UNIVERSITÀ DEGLI STUDI DI PADOVA

Dipartimento di Salute della Donna e del Bambino

SCUOLA DI DOTTORATO DI RICERCA IN MEDICINA DELLO SVILUPPO E SCIENZE DELLA PROGRAMMAZIONE SANITARIA

INDIRIZZO: Emato-oncologia, Genetica, Malattie Rare e Medicina Predittiva

CICLO XXIX

# IDENTIFICATION OF ANNEXIN 2A AS A FUNDAMENTAL MEDIATOR OF GLIOBLASTOMA CELL DISSEMINATION AND POTENTIAL THERAPEUTIC TARGET

**Coordinatore**: Ch.mo Prof. Carlo Giaquinto

**Supervisore:** Ch.mo Prof. Giuseppe Basso

**Tutor:** Dr. Luca Persano

**Dottorando**: Francesca Maule

## TABLE OF CONTENTS


1. **TABLE OF CONTENTS**
2. **SUMMARY**
3. **SOMMARIO**
4. **INTRODUCTION**
   - **4.1** Gliomas and Glioblastoma Multiforme.
   - **4.2** Glioblastoma multiforme Treatment.
   - **4.3** Mechanisms of Glioblastoma Cell Migration and Invasion.
   - **4.4** Annexin 2A in Tumorigenesis and Cancer Progression.
5. **MAIN AIMS OF THE STUDY**
6. **RESULTS**
   - **6.1** ANXA2 expression correlates with glioma grade and patient outcome.
   - **6.2** ANXA2 inhibition dramatically affects gene expression profile of GBM cells.
   - **6.3** GBM cell migration and invasion are sustained by ANXA2.
   - **6.4** ANXA2 impairment induces differentiation and inhibits proliferation of GBM cells.
   - **6.5** An $ANXA2^{down}$ signature predicts GBM patient survival.
   - **6.6** ANXA2-dependent gene signature mapping for drug repositioning.
7. **DISCUSSION**
8. **FUTURE PROSPECTIVES**
9. **MATERIALS AND METHODS**
10. **REFERENCES**
11. **SUPPLEMENTARY TABLES**
    - **11.1** Newman-Keuls multiple comparisons test from GSE4290.
    - **11.2** Clinical characteristics of glioma patients included in survival and multivariate analyses.

**11.3** Differentially expressed genes in common between TGCA and GSE13041 datasets derived from comparison between ANXA2 Very Low and ANXA2 High patients.

**11.4** Primary GBM cells used in the study.

**11.5** Differentially expressed genes between Isotype and anti-ANXA2 antibody treated GBM cells.

**11.6** Summary of Log-rank analysis for ANXA2-dependent Risk Score on TCGA, GSE13041, GSE17536, E-MTAB-365 and GSE31210 cohorts of cancer patients.

**11.7** Differentially expressed genes between SiNEG and SiANXA2 transfected GBM cells.

**11.8** Antibodies used in this study.

**11.9** Sequence of primers used in this study.

**12. ABBREVIATIONS USED IN THE TEXT**

## 2. SUMMARY

Glioblastoma multiforme (GBM) is the most devastating tumor of the brain, characterized by an almost inevitable tendency to recur after intensive treatments and a fatal prognosis. Indeed, despite recent technical improvements in GBM surgery, the complete eradication of cancer cell disseminated outside the tumor mass still remains a crucial issue for glioma patients management. In my PhD project, we identified Annexin 2A (ANXA2) as an important intracellular cytoskeletal protein expressed also on the surface of various types of cancer cells. Initially, we show that ANXA2 is over-expressed in IV grade GBM at various levels when compared to lower stage tumors. More importantly, we demonstrated that low/absent expression of ANXA2 identifies a subgroup of GBM patients endowed with better prognosis, suggesting that ANXA2 expression can be considered as an independent prognostic factor in glioma. We then analyzed the transcriptional changes associated to different levels of ANXA2 expression. In particular, we generated a series of ANXA2 dependent transcriptional signatures based on the comparison between $ANXA2^{hi}$ versus $ANXA2^{lo}$ expressing GBM patients from the TCGA and GSE13041 datasets (719 differentially expressed genes in common between the two cohorts), modulated transcripts after ANXA2 neutralization by specific antibody (855 differentially expressed genes) and the expression profiles of ANXA2 silenced cells respect to relative controls (3592 differentially expressed genes) in our primary GBM cell cultures. Interestingly, Gene Set Enrichment Analysis (GSEA) on the three different signatures obtained, revealed a negative enrichment of cell migration and mesenchymal transition related genes. These data strongly suggested the important role played by ANXA2 in GBM cell behavior and aggressiveness, allowing us to further setup strategies to specifically modulate its functions and dependent intracellular signaling. For this reason, we further analyzed ANXA2 functional activity *in vitro* in primary GBM cell cultures, demonstrating as ANXA2 is a major sustainer of GBM cell aggressiveness by regulating cellular invasion and motility together with cancer cell proliferation and differentiation status. Moreover, based on gene expression data of ANXA2 neutralized cells, we were able to test the prognostic potential of an $ANXA2^{down}$ signature in multiple cancer datasets, demonstrating that expression of genes regulated by ANXA2 fluctuations predict cancer patients outcome by themselves.

Finally, we then functionally mapped an ANXA2-dependent gene signature (TCGA and GSE13041 datasets analysis) by exploiting the Connectivity Map bioinformatic tool in order to identify compounds and approved drugs able to revert this signature of GBM aggressiveness. The compounds, significantly predicted to be able to counteract the ANXA2-dependent transcriptional signature, were analyzed for their ability to inhibit GBM cell invasion *in vitro* in primary GBM cultures. Finally, we applied ANXA2 dependent transcriptional signatures, previously generated from our primary GBM cells, to the QUADrATiC tool, which was allowed the exploration of a larger database of reference cell lines and perturbagens.

## 3. SOMMARIO

Il Glioblastoma Multiforme (GBM) è il tumore cerebrale più aggressivo, caratterizzato da una prognosi infausta e dall'inevitabile tendenza a ricadere anche in seguito ad un trattamento intensivo. Nonostante i recenti miglioramenti tecnici nella chirurgia del GBM, la sua completa rimozione rimane ad oggi uno dei maggiori problemi legati all'insuccesso terapeutico di questi pazienti. Questo studio si focalizza sulla caratterizzazione di annessina 2A (ANXA2), proteina presente in diversi compartimenti delle cellule normali e ritrovata anche sulla superficie di diversi tipi di cellule tumorali. Con lo sviluppo di questo progetto, abbiamo dimostrato che ANXA2 è espressa ad alti livelli nei gliomi di IV grado rispetto ai gliomi di grado minore e che una bassa/nulla espressione di ANXA2 identifica un sottogruppo di pazienti caratterizzati da una prognosi migliore, suggerendo come l'espressione di ANXA2 possa essere considerata un fattore prognostico indipendente nei gliomi.

Successivamente, con lo scopo di analizzare i cambiamenti trascrizionali associati ai differenti livelli di espressione di ANXA2, abbiamo generato una signature trascrizionale ANXA2-dipendente utilizzando i dati provenienti dai dataset pubblici TCGA e GSE13041 e basata sul confronto tra pazienti esprimenti alti livelli di ANXA2 e pazienti esprimenti bassi livelli di questa proteina (719 geni differenzialmente espressi in comune tra le due coorti). Sono state quindi generate due signature ANXA2-dipendenti basate rispettivamente sui trascritti modulati in seguito alla neutralizzazione di ANXA2 con anticorpo specifico (855 geni differenzialmente espressi) e tramite silenziamento (3592 geni differenzialmente espressi), in colture primarie di GBM. L'analisi di gene set enrichment (GSEA) condotta sulle tre signature, ha rivelato un arricchimento negativo di geni legati ai processi di migrazione cellulare e transizione epitelio-mesenchimale. Questi dati hanno fortemente suggerito l'importante ruolo svolto da ANXA2 nel comportamento e nell'aggressività delle cellule di GBM, portandoci pertanto a programmare differenti strategie per modulare le sue funzioni e le vie di segnale intracellulare ad essa correlate. Per questo motivo, è stata condotta una serie di analisi funzionali in vitro in cellule primarie di GBM, dimostrando come ANXA2 sia un principale mediatore dell'aggressività di questo tumore attraverso la regolazione di processi quali motilità cellulare, proliferazione e differenziamento.

Inoltre, basandoci sul profilo d'espressione genica di cellule di GBM in cui abbiamo inibito la funzione di ANXA2, abbiamo validato il potenziale prognostico di una signature "ANXA2down" (basata sui geni maggiormente down-regolati in cellule di GBM trattate con anticorpo neutralizzante ANXA2) in diversi dataset pubblici, dimostrando come l'espressione di geni regolati dai livelli di ANXA2 sia in grado di predire l'andamento dei pazienti.
Infine, la signature precedentemente generata dai dataset TCGA e GSE13041 è stata mappata funzionalmente utilizzando il tool bioinformatico Connectivity Map con lo scopo di identificare composti in grado di revertire tale signature. I composti identificati sono stati analizzati successivamente per la loro abilità di inibire il processo di invasione in vitro in colture primarie di GBM. Inoltre, le signature ANXA2-dipendenti, ottenute dalle precedenti analisi (cellule inibite/silenziate per ANXA2), sono state applicate al tool QUADrATiC. Ciò ha permesso di approfondire i risultati grazie all'utilizzo di un database più ampio che si basa sullo studio di un numero maggiore di composti approvati in numerose linee cellulari.

# 4. INTRODUCTION

## 4.1 Gliomas and Glioblastoma Multiforme.

Gliomas are primary brain tumors that arise from neural cells called glial cells [1]. As described by the World Health Organization (WHO) classification [2], malignant diffuse gliomas are comprised of astrocytic, oligodendroglial, and mixed oligoastrocytic neoplasms based on morphology, and then are further subdivided by tumor grade based on additional histological features in the tumor. Lower grade tumors (such as grade I-II tumors) are characterized by well differentiated cells while nuclear atypias and mitotic activity are required criteria for grade III lesions. The presence of necrosis or microvascular proliferation is required for the diagnosis of grade IV astrocytomas, named glioblastoma multiforme (GBM). While 90-95% of GBM arise de novo and are considered "primary," about 5-10% arise from lower-grade gliomas in younger patients and are termed "secondary" [3].

Glioblastoma multiforme is the most common primary malignant brain tumor in the adult [4]. Together with grade III anaplastic astrocytoma, these tumors embrace the clinical entity termed "malignant glioma". Extensive genomic characterization gave a high resolution picture of the molecular alterations underlying this tumor providing the emerging view that "GBM" represents several histologically similar but molecularly heterogeneous diseases. Indeed, World Health Organization classification has recently incorporated molecular information into diagnoses, which is made by both identifying and characterizing the physical appearance and growth rate as well as genetic features. The use of "integrated" phenotypic and genotypic parameters for CNS tumor classification adds a level of objectivity and narrowly defined diagnostic entities than in prior classifications, which in turn should lead to greater diagnostic accuracy as well as improved patient management and more accurate determinations of prognosis and treatment response [5].

GBM is a highly heterogeneous tumor with individual histologic hallmarks including high cell density, intratumoral necrosis, vascular hyperplasia and invasion through brain parenchyma [6]. Symptoms of disease depend on the specific location of the tumor, and diagnosis is most commonly made following surgical resection. The prognosis for patients with GBM is often very poor (only 2% of patients aged 65 years or older, and only 30% of those under the age of 45 years at diagnosis, survive for 2 years or more), and treatments to cure this cancer have yet to be devised.

Due to its cellular heterogeneity and the intrinsic ability of invading neighboring normal tissues, GBM is almost incurable. Despite decades of efforts in trying to improve surgical approaches and chemotherapy protocols, GBM patients display a median survival of only 17 months [7, 8]. Tumor cells remaining at the edge of the cavity after surgical removal of the mass appear to be resistant to the gold standard treatments, since the majority of GBM rapidly recur within 2-3cm of the original tumor site, giving rise to cancers with an even more aggressive and resistant phenotype (Figure 1). There are at least four different reasons possibly contributing to the recurrent phenotype of GBM tumors and their resistance to therapy:

1. Brain is a terminally differentiated organ with low or absent cellular turnover that impede the application of ablative therapies [6].
2. GBM masses can often localize and invade functional brain areas that make impossible for the surgeons to totally remove pathologic and cancer infiltrated tissues, without affecting cognitive processes or motor activities, thus unequivocally affecting patient's outcome [9].
3. Blood Brain Barrier (BBB) protects the CNS, preventing many systemically administered chemotherapics to reach tumor sites. For this reason, many chemotherapeutic strategies, that have shown to be effective in other malignancies, could not be applicable in the context of primary brain tumors [6].
4. GBM are characterized by a variety of genetic abnormalities. This heterogeneity may raise a therapeutic challenge, because cells bearing different abnormalities might differently respond to therapy.
5. GBM is one of the tumors in which cancer stem cells (CSCs) were identified. These stem-like cells, called glioma stem cells (GSCs), express both neuronal and astroglial markers of differentiation, together with several key determinants of neural stem cell fate. These findings confirmed that brain tumors contain transformed, undifferentiated neural precursors, indicating that GSCs have the ability to self-renew, proliferate and express typical markers of stem cells, such as the cell surface marker CD133, normally expressed on highly clonogenic and multipotent stem cells in human central nervous system (CNS) precursors [10]. GSCs are thought to be responsible for maintaining these tumors after therapy and repopulating them after gross total resection. Therefore these cells are important targets for treatment. Several embryonic signaling pathways, such as Notch, Hedgehog, and Hif-1α have been reported to

help maintain these GSCs and thus provide potential targets for treating these extremely malignant cancer cells [11].

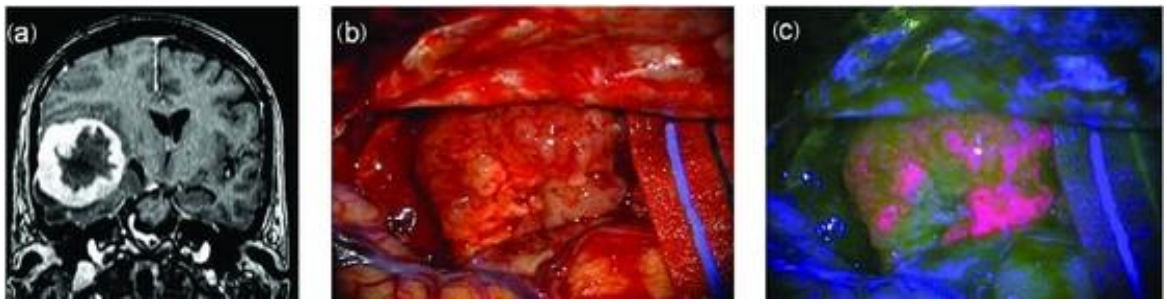



**Figure 1**. F 63/Y, preoperative MRI scan showing a large temporal high grade glioma (a). Intraoperative view: tumor resection under white (b) and blue (c) light till the complete removal of lesion. Histological report: glioblastoma (astrocytoma grade IV sec WHO). Reproduced from "Della Puppa A, et al. 5-Aminolevulinic Acid Fluorescence in High Grade Glioma Surgery: Surgical Outcome, Intraoperative Findings, and Fluorescence Patterns, Hindawi Publishing Corporation BioMed Research International Volume 2014" [12].

### 4.2 Glioblastoma Multiforme Treatment.

Since GBM presents different phenotypic patterns and molecular signaling activation in distinct regions of the tumor mass, the pathological characterization can be influenced by the site of sample collected by the surgeon throughout the tumor [13]. In this context, O(6)-methylguanine-DNA methyltransferase (MGMT) protein expression and promoter methylation status are considered important prognostic factors [14]. This issue becomes particularly crucial because in the modern neuro-oncological setting, several diagnostic and prognostic markers are commonly analyzed to predict tumor grade and the consequential therapeutic approach. In addition, biomarkers are pivotal in the selection of glioma patients for their recruitment into clinical trials following surgery. In this sense, site of the tumor sample collection could represent a remarkable bias for both selection and stratification of patients. Due to its great heterogeneity, the current standard of care for GBM management is a multimodal approach comprising of maximal safe surgical resection, post-operative radiation therapy (RT), and concurrent and adjuvant temozolomide (TMZ). It is widely accepted that surgery alone cannot cure GBM because of tumor dissemination, however it provides fast mass reduction, with reported survival consequences [8]. Chemotherapy also has major limitations since most drugs cannot cross the blood brain barrier and the penetration into brain cells is limited.

Degree of tumor removal has been shown to strongly influence overall survival of patients [15]. Although maximal resection (MR) could be achieved only in a quote of patients (≈40%), it seems to significantly increase their survival by allowing a more efficient removal of disseminated tumor cells [16, 17]. Nevertheless, MR is challenging to accomplish, because of the complexity in recognizing tumor boundaries at GBM margins [9]. Moreover, relevance of extent of resection in surgical management of these tumors is clearly supported by the knowledge that almost all GBM patients experience recurrence within 2-3cm from previous surgical cavity, despite achievement of MR and multimodal treatments [18, 19].

For this reason, 5-aminolevulinic acid (5-ALA) staining of tumors cells during surgery has been recently adopted to intra-operatively identify GBM cells as fluorescent, with documented survival benefits [20, 21]. 5-ALA-derived fluorescence accumulates in distinct GBM regions and make tumour cells easily identifiable during surgery [22], with 100% predictive value in 5-ALA bright fluorescence areas [16, 23]. After maximal surgical resection, standard treatment consists of 6 weeks of radiotherapy (dose: 60Gy), together with concomitant chemotherapy with TMZ (75mg/m$^2$ daily). Once chemo-radiotherapy is complete, a minimum of 6 months of adjuvant treatment with TMZ is started (dose: 150-200mg/m$^2$ for 5 days every 28 days) [8].

TMZ is a monofunctional methylating agent which is spontaneously activated in aqueous solution into the dacarbazine metabolite 5-(3-methyl-1-triazeno) imidazole-4-carboxamide. When TMZ is combined with radiotherapy in patients with newly diagnosed GBM, survival is significantly prolonged [8]. It exerts its anticancer property by adding methyl adducts to DNA, which eventually leads to apoptosis. TMZ achieves its cytotoxic effect mainly by methylating guanine residues in DNA at O6 position. This adduct can be removed by the DNA repair protein O6-methylguanine-DNA-methyltransferase (MGMT), which is heterogeneously expressed in GBM [4, 24, 25].

Recently, two phase III clinical trials investigated the addition of bevacizumab to standard treatment with TMZ. GBM promotes secretion of vascular endothelial growth factor (VEGF), which induces vascularization and increases capillary permeability of the blood brain barrier, subsequently causing extracellular edema [26, 27]. Bevacizumab (BV) is a humanized monoclonal antibody targeting VEGF and was first approved in the US for glioblastoma in 2009 [28]. Blocking the VEGF pathway restores the abnormal tumor vasculature to a more normal state, reducing vascular permeability and the regional cerebral blood volume around

the tumor in addition to decreasing peritumoral edema [29]. Although the addition of BV to the conventional standard therapy for newly diagnosed glioblastoma prolonged the progression-free survival time and the performance status of patients, it failed to extend overall survival time. Since recurrence of malignant glioma is often local, a further consideration can be done about loco-regional therapies. Gliadel wafers are a biodegradable polymer containing 3.85% carmustine (1,3-bis[2-chloroethyl]-1-nitrosourea [BCNU]), which are implanted in the resection cavity, delivering carmustine directly at the time of surgery. BCNU may alkylate the nucleoprotein and interfere with the DNA synthesis and repair, and the carbonylation of nucleoprotein lysine residues can also decrease RNA and protein synthesis [30]. However, use of carmustine wafers is currently a content of controversy. Westphal et al believed that local chemotherapy with carmustine wafers offers a survival benefit to patients with newly diagnosed GBM [31]. Affronti et al also emphasized that the BCNU wafer therapy is well tolerated and has a survival benefit compared with radiation alone [32]. Conversely, De Bonis et al showed that there was no significant improvement in the outcome by adding BCNU wafers and the toxicity after Gliadel use was significantly higher [33]. Currently, treatment with BCNU wafers has been excluded in some clinical trials of new chemotherapies because of the potential toxicities and lack of reliable survival statistics [34]. At present, several clinical studies have looked at the use of various pharmacological compounds such as integrin inhibitors (cilengitide), other antiangiogenics (cediranib), and vaccines against the epidermal growth factor receptor (EGFR), which is aberrantly expressed/activated in 30% of patients. Another innovative strategy is the application of the NovoTTF-110A device for several hours daily, which delivers alternating intermediate-frequency electrical fields (100-300kHz) as an adjunct to standard treatment. Immunotherapy has not demonstrated yet any conclusive results to date [35].

All these data highlight the urgent need for the identification of additional strategies to counteract the intrinsic GBM drug resistance. In this context, the Connectivity Map database is a powerful bioinformatic tool for drug repositioning, able to identify perturbagens predicted to revert the gene signature of a specific cancer to a less aggressive or drug-sensitive transcriptional profile [36, 38]. The recently developed QUADrATiC tool allows the exploration of a larger database of reference cell lines and perturbagens, making it attractive for a drug repurposing approach also against GBM [39].

### 4.3 Mechanisms of Glioblastoma Cell Migration and Invasion.

One of the characteristics of malignant gliomas that makes them universally fatal is their ability to infiltrate normal brain parenchyma. The rapid proliferation of GBM cells changes the tumor microenvironment, which becomes hypoxic, acidic, and poor of glucose and other nutrients. Tumor cells must adapt to these changes to survive and thus they shift from a proliferative to a migratory phenotype in order to reach a more favourable environment. Moreover, over time secreted cytokines diffuse and generate concentration gradients that are sensed by GBM cells, leading to the detachment and migration of these cells away from the primary tumor [40].

While other aggressive cancers metastasize by travelling through the circulatory or lymphatic systems to organs, high-grade glioma cells rarely metastasize outside of the brain and instead actively migrate through two types of extracellular space: 1) the perivascular space that is found around all blood vessels, and 2) the spaces in between the neurons and glial cells which makes up the brain parenchyma and white matter fiber tracts. The mechanisms underlying migration and invasion of GBM cells are complex and involve a number of sequential steps that require the adhesion of tumour cells to resident cells or matrix components, remodelling and degradation of this matrix and successful invasion of the infiltrating cells into the modified region (Figure 2).

First, tumor cells become morphologically polarized and develop membrane protrusions allowing the cells to reach forward and attach to the extracellular matrix (ECM). During this process, invasive cells alter the cell shape and volume in order to move through differently sized spaces, including the extremely small spaces in normal brain [41]. In addition to gaining mobility, invasive glioma cells must be able to interact with multiple components of the ECM, which provides ligands that tumor cells can anchor to. Several studies have shown that tumors influence the nearby stromal cells, causing reorganization of the structure and composition of the ECM. These changes in the ECM then further enhance tumor growth and invasion [42]. The ECM is composed of a network of fibrous proteins, glycoproteins and proteoglycans which form a scaffold to which cancer cells adhere [43]. While all tissues contain ECM, the composition ,dimension and elasticity of the ECM differs between tissue types depending on tissue function [44]. ECM integrity is important in maintaining tissue-specific function, therefore, loss of ECM integrity results in the release of ECM-bound signalling molecules and changes in the tensional forces exerted on the cell [45]. Signalling

molecules and biomechanical perturbation trigger intracellular signalling cascades that change gene expression which facilitate either ECM degradation or synthesis of ECM components [46]. Generally, cells are inherently motile, but this is tightly regulated in various stages, such as embryological development, and in physiological responses, such as wound healing and immune-response. In GBM cells, motility becomes dys-regulated allowing them to be highly migratory [47]. Besides being able to migrate, these cells must be able to get through the physical barrier, ECM, by degrading its constituting proteins in order to create a path for invasion. Remodelling and degradation of ECM encompasses both secretion of altered matrix components and proteolytic modification of the existing matrix by proteases whose expression and activity is regulated by a number of interactive factors [48]. Finally, the migration and thus completed invasion of the GBM cells into the modified region is stimulated by a vast variety of soluble factors that are secreted either by the tumour cells themselves or by the surrounding stroma. These factors act in an autocrine or paracrine fashion, inducing cell migration and proteolytic activity. Alternatively, tumour cells may communicate with specific distant targets through secreted microvesicles that contain growth factors and receptors, functional mRNAs, and miRNAs [49-51]. For all these reasons, any imbalance in the expression of proteases, receptors and soluble factors could dramatically impact the complex process of cancer cell invasion.

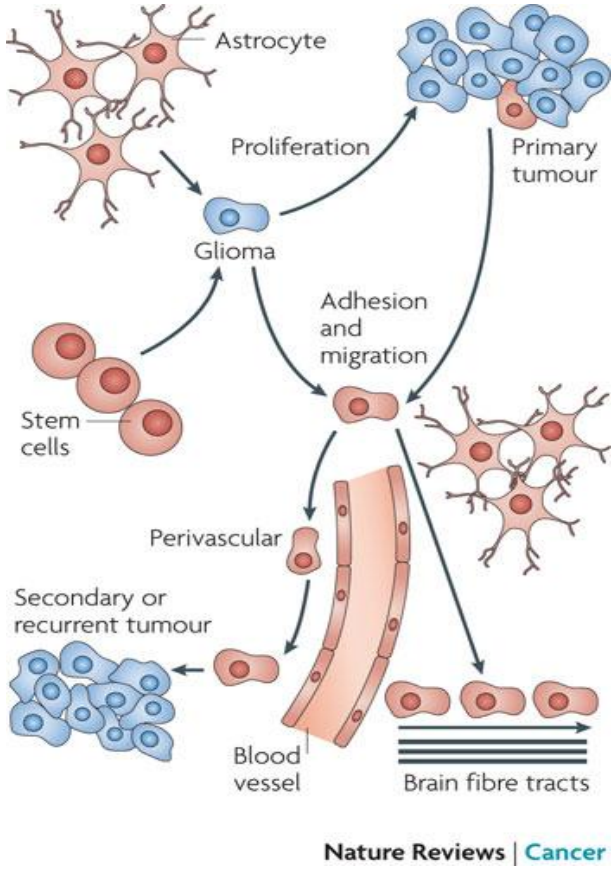



**Figure 2.** Mechanisms of glioblastoma cell migration and invasion. Reproduced from "Christian C. Naus & Dale W. Laird, Implications and challenges of connexin connections to cancer, Nature Reviews Cancer, June 2010" [52].

### 4.4 Annexin2A in Tumorigenesis and Cancer Progression.

Annexin A2 gene (also called p36, annexin II, ANXA2, calpactin I, lipocortin II, chromobindin VIII, or placental anticoagulant protein IV) [53], is located on chromosome 15q22.2 and its transcription and translation give a 36kDa protein [54] expressed in many cellular types including: endothelial cells, macrophages, mononuclear cells and also cancerous cells. ANXA2 contains three distinct functional regions: the N-terminal region, the C-terminal region, and the core region. The N-terminal region contains the tissue plasminogen activator (tPA)- [55] and S100/A10 (also called p11)-binding sites [56]. The C-terminal region contains the F-actin- [57], heparin- [58] and plasminogen-binding sites [59]. The core region of ANXA2 contains the calcium and phospholipid-binding site [60]. The core domain contains four repeats, and each repeat features five alpha-helices that give rise to two annexin-type calcium-binding sites with the sequence GxGT-[38 residues]-D/E. ANXA2 is activated in a calcium-dependent manner and undergoes a conformational change that exposes a

hydrophobic amino acid to form a heterotetramer with p11 that shows a high affinity for phospholipids [61]. ANXA2 exits both as a monomer and a heterotetramer. The ANXA2 monomer is an intracellular 38kDa protein while the ANXA2 heterotetramer, consisting of two subunits of monomers and two subunits of p11 proteins (also known as S100A10), localized to the plasma membrane (Figure 3) [62].

Many studies have reported increased expression of ANXA2 in cancer tissues compared with normal tissues [63, 64] and the up-regulation of ANXA2 expression in pancreatic, colorectal, and brain tumors was directly correlated with advanced clinical stage [65, 66]. In particular, ANXA2 have been detected at high levels in fetal brain during the period when radial glia proliferate, instead of normal adult brain were it was not detected, suggesting that its expression might be important during brain development and differentiation of brain stem cells [66]. Higher ANXA2 expression was also observed in metastatic breast cancer and colon cancer cells compared with the non-metastatic cells [67]. Furthermore, a recent study demonstrated a correlation between high ANXA2 levels and a more aggressive prostate cancer phenotype [68]. Despite various researches confirmed either an up or down regulation of ANXA2 in various tumour types, the exact mechanism that regulate its expression at both gene and protein level are poorly understood. Several studies suggest that ANXA2 plays an essential role in regulating cancer cell adhesion [69, 72], cytoskeleton structures and actin remodeling, which are both essential processes for cancer cell migration [61, 73].

ANXA2 binds with plasminogen and tissue plasminogen activator on the cell surface, which leads to the conversion of plasminogen to plasmin, which plays a key role in the activation of metalloproteinases and degradation of extracellular matrix components, essential for metastatic progression. Indeed, ANXA2 is a well-known facilitator of ECM degradation through its ability to simultaneously interact with the cytoskeletal, membrane and extracellular matrix components, thereby providing a structural link between ECM components and proteolytic enzymes [74, 76], reviewed by Roda et al. [77].

Initial evidence for the involvement of ANXA2 in tumor adhesion was discovered in RAW117 large cell lymphoma cells [78]. This study demonstrated that the binding of RAW117 tumor cells to endothelial cells (ECs) was mediated by ANXA2 expressed on the surface of RAW117, and this binding was inhibited by specific antibodies against ANXA2, reinforcing the role of ANXA2 in the tumor cell adhesion process. Recently, other studies have demonstrated that the adhesion between breast cancer cells and ECs is mediated by

interactions between ANXA2 and S100A10. ANXA2 expressed on the surface of breast cancer cells interacts with S100A10 located on microvascular ECs, facilitating the process by which cancer cells form cell-cell contact with microvascular ECs [79]. The contribution of ANXA2 to tumor invasion and metastasis by interacting with its potential invasion-associated protease proteins as well as the actin cytoskeleton, has been reported in many advanced human tumors. In breast cancer, for example, ANXA2 was found to be over-expressed in the highly invasive cell line MDA-MB-231 compared with a poorly invasive cell line MCF-7 [63]. In MCF-7/ADR cells, the administration of adriamycin increased the expression of ANXA2 consistent with the enhancement in cell proliferation and invasion, suggesting the involvement of ANXA2 in cancer cell invasion [80]. Shiozawa et al. (2008) also reported that ANXA2 regulates the adhesion and migration of prostate cancer cells to osteoblasts and endothelial cells [81].

In addition, the reduction in ANXA2 expression by siRNA or neutralizing antibodies significantly inhibited the motility and invasion of ovarian cancer cells [82]. A study by Zhao et al. [83] reported that ANXA2 interaction with a member of the immunoglobulin family (HAb18G/CD187) promotes invasion and migration of human hepatocellular carcinoma cells (FHCC-98 cells) *in vitro*. ANXA2 catalyzes the conversion through the interaction with tPA, thus efficiently enforcing the effects of plasmin on tumor angiogenesis and tissue remodeling, MMPs, latent growth factor activation and ECM degradation leading to tumor progression and metastasis [53, 84, 85]. Together these studies indicate that ANXA2 plays an important role in promoting adhesion, migration and subsequent metastasis of cancer cells. While the majority of ANXA2 is found in the heterotetrameric form associated with the membrane and the actin cytoskeleton, monomeric ANXA2 is found in the nucleus [86]. Here, ANXA2 has been shown to play an important role in DNA synthesis and mRNA transport and translation after identification of a small population existing in the nucleus and a NES in the N-terminus of this protein that regulates its nuclear export [86, 87]. Increasing evidence points to the participation of the multifunctional protein ANXA2 in mRNA localization as well as the translation of certain mRNAs on cytoskeleton-bound polysomes, and thereby in the regulation of the biosynthesis of specific proteins, such as c-Myc and ANXA2 itself, which are linked to cellular transformation. ANXA2 is most likely activated by signaling pathways, which result in its post-translational modifications and modulate its binding to various ligands. Positive and polar residues in helices C-D in domain IV of ANXA2 bind to cis-acting elements in the

3'-UTRs of its cognate, c-myc, collagen prolyl 4-hydroxylase-α(I) and N-methyl-D-aspartate R1 mRNAs, thus contributing to post-transcriptional regulation of the expression of specific genes [88, 89].

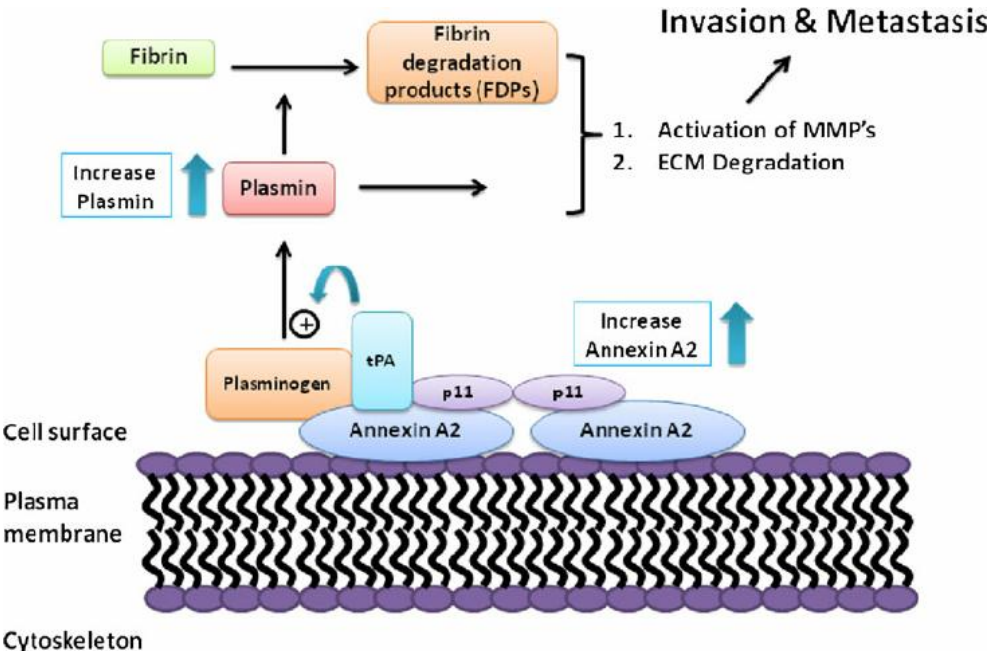



**Figure 3.** Proposed mechanism of ANXA2 promoting cancer metastasis in the plasminogen activation system. ANXA2 heterotetramer on the cell surface binds to t-PA and activates plasminogen conversion to plasmin. Plasmin results in activation of MMPs and lead to ECM degradation. Increased ANXA2 expression results in increased plasmin generation and enhances cancer invasion and metastasis. Reproduced from "Lokman NA1, Ween MP, Oehler MK, Ricciardelli C. The role of annexin A2 in tumorigenesis and cancer progression. Cancer Microenviron, 2011" [82].

## 5. MAIN AIMS OF THE STUDY

Glioblastoma multiforme (GBM) is the most devastating tumor of the brain, characterized by an almost inevitable tendency to recur after intensive treatments and a fatal prognosis, with a patients median survival of only 17 months. Indeed, despite recent improvements in GBM surgery, the complete eradication of cancer cell disseminated outside the tumor mass still remains a crucial issue for glioma patients management. These considerations make particularly relevant the identification of new targets and compounds able to counteract the severe effects of GBM cell invasion and dissemination. In this context, ANXA2 has been recently associated with cell dissemination and metastasis in many cancer types, thus making it an attractive putative regulator of cell invasion and potential therapeutic target also in GBM.

The main aims of this study are:

1. To better understand the biological and clinical significance of ANXA2 expression in GBM.

2. To investigate a possible ANXA2 signature with prognostic value.

3. To setup different strategies to target ANXA2 (neutralizing antibodies, siRNA, drugs) and evaluate the effects on GBM cells.

4. To *in vitro* screen a selection of compounds generated by the Connectivity Map bioinformatic tool based on the effects on established primary GBM cells in terms of cell proliferation, motility and invasion.

## 6.1 RESULTS

### 6.1 ANXA2 expression correlates with glioma grade and patient outcome.

To evaluate the impact of ANXA2 expression on glioma aggressiveness, we firstly performed ANXA2 IHC on a series of 89 gliomas. IHC staining disclosed that ANXA2 protein levels are significantly higher in GBM ($p<0.0001$) compared to less aggressive tumors (Figure 4A, 4B). To validate our results, we next retrieved ANXA2 gene expression values from GSE4290 [90] and GSE7696 [91] glioma patients cohorts confirming a significant over-expression of ANXA2 transcript in gliomas relative to control tissues and its progressive increase with tumor grade (Figure 4C, 4D and Supplementary Table 1). We then correlated ANXA2 IHC scores with clinical outcome of patients in terms of progression-free and overall survival (PFS and OS). In particular, glioma patients with "Very Low" ANXA2 IHC score (<25° percentile) show a significantly prolonged PFS and OS when compared with remaining "ANXA2 High" patients (Table 1 and Figure 5A-5D). Since this result could be partially biased by an unbalanced distribution of low grade tumors (grade II-III and secondary) in the ANXA2 Very Low subgroup, we then analyzed the impact of ANXA2 IHC score only in GBM patients. Importantly, GBM patients with an ANXA2 Very Low score (<25° percentile) display a significant increase in PFS and OS compared to all other GBMs (Figure 4E, 4F, Table 1 and Figure 5E, 5F), thus strengthening the correlation of ANXA2 with GBM aggressiveness. In order to validate these results, we analyzed ANXA2 gene expression data from two independent cohorts of GBM patients (the TCGA dataset [92, 93] and GSE13041 [94]) and correlated its expression to patient outcome. Log-rank analysis confirmed that GBM patients expressing "Very Low" levels of ANXA2 mRNA (<25° percentile) survived significantly longer in terms of OS (Figure 4G, 4H and Table 1) and PFS (Table 1 and Figure 6).

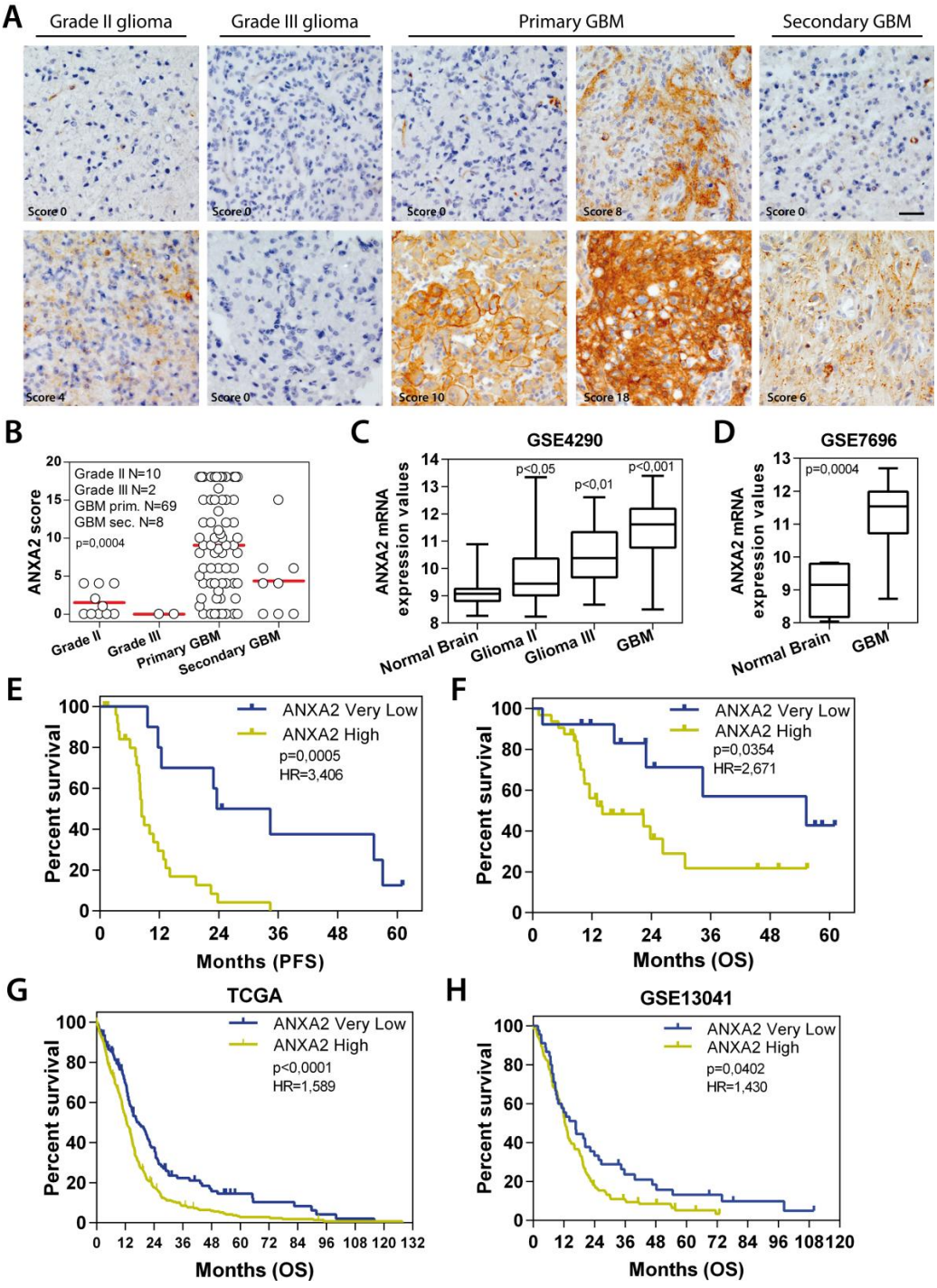



**Figure 4.** ANXA2 is over-expressed in GBM and positively correlates with bad prognosis. (A) Representative ANXA2 IHC staining performed on grade II, III and IV gliomas and secondary GBMs. Original magnification 20x; bar: 50µm. (B) ANXA2 protein expression levels represented as IHC scores in 10 grade II gliomas, 2 grade III gliomas, 69 GBM and 8 secondary GBM samples. (C and D) Box plots showing ANXA2 gene expression in samples retrieved from GSE4290 and GSE7696 datasets respectively. p values have been calculated relative to Normal Brain samples. (E and F) Kaplan Meier curves showing the impact of ANXA2 IHC score on GBM patient outcome in terms of progression-free (PFS) (E) and overall survival (OS) (F). (G and H) Validation of prognostic potential of ANXA2 mRNA expression in TCGA (G; N=519 patients) and GSE13041 (H; N=191) datasets.

**Table 1.** Summary of Log-rank analysis results on patients groups.

| *Tumour type (origin of data)* | *Survival* | *ANXA2 status* | *Median Survival (months)* | *Log-rank (Mantel-Cox) p value* | *Hazard Ratio (logrank) High/Very Low* |
|---|---|---|---|---|---|
| *Gliomas from IHC* | PFS | ANXA2 High | 9.6 | <0.0001 | 3.888 |
| | | ANXA2Very Low | 34.6 | | |
| | OS | ANXA2 High | 22.9 | 0.0282 | 3.018 |
| | | ANXA2 Very Low | N.D. | | |
| *GBM from IHC* | PFS | ANXA2 High | 8.4 | 0.0005 | 3.406 |
| | | ANXA2 Very Low | 29 | | |
| | OS | ANXA2 High | 14.1 | 0.0354 | 2.671 |
| | | ANXA2 Very Low | 55.3 | | |
| *GBM from TCGA* | PFS | ANXA2 High | 8.3 | <0.0001 | 1.651 |
| | | ANXA2 Very Low | 10.89 | | |
| | OS | ANXA2 High | 12.6 | <0.0001 | 1.589 |
| | | ANXA2 Very Low | 17.76 | | |
| *GBM from GSE13041* | OS | ANXA2 High | 12.5 | 0.0402 | 1.43 |
| | | ANXA2 Very Low | 16.6 | | |

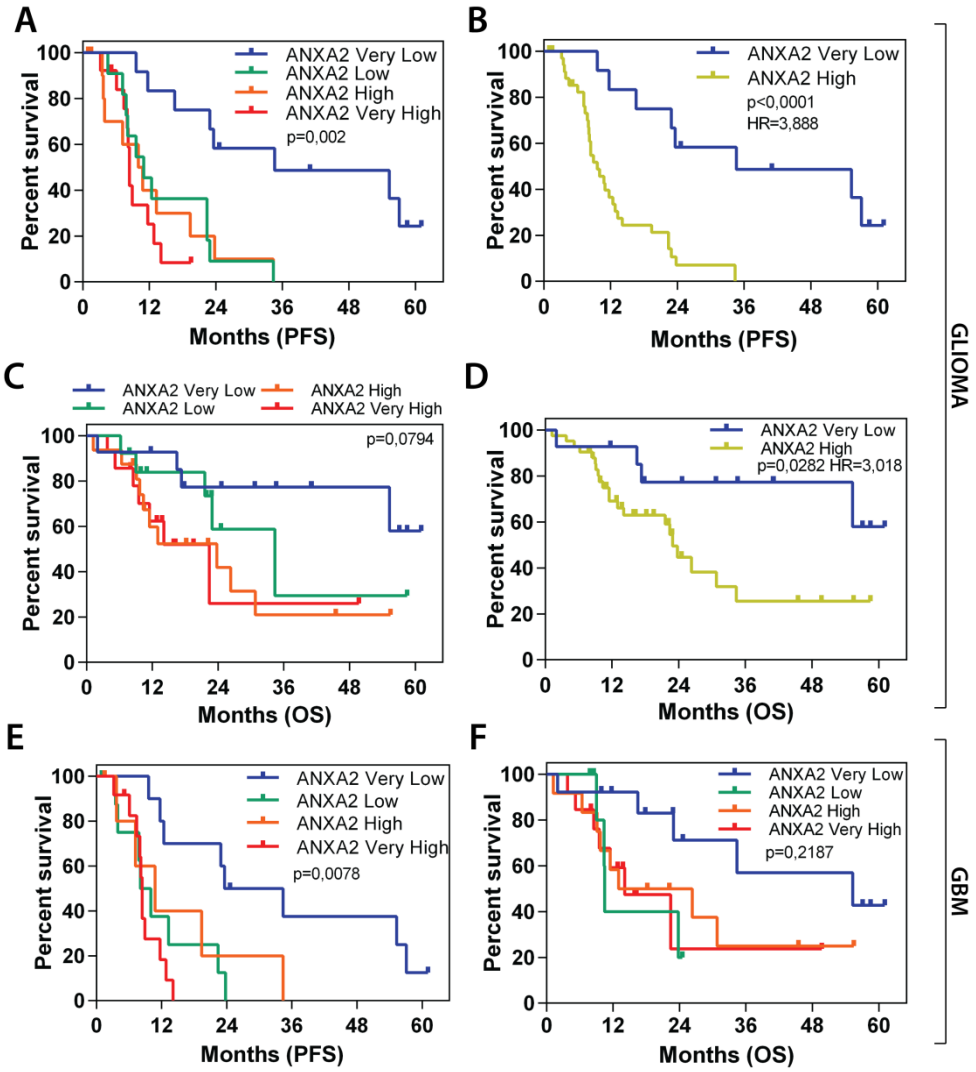



**Figure 5.** ANXA2 protein expression impacts glioma patient survival. (A-D) Kaplan Meier curves showing PFS and OS of glioma patients divided in four subgroups (A and C) depending on ANXA2 IHC score (ANXA2 Very Low: IHC score <25° percentile; ANXA2 Low: IHC score <50° percentile; ANXA2 High: IHC score <75° percentile; ANXA2 Very High: IHC score ≥75° percentile). Right panels reports PFS (B) and OS (D) of glioma patients divided in two subgroups depending on ANXA2 IHC score (ANXA2 Very Low: IHC score <25° percentile; ANXA2 High: IHC score >25° percentile). (E and F) Kaplan Meier curves showing PFS (E) and OS (F) of GBM patients divided in four quartiles on the basis of ANXA2 IHC score as previously reported.

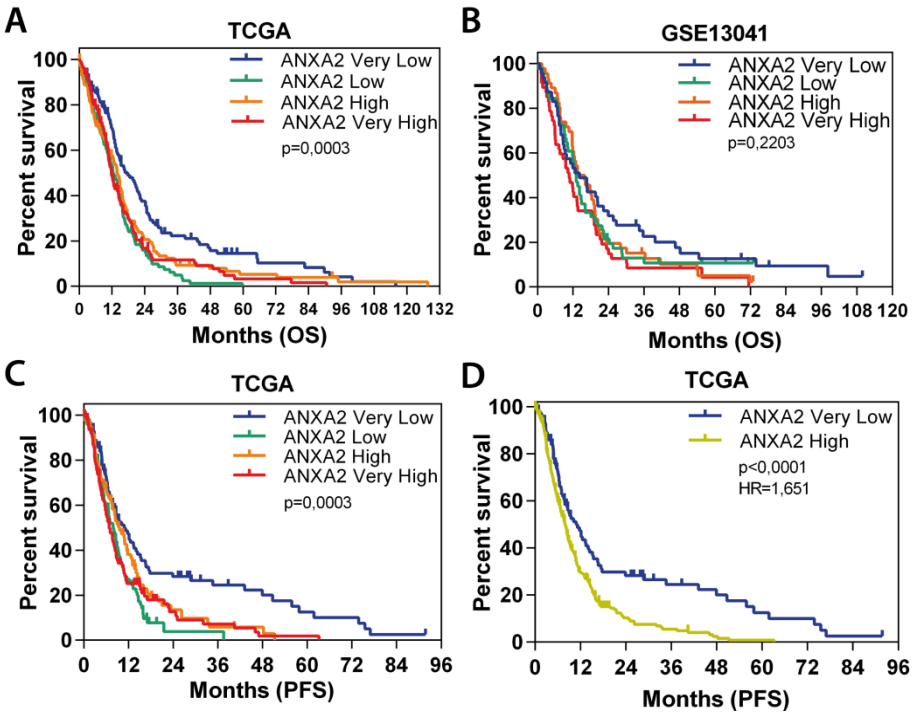



**Figure 6.** ANXA2 mRNA expression impacts GBM patient survival. (A and B) Kaplan Meier curves showing OS of GBM patients retrieved from TCGA (A; N=519 patients) [92, 93] or GSE13041 (B; N=191 patients) [94] datasets. GBM patients have been divided in four quartiles on the basis of ANXA2 mRNA expression levels as previously described. (C and D) Kaplan Meier curves showing PFS of GBM patients from TCGA divided in four quartiles (C) or in two subgroups (D; < or ≥25° percentile) on the basis of ANXA2 mRNA expression levels.

Then, we assessed the prognostic potential of ANXA2 IHC score in our cohort of patients (Supplementary Table 2) by Cox-regression (multivariate) analysis which demonstrated that ANXA2 IHC score is an independent prognostic factor for PFS (p=0.041; Table 2). Intriguingly, when considering only GBMs, ANXA2 score retains an even stronger prognostic value for PFS (p=0.029; Table 2).

**Table 2. Multivariate analysis**

| | ***Progression Free Survival*** | | ***Overall Survival*** | |
|---|---|---|---|---|
| | *Univariate (p value)* | *Multivariate (p value)* | *Univariate (p value)* | *Multivariate (p value)* |
| ***Variables*** | **Glioma (grade II-IV and secondary)** | | | |
| *Sex* | 0.268 | 0.606 | 0.016 * | 0.090 |
| *Age (≤60; >60 years)* | 0.881 | 0.720 | 0.194 | 0.355 |
| *Performance Score (≤1; >1)* | 0.004 * | 0.020 * | <0.001 * | 0.005 * |
| *MGMT promoter (methylated or not)* | 0.391 | 0.891 | 0.148 | 0.694 |
| *IDH mutation* | 0.026 * | 0.876 | 0.001 * | 0.968 |
| *ANXA2 IHC score (≤4; >4)* | 0.001 * | 0.041 * | 0.016 * | 0.404 |
| | **Glioblastoma (only grade IV)** | | | |
| *Sex* | 0.836 | 0.555 | 0.107 | 0.106 |
| *Age (≤60; >60 years)* | 0.878 | 0.498 | 0.867 | 0.564 |
| *Performance Score (≤1; >1)* | 0.007 * | 0.054 | <0.001 * | 0.019 * |
| *MGMT promoter (methylated or not)* | 0.488 | 0.892 | 0.246 | 0.934 |
| *IDH mutation* | 0.230 | 0.679 | 0.049 * | 0.975 |
| *ANXA2 IHC score (≤4; >4)* | 0.008 * | 0.029 * | 0.035 * | 0.607 |

* highlight significant p values<0.05

**6.2 ANXA2 inhibition dramatically affects gene expression profile of GBM cells.**

Starting from previous results, we analyzed TCGA and GSE13041 datasets in order to compare the gene expression profile of ANXA2 Very Low and ANXA2 High GBMs. We identified 421 up-regulated and 298 down-regulated genes in common between the two cohorts of patients and significantly associated to an "ANXA2-high expression phenotype" differentially expressed genes between ANXA2 High versus ANXA2 Low tumors with 25° percentile of ANXA2 expression as cut-off (Figure 7A and Supplementary Table 3). Interestingly, Gene Set Enrichment Analysis (GSEA) of differentially expressed genes revealed a positive enrichment for cell migration and epithelial to mesenchymal transition (EMT) signatures in ANXA2 High GBMs (Figure 7B). Moreover, it showed ANXA2 High GBMs as positively and negatively enriched for genes related to the "Mesenchymal" and "Proneural" molecular subtypes respectively (Figure 7B).

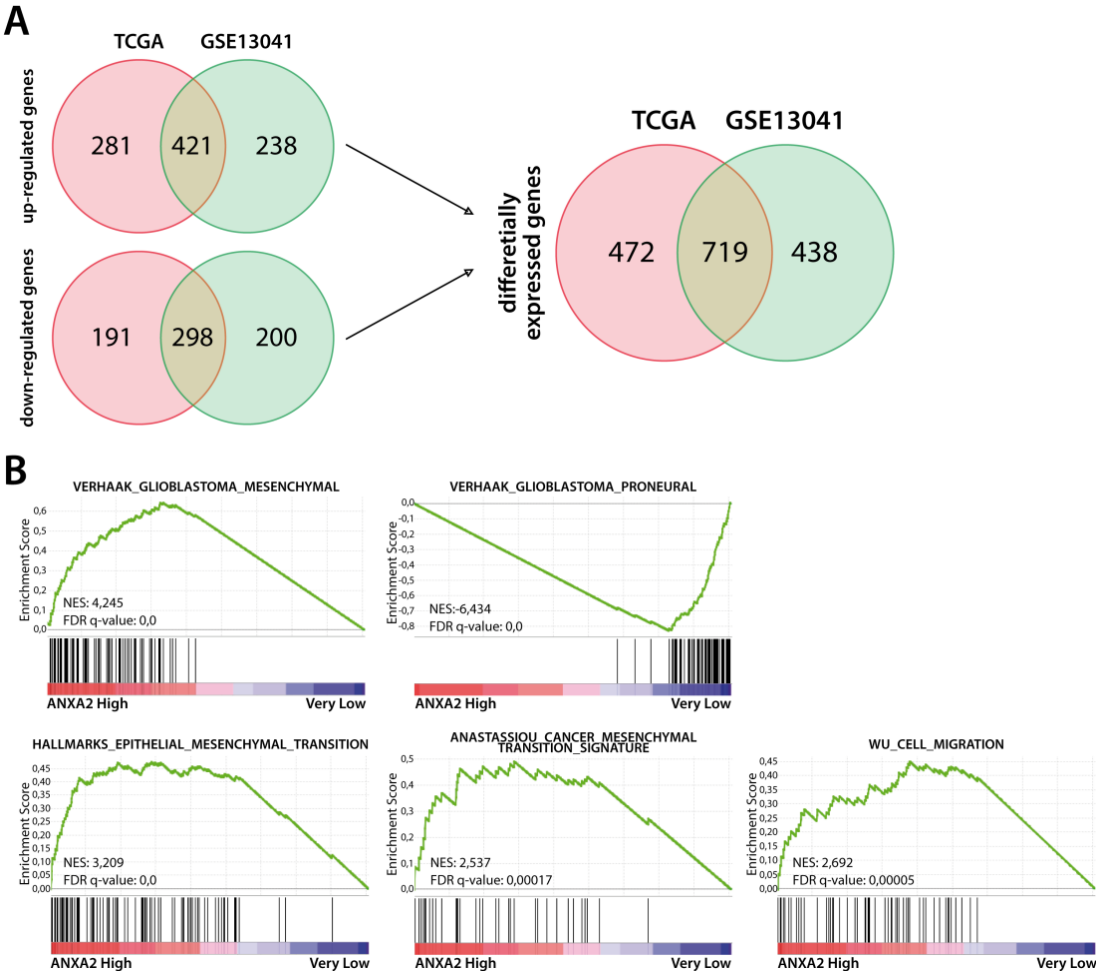



**Figure 7.** GSEA analysis of differentially expressed genes in ANXA2 High vs. ANXA2 Very Low GBM patients. (A) Venn diagrams reporting the number of differentially expressed genes between GBM tumours expressing high levels (ANXA2 High; ≥25° percentile) or very low (ANXA2 Very Low; <25° percentile) levels of ANXA2 mRNA in patients retrieved from TCGA (orange) or GSE13041 (green) datasets. (B) GSEA of commonly up-regulated genes in ANXA High patients from TCGA and GSE13041 datasets showing positive enrichment for genes of the Mesenchymal molecular subtype [95], EMT and cell migration, and negative enrichment for genes of the Proneural molecular subtype [95]. Plots were generated by c2 curated gene sets in the GSEA MSigDatabase. The green curves show the enrichment score and reflects the degree to which each gene (black vertical lines) is represented at the top or bottom of the ranked gene list. The heat map indicates the relative abundance (red to blue) of the genes specifically enriched in the ANXA2 High as compared with the ANXA2 Very Low GBM patients.

In order to better characterize the link between ANXA2 levels and GBM transcriptional profile, we retrieved gene expression data from GBM cells treated with an ANXA2 neutralizing antibody, previously reported to efficiently inhibit ANXA2 activity [96, 97]. To this end, we derived a series of primary GBM cultures from patient biopsies (Supplementary Table 4) and selected ANXA2 highly expressing GBM cells by WB (ANXA2$^{hi}$; Figure 8).

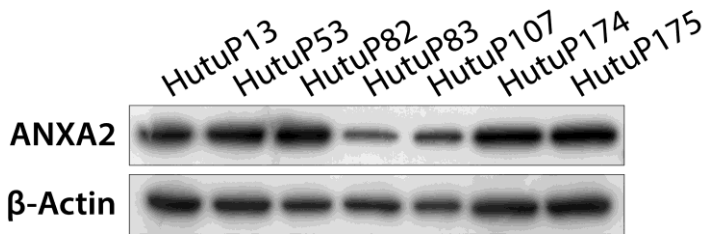



**Figure 8.** ANXA2 protein expression in primary GBM cell cultures. Western Blot analysis of ANXA2 protein expression in seven primary GBM cells used in this study. β-Actin expression has been used as loading control. 10μg of protein lysate has been loaded in each lane.

ANXA2$^{hi}$ cells were then treated with the ANXA2-neutralizing antibody and their transcriptional profile analyzed by Affymetrix chips. Supervised analysis retrieved 855 differentially expressed probes between anti-ANXA2 and Isotype control-treated GBM cells (634 down- and 221 up-regulated; Figure 9A and Supplementary Table 5). Interestingly, ANXA2-inhibited cells showed a negative enrichment for EMT and metastasis genes (Figure 9B), confirming previous results from TCGA and GSE13041 datasets (Figure 7). Moreover, anti-ANXA2-treated cells were negatively enriched for genes correlated to a "stem cell/undifferentiated phenotype", suggesting that ANXA2 modulation would potentially impact also cellular differentiation (Figure 9B, lower panels). To account for further effects mediated by ANXA2, we generated an enrichment map based on gene ontology (GO) analysis of differentially expressed genes, which clearly showed that ANXA2 blockade is sufficient to significantly down-regulate genes clustering in cell cycle, DNA replication, chromosome segregation and microtubule organization gene families, thus pointing ANXA2 also as a potential modulator of GBM cell proliferation (Figure 9C). Analysis of up-regulated genes revealed no association to specific enrichment modules or gene sets; however, GO analysis showed a general up-regulation of genes actively involved in the control of the transcriptional machinery (data not shown). Finally, to account for a potential molecular subtype shift after ANXA2 inhibition, HuTuP174 primary GBM cells (isotype- or ANXA2

antibody-treated) were assigned to their specific molecular subtype according to the Verhaak classifier [95]. As a result, HuTuP174 were classified as “classical”, without shifting their assigned subtype after ANXA2 inhibition (data not shown). To validate these data we evaluated the expression of selected genes in GBM cells silenced for ANXA2 (Figure 9D) or transiently over-expressing ANXA2 mRNA (Figure 9E). As a result, ANXA2 silencing was able to dramatically down-regulate a series of genes down-modulated by ANXA2 antibody treatment (Supplementary Table 5) and particularly involved in the regulation of cell cycle, cell migration and ECM remodeling (Figure 9F). Conversely, the expression of these genes was significantly augmented by ANXA2 over-expression in ANXA2$^{low}$ cells (Figure 9G).

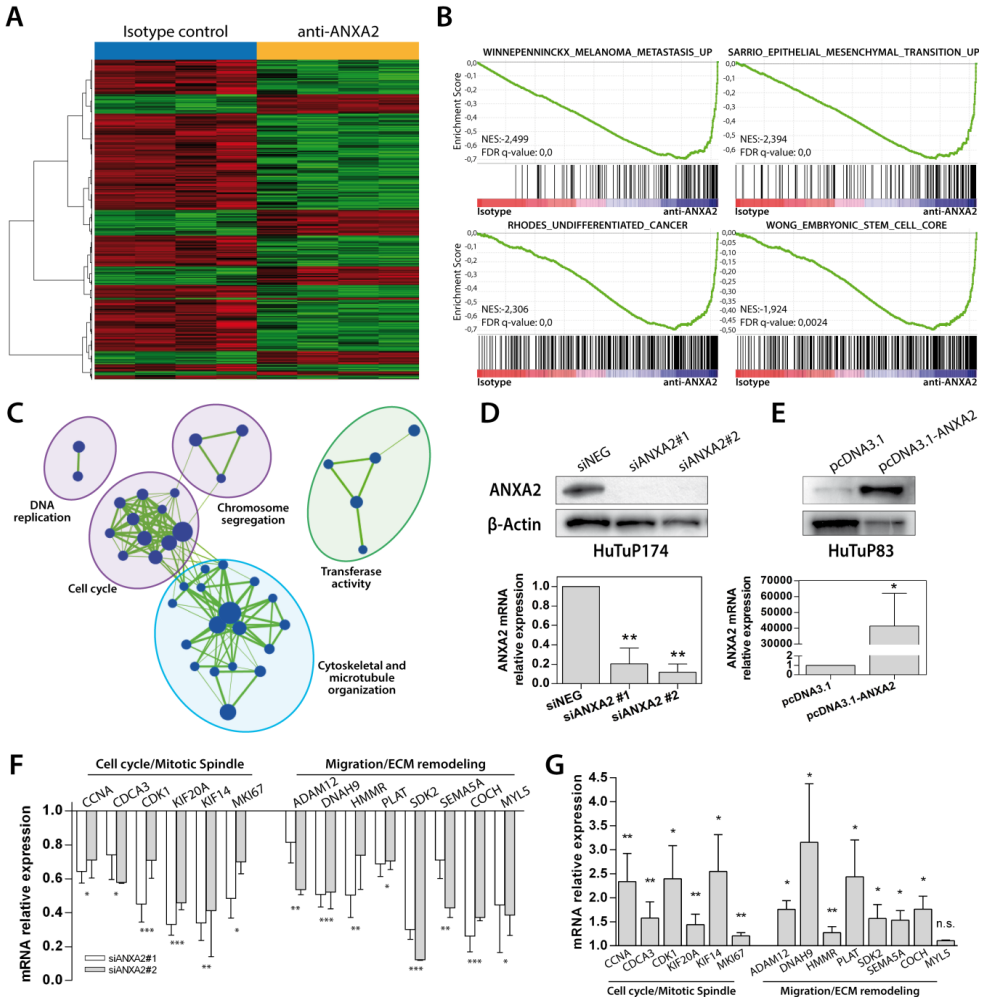



**Figure 9.** ANXA2 inhibition down-regulates the expression of genes involved in metastasis, EMT, cytoskeletal remodeling and cell cycle. (A) Heat map generated by supervised analysis of HuTuP174 primary GBM cells treated with a monoclonal anti-ANXA2 antibody for 48h (4 isotype vs. 4 ANXA2 antibody-treated cells) using the 855 differentially expressed probe sets (lFDR<0.05). (B) Representative GSEA enrichment plots demonstrating that probes down-regulated after ANXA2 inhibition are enriched for genes involved in the metastatic and EMT processes (upper panels), and a stem-like/undifferentiated phenotype (lower panels). Plot were generated by c2 curated gene sets in the GSEA MSigDatabase. The green curves show the enrichment score and reflects the degree to which each gene (black vertical lines) is represented at the top or bottom of the ranked gene list. The heat map indicates the relative abundance (red to blue) of the genes specifically enriched in the anti-ANXA2-treated as compared with the isotype control-treated cells. (C) Enrichment Map based on results of c5 Gene Ontology GSEA-MSigDB, generated using Enrichment Map Cytoscape plug-in. Node represents the functional gene sets and the size is proportional to the size of gene set. Edge thickness is proportional to the overlap between the gene sets. We show only gene sets that are enriched with a fdr<5% and only gene sets with a size between 15 and 500 genes were analyzed. Gene sets with common biological function are grouped in cluster and labeled with Gene Ontology terms. Green indicate negative enrichment in ANXA2 antibody-treated cells. (D and E) Evaluation of ANXA2 protein (upper panels) and mRNA (lower panels) expression in GBM cells after ANXA2 gene silencing (two different siRNAs against ANXA2 mRNA vs. siNEG in HuTuP174 GBM cells) or ANXA2 over-expression (HuTuP83) respectively by transient transfection procedures. (F and G) Validation of the transcriptional expression of a series of genes, selected from down-regulated genes after anti-ANXA2 treated cells, involved in cell cycle (CCNA, CDCA3, CDK1, KIF20A, KIF14 and MKI67) and cell migration (ADAM12, DNAH9, HMMR, PLAT, SDK2, SEMA5A, COCH, MYL5) cellular processes in ANXA2 silenced (HuTuP174) and ANXA2 over-expressing (HuTuP83) GBM cells respectively. *p<0.05, **p<0.01, ***p<0.001, n.s. not significant by one-way ANOVA or paired t-test.

### 6.3 GBM cell migration and invasion are sustained by ANXA2.

In order to functionally validate the role of ANXA2 as master sustainer of GBM cell dissemination, we modulated ANXA2 activity/expression in primary cells (Supplementary Table 4) and evaluated their migratory and invasive properties. Inhibition of ANXA2 by neutralizing antibody resulted in a dramatic impairment of GBM cell migration during scratch assays. In particular, the inhibitory effect on cell migration was detectable early after treatment (24h), being progressively stronger at later timepoints (Figure 10A, 10D). This effect was confirmed also by ANXA2 silencing (Figure 10B, 10E). In both conditions, we did not observe impairment of GBM cell viability (data not shown). Conversely, ANXA2 over-expression significantly enhanced the migratory properties of cells endowed with low motility (Figure 10C, 10F).

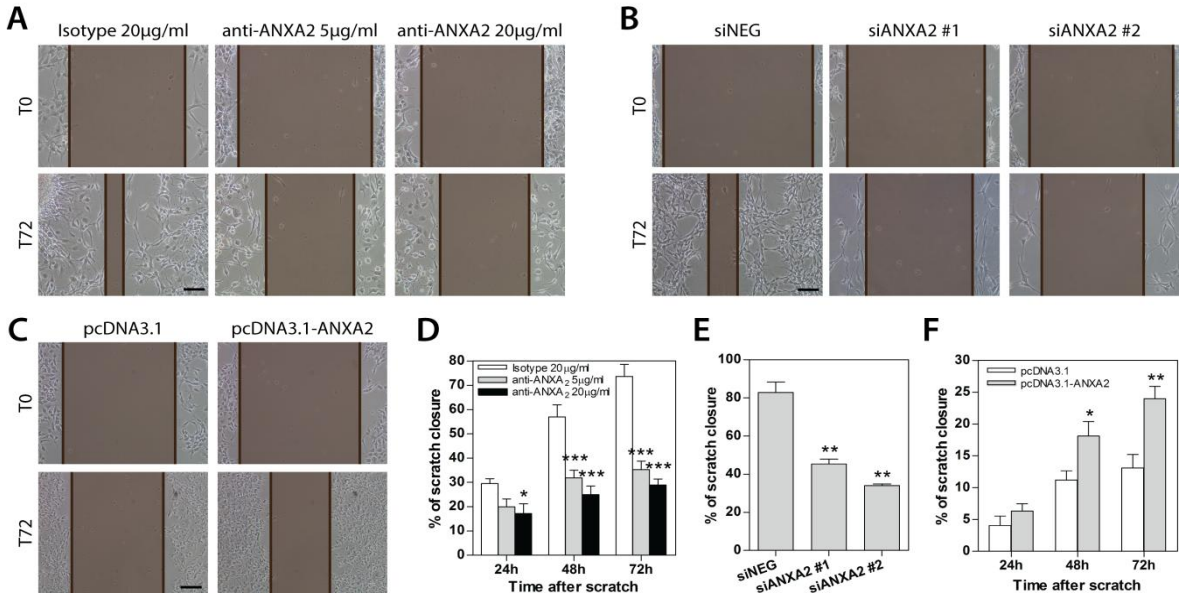



**Figure 10.** Modulation of ANXA2 activity or expression levels impacts primary GBM cell migration. (A, B and C) Representative images showing the ability of GBM cells to close the wound within 72h after scratching the cell monolayer during scratch assays. These have been performed on primary GBM cells treated with a monoclonal anti-ANXA2 antibody (A; HuTuP175), silenced for ANXA2 (B; HuTuP174) or ANXA2 over-expressing (C; HuTuP83) cells. The distance between the two edges of the scratch is marked in brown and has been quantified by using Adobe Photoshop CS6. Original magnification 10x; bar: 50µm. (D, E and F) Bar graphs showing relative quantification of the distance between scratch edges in anti-ANXA2 antibody-treated (D; N=6 for HuTuP107, HuTuP174 and HuTuP175), ANXA2-silenced (E; N=3 for HuTuP174) or ANXA2 over-expressing (F; N=3 for HuTuP83) primary GBM cells at the indicated timepoints. The migration ability of GBM cells after ANXA2 silencing is reported only at 72h. *p<0.05; **p<0.01; ***p<0.001 by one-way ANOVA or paired t-test.

We then tested the invasion ability of ANXA2$^{hi}$ cells in a basement membrane-like matrigel assay with cells plated on the top of a thin layer of semisolid medium. In this condition, HuTuP174 GBM cells grew as clonal spheres and inhibition of ANXA2 by antibody treatment counteracted their invasive properties in a dose dependent manner (Figure 11A, 11B). Importantly, the highest dose of antibody completely halted cell invasion until one week after treatment, with GBM cells being restricted in the spheres without any spreading (Figure 11A, 11B). We then confirmed these data in two additional primary GBM cultures endowed with reticulate growth (HuTuP13 and 176) which showed a dramatic reduction of the number and length of branches and the amount of invading cells (Figure 11C, 11D). As a further validation, ANXA2 inhibition/silencing were both able to halve the number of ANXA2$^{hi}$ GBM cells able to pass through a basal membrane extract (BME)-coated transwell (CultreCoat® Cell Invasion assay) within 48h (Figure 11E, 11F). Moreover, ANXA2 over-expression significantly increased GBM cell invasion (Figure 11G).

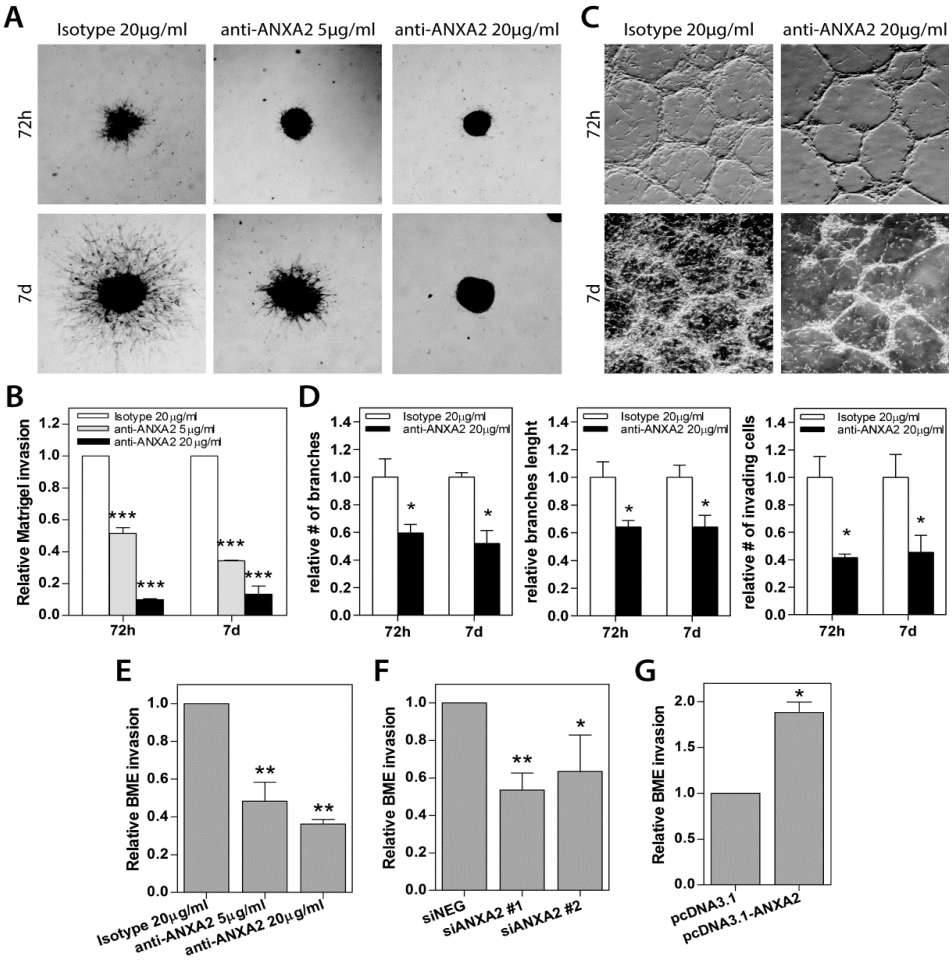



**Figure 11.** Modulation of ANXA2 activity or expression levels impacts primary GBM cell invasion. (A) Representative images of primary GBM cells growing as spheres (HuTuP174) on Matrigel-coated dishes and treated with anti-ANXA2 antibody until the indicated timepoints. Original magnification 4x. (B) Relative quantification of the length of the protrusions invading the matrix and spreading away from the spheres showed in (A). Bar graphs showing relative invasion of primary GBM cells after ANXA2 inhibition (C; N=3 for HuTuP13 and HuTuP175), gene silencing (D; N=3 for HuTuP13 and HuTuP174) or over-expression (E; N=4 for HuTuP83) as quantified by Cultrecoats® BME-based assays as described in the Methods section. *p<0,05; **p<0,01; ***p<0,001 by one-way ANOVA or paired t-test.

To definitely assess the inhibitory effects exerted by ANXA2 blockade on the dissemination of GBM cells, we analyzed the impact of ANXA2 antibody treatment *in vivo* on GBM primary cells (EGFP expressing HuTuP13 cells) xeno-transplanted in the chick embryo chorioallantoic membrane (CAM). After 72h from initial treatment (2µg antibody/egg/day), isotype treated cells actively dispersed in the CAM, moving away from the initial site of cell deposition (Figure 12A, upper panels). On the contrary, ANXA2 inhibited cells formed restricted cellular masses, confined in the deposition site, without any spreading (Figure 12A,

lower panels). As a result, control cells disseminated covering a 60-fold larger area than ANXA2 antibody treated cells (Figure 12B), demonstrating that ANXA2 inhibition is able to completely block GBM cell invasiveness also in an *in vivo* setting.

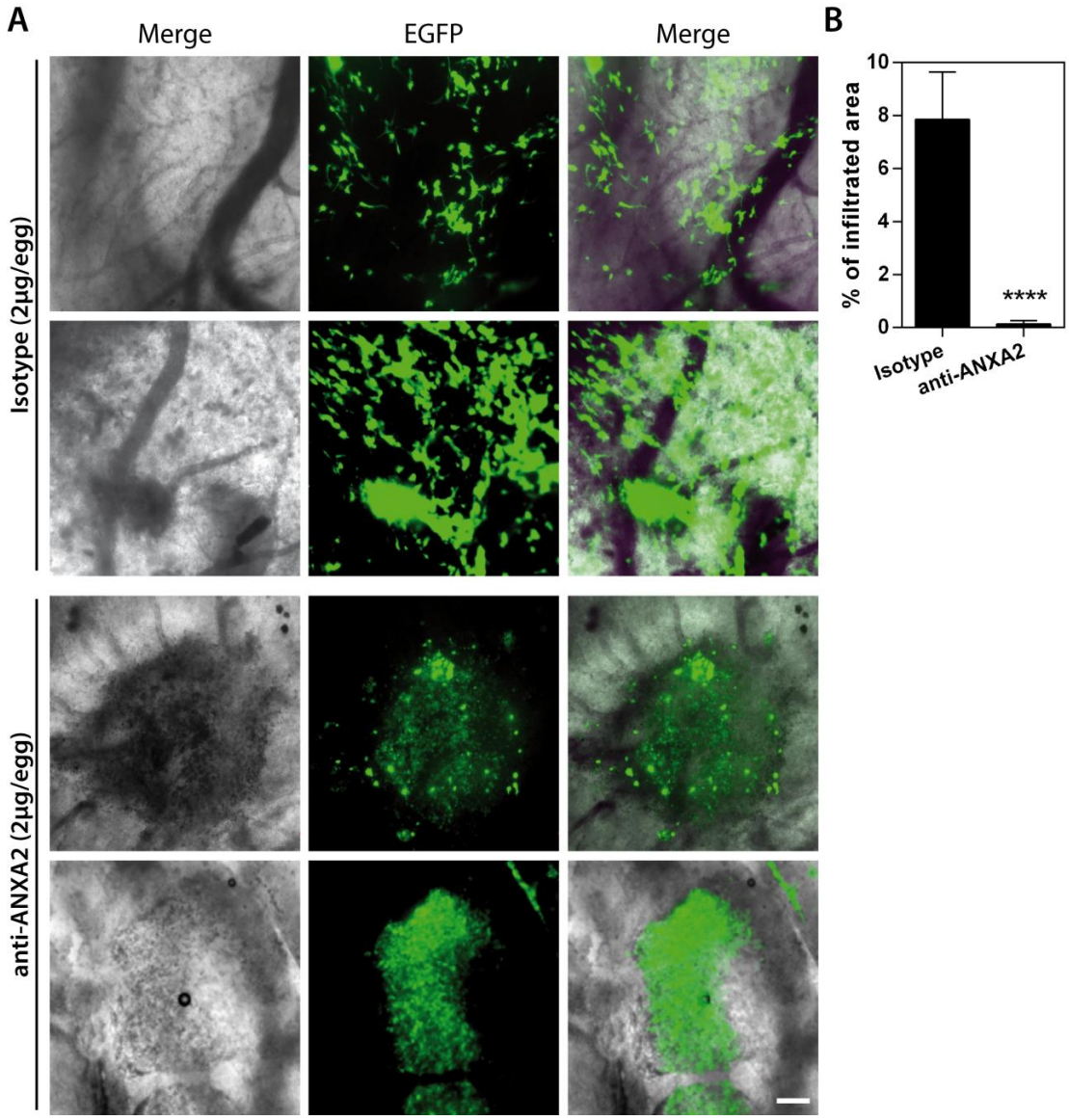



**Figure 12.** ANXA2 inhibition reduces GBM cell dissemination *in vivo* in the CAM invasion assay. (A and B) Representative images showing the migration/invasion of HuTuP13-EGFP primary GBM cells (green) inside the observation area after 3 days of treatment with 2µg of isotype control (upper panels) or ANXA2 antibody (lower panels) (2µg/egg/day) (A) and quantification of the area covered by cells relative to the entire observation space (24,7mm$^2$; B). Original magnification 20x; bar: 200µm. ****p<0.0001 by t-test.

Cellular migration/invasion is usually mediated by re-organization of cytoskeletal actin fibers and their link to ECM through focal adhesions (FAs) [98, 99]. In this context, it has been previously reported that ANXA2 binds to filamentous (F)-actin [97]. For this reason, we analyzed the possible involvement of ANXA2 in cytoskeletal remodeling, as suggested by GO analysis (Figure 9C). Phalloidin staining revealed that ANXA2$^{hi}$ GBM cells are characterized by cytoskeletal fibers assembled in FA-like structures, indicative of a migrating phenotype (Figure 13A, 13B, 13D). Conversely, ANXA2 inhibited/silenced cells displayed a dramatic redistribution of F-actin fibers and an almost complete loss of FAs (Figure 13A, 13B, 13D), without affecting distribution of microtubules (data not shown). ANXA2 over-expression in ANXA2$^{low}$ GBM cells increased the number of FAs (Figure 13C, 13D), thus reinforcing the hypothesis of ANXA2 as a major player in the control of cytoskeletal dynamics.

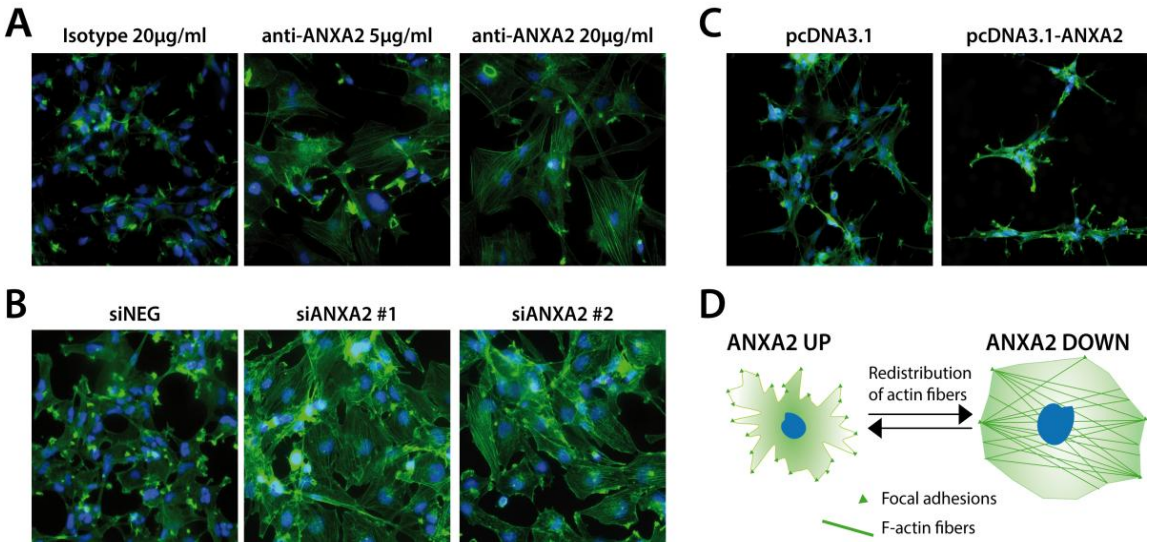



**Figure 13.** Modulation of ANXA2 levels is accompanied by dramatic cytoskeletal remodeling. (A-C) Representative immunofluorescence images of GBM cells after ANXA2 inhibition, gene silencing or over-expression respectively and stained with a FITC-labeled phalloidin probe in order to reveal the distribution of F-actin (green). Cell nuclei have been counterstained with DAPI (blue). Original magnification 20x. (D) Cartoon resembling the major morphological and cytoskeletal changes associated to the modulation of ANXA2 in GBM cells.

**6.4 ANXA2 impairment induces differentiation and inhibits proliferation of GBM cells.**

GSEA and GO analysis suggested a potential role of ANXA2 in the control of cell phenotype and proliferation (Figure 9B, 9C). According to this hypothesis, ANXA2 blockade significantly reduced the number of cells expressing the stem cell marker Sox2, nevertheless without affecting the expression of Nestin and CD133 (Figure 14A-14C). Conversely, ANXA2 inhibition was responsible of a significant increase of the number of cells expressing the astrocytic differentiation markers GFAP and S100 (Figure 14D, 14E and Figure 15A). Nevertheless, we did not observe induction of cell differentiation toward other neural lineages such as neurons or oligodendrocytes, since examined cells showed very low or absent expression of the neuronal marker microtubule associated protein 2 (MAP2; Figure 15B) and oligodendrocyte specific protein (OSP; Figure 15C). These effects increased in ANXA2-silenced GBM cells, which displayed a significant reduction of $Nestin^{+}$ and $CD133^{+}$ cells instead of Sox2 (Figure 14F-14J and Figure 15D, 15E).

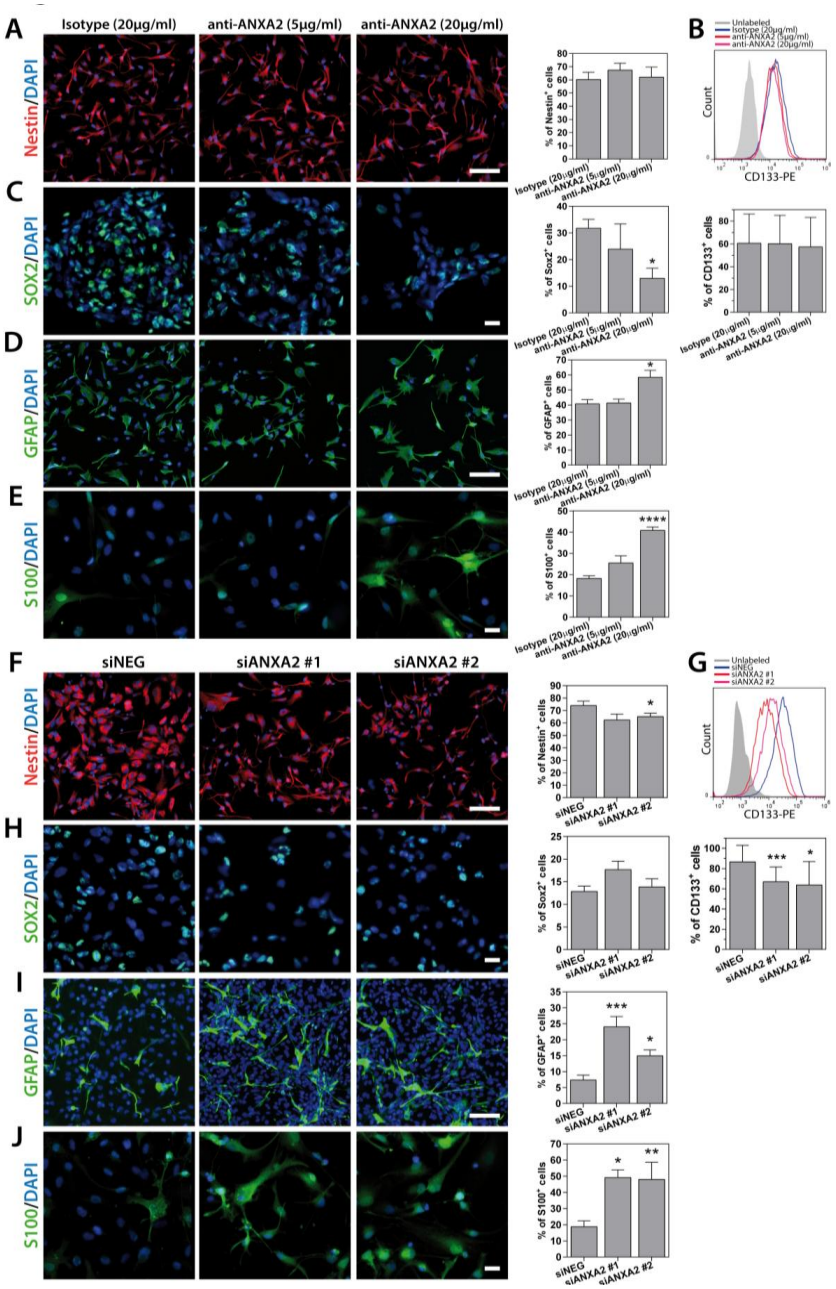



**Figure 14.** Analysis of primary GBM cell phenotype after ANXA2 inhibition or gene silencing. (A-E) Representative immunofluorescence images showing primary GBM cells (HuTuP175) treated with anti-ANXA2 monoclonal antibody or isotype control antibody and stained with anti-Nestin (A; red), anti-Sox2 (C; green), anti-GFAP (D; green) or anti-S100 (E; green) antibodies, and relative quantification of positive cells (right panels). (B) Representative plot showing overlay of $CD133^+$ cell populations in control and ANXA2 antibody treated cells (HuTuP13; upper panel) and relative quantification (N=5 for HuTuP13, HuTuP82 and HuTuP175; lower panel). (F-J) Representative immunofluorescence images showing primary GBM cells (HuTuP13) silenced for ANXA2 and stained with anti-Nestin (F; red) or anti-Sox2 (H; green), anti-GFAP (I; green) or anti-S100 (J; green) antibodies and relative quantification of positive cells (right panels). (G) Representative plot showing overlay of $CD133^+$ cell populations in siNEG and siANXA2 transfected cells (HuTuP13; upper panel) and relative quantification (N=9 for HuTuP13 and HuTuP82; lower panel). For all stainings GBM cell nuclei have been counterstained with DAPI (blue). Percentages of positive cells have been calculated as number of positive cells/number of $DAPI^+$ nuclei per microscopic field. At least 8 fields per condition have been analyzed. Original magnification 10-20x. Bar: 50µm. *p<0.05;***p<0.001 by one-way ANOVA analysis. Significance is reported relative to control (isotype treated or siNEG transfected) GBM cells.

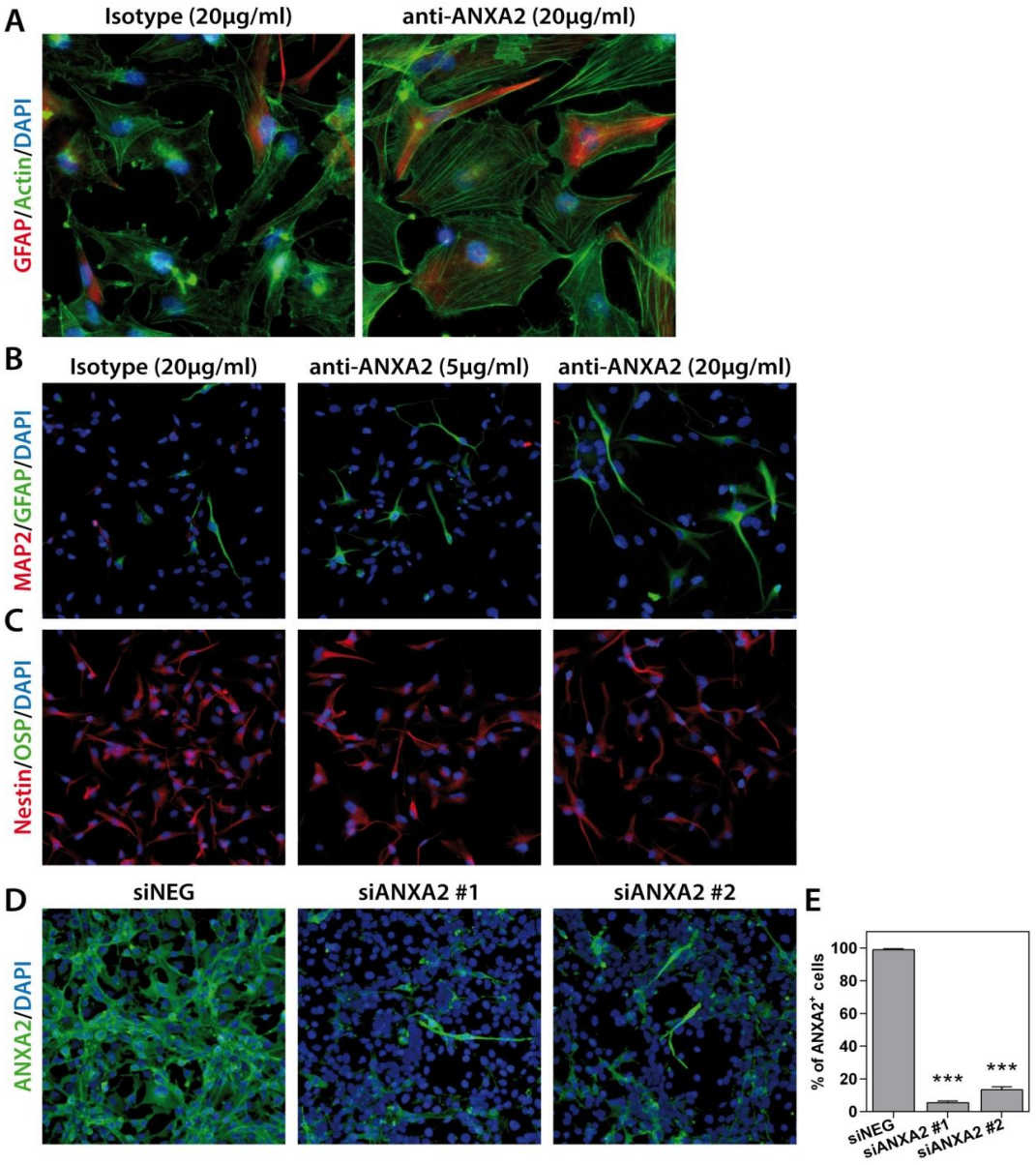



**Figure 15.** Immunofluorescence analysis of ANXA2 inhibited/silenced GBM cells. (A-C) Representative immunofluorescence images of GBM cells treated either with isotype or ANXA2 antibody and double stained for GFAP (red)/phalloidin (green) (A), MAP2 (red)/GFAP (green) (B) and Nestin (red)/OSP (green) (C). Images show a peculiar distribution of GFAP and Actin fibers within the cell cytoplasm. (D and E) Representative immunofluorescence images showing primary GBM cells (HuTuP13) silenced for ANXA2 and stained with anti-ANXA2 antibody (green; D) and bar ghaph reporting relative quantification of $ANXA2^{+}$ cells (E). Cell nuclei have been counterstained with DAPI (blue). Original magnification 10-20x. ***$p<0.001$ by one-way ANOVA analysis.

In line with these results, ANXA2 blockade/silencing strongly inhibited GBM cell proliferation. Indeed, the number of cells and the expression of the proliferation marker Ki67 were significantly reduced after ANXA2 knockdown (Figure 16A-16D and Figure 17). To better characterize these effects, we performed a PI-based cell cycle analysis on both antibody treated and silenced cells. We measured a significant reduction of cells in the G1 phase and a parallel accumulation of cells in the S phase of the cell cycle (Figure 16E, 16F), suggesting that impairment of ANXA2 is sufficient to partially arrest GBM cells at the S-G2/M cell cycle checkpoint. As a confirmation, experiments of BrdU uptake clearly showed a significant decrease of its incorporation within 96h in the same cells (Figure 16G, 16H). On the other hand, ANXA2 over-expression did not affect neither phenotype, nor cell cycle dynamics of GBM cells (data not shown), suggesting that ANXA2 would be necessary for the maintenance of a proliferative and in some way "less differentiated" cell phenotype, but its accumulation is not sufficient to perturb these systems by itself.

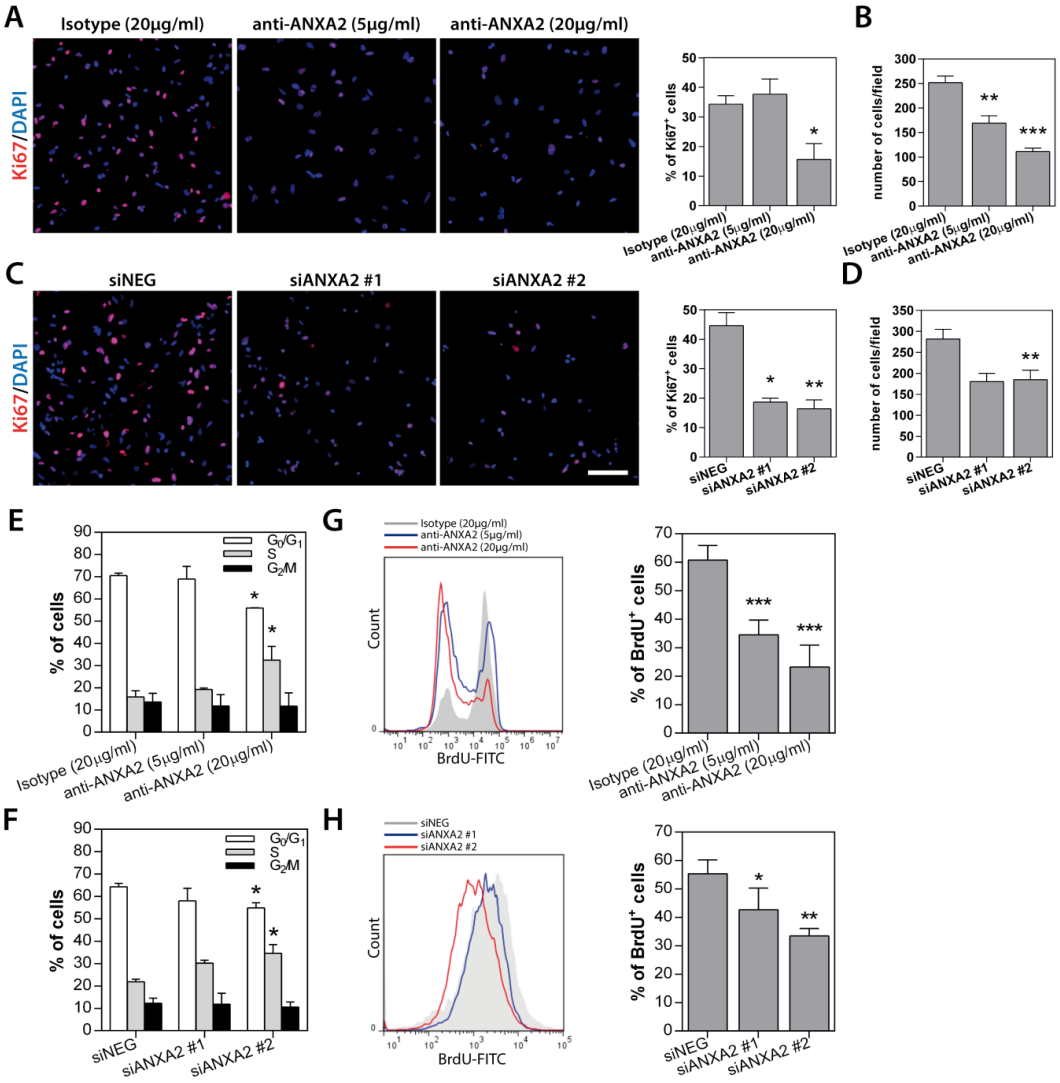



**Figure 16.** ANXA2 inhibition or gene silencing strongly reduces GBM cell proliferation by inducing a partial block at the S-G2/M checkpoint. (A-D) Representative immunofluorescence images of primary GBM cells treated with anti-ANXA2 antibody (HuTuP175) or silenced for ANXA2 (HuTuP13) and stained with anti-Ki67 (red) monoclonal antibody. Right panels show relative quantification of $Ki67^+$ cells (A and C) or quantification of $DAPI^+$ nuclei per microscopic field depending on the experimental condition (B and D). Percentages of $Ki67^+$ cells have been calculated as number of positive cells/number of $DAPI^+$ nuclei per microscopic field. At least 8 fields per condition have been analyzed. Original magnification 10x. Bar: 50µm (E and F) Bar graph summarizing cell cycle analyses of ANXA2-neutralized or –silenced GBM cells (HuTuP13, HuTuP82 and HuTuP174). (G and H) Representative graphs showing BrdU incorporation analysis performed on HuTuP174 GBM cells after anti-ANXA2 antibody treatment or HuTuP53 GBM cells after ANXA2 silencing respectively. Right panels show bar graphs reporting relative quantifications. BrdU analyses have been performed on HuTuP13, HuTuP53, HuTuP82 and HuTuP174 primary GBM cells. *p<0.05; **p<0.01; ***p<0.001 by one-way ANOVA. Significance is reported relative to control (isotype treated or siNEG transfected) GBM cells.

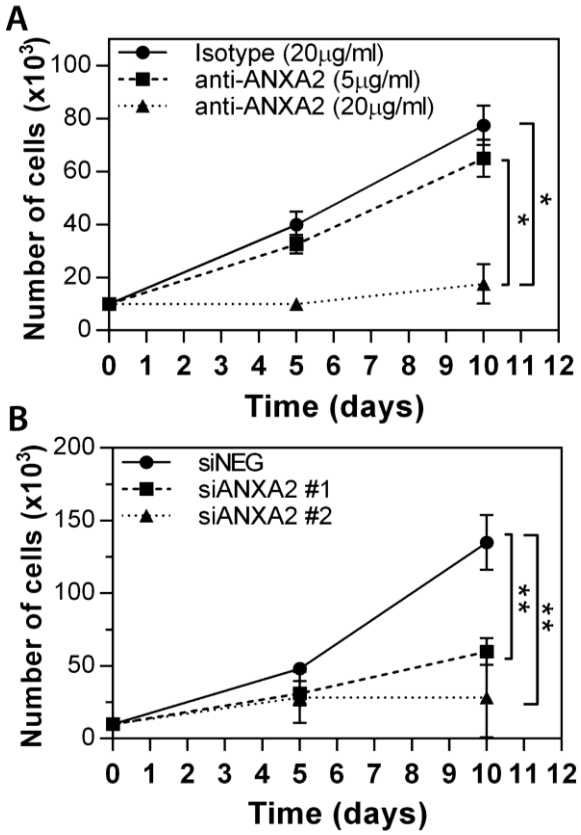



**Figure 17.** Long term anti-proliferative effects of ANXA2 inhibition/silencing in GBM cells. Growth curves generated by cell count (trypan blue exclusion) at different time-points after ANXA2 inhibition (HuTuP175; A) or gene silencing (HuTuP13; B). *p<0.05, **p<0.001 by one-way ANOVA analysis.

### 6.5 An ANXA2$^{down}$ signature predicts GBM patient survival.

To finally test the clinical relevance of the multiple effects exerted by ANXA2 modulation, we investigated the correlation of an ANXA2-dependent gene signature (ANXA2$^{down}$), with clinical outcome in TCGA and GSE13041 datasets. We used the ANXA2$^{down}$ gene signature, based on the most down-regulated probes after ANXA2 antibody treatment, to divide patients into two equal groups on the basis of the median expression of the signature in the bulk GBM tumors. We observed a significant positive correlation between ANXA2$^{down}$ signature and survival (PFS and OS) in GBM patients from both datasets (Figure 18A-18C and Supplementary Table 6). In addition, we analyzed the potential correlation of the ANXA2$^{down}$ signature with clinical outcome also in other publicly available solid tumor datasets including colon cancer (GSE17536; [100]), breast cancer (E-MTAB-365; [101]) and lung adenocarcinoma (GSE31210; [102]). Of note, the signature significantly correlated with disease-specific (DSS) and relapse-free survival (RFS) in colon and breast cancer respectively (Figure 18D, 18E), showing a partial association with RFS also in lung adenocarcinoma (Figure 18F). These findings indicate that genes directly or indirectly regulated by ANXA2 retain a consistent prognostic relevance and that ANXA2 is endowed with the ability to participate in multiple cancer processes, fundamental for tumor survival, thus being a potential therapeutic target in GBM.

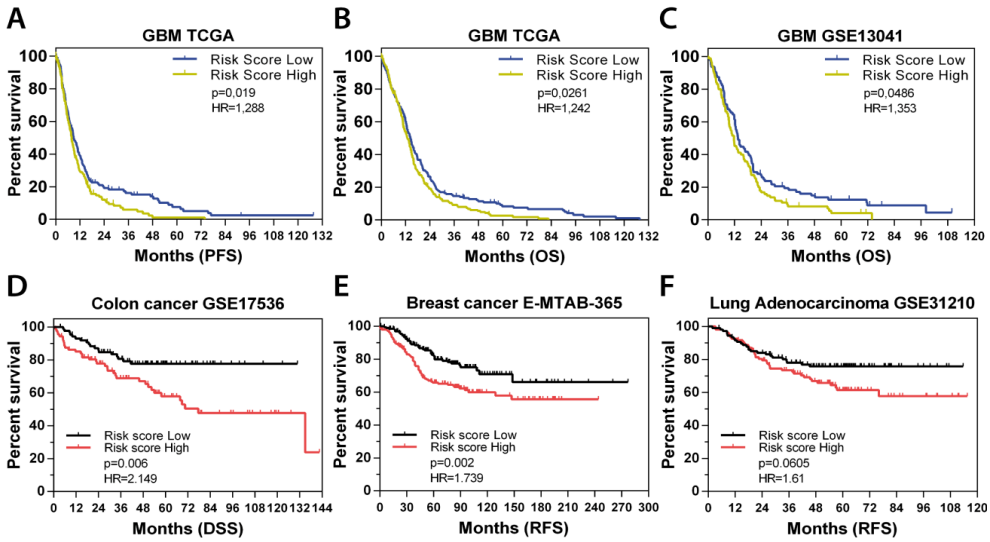



**Figure 18.** The ANXA2$^{down}$ signature predicts GBM patient survival. (A-C) Kaplan Meier curves showing the prognostic potential of the ANXA2$^{down}$ gene signature applied on GBM patients from TCGA (PFS and OS in A and B respectively) and the GSE13041 (OS in C) datasets. (D-F) Kaplan Meier curves showing the application of the ANXA2$^{down}$ gene signature on different solid tumors datasets including GSE17536 (disease specific survival-DSS in colon cancer patients in D), E-MTAB-365 (relapse free survival-RFS of breast cancer patients in E) and GSE31210 (RFS of lung adenocarcinoma patients in F). Hazard Ratios have been calculated as Risk Score Low/High.

Interestingly, we also examined the effects produced by intensive treatment protocols (defined as more than one cycle of single or concurrent chemo- and radiotherapy) in GBM patient subgroups generated on the basis of ANXA2 expression in the TCGA dataset. Our analyses show that aggressive treatment prolonged survival only in ANXA2 High tumors (HR=0,475; Figure 19A) rather than ANXA2 Very Low GBMs (HR=0,74; Figure 19B), resembling previous data on the Mesenchymal or Proneural subclasses respectively [95].

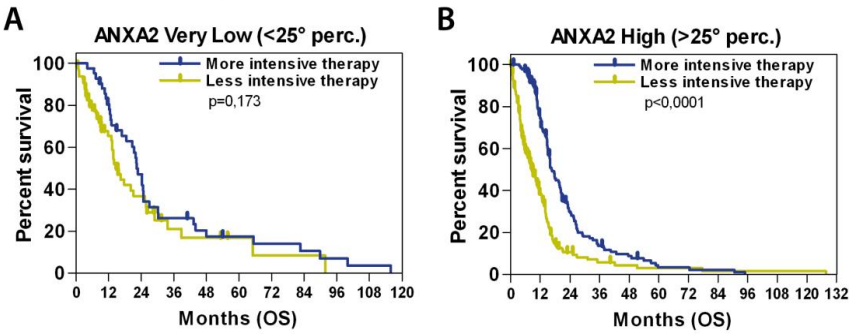


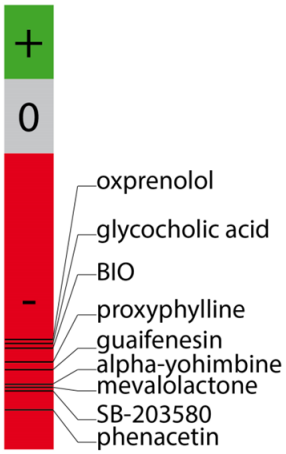

**Figure 19. Impact of aggressive treatment on GBM patients depending on ANXA2 expression.** Kaplan Meier curves reporting OS of GBM patients either treated with a single cycle of mono or concurrent therapy (Less Intensive), or by additional cycles of treatment (More Intensive) depending on their transcriptional expression of ANXA2 (< or ≥25° percentile in **A** and B respectively).

### 6.6 ANXA2-dependent gene signature mapping for drug repositioning.

In order to identify compounds and approved drugs able to revert the pro-oncogenic function of ANXA2 on GBM aggressiveness, we functionally mapped the ANXA2-dependent gene signature that we previously generated from TCGA and GSE13041 datasets by exploiting the Connectivity Map bioinformatic tool [37]. Top nine drugs, significantly predicted to be able to counteract the ANXA2-dependent transcriptional signature, were further selected for their activity on multiple cell types ($n \geq 3$) (Figure 20A, 20B) and then analyzed for their ability to inhibit cell proliferation, motility and invasion also in primary GBM cultures *in vitro*.

First, MTT assay was performed on a panel of three different primary GBM cultures to determine the optimal concentration to be used in subsequent experiments on GBM (HuTuP174, HuTuP175, HuTuP176; Supplementary Table 4). Indeed, MTT metabolic assay allowed us to determine the potential anti-proliferative effects of compounds at different concentration and, in order to evaluate the anti-migratory and invasive effects of selected compounds we fixed as optimal concentration the IC20 for each drug (Figure 20C).

A




B

| CMAP NAME | INDICATION | Z-SCORE | P-VALUE |
|---|---|---|---|
| PHENACETIN | Fever-reducing drug | -0,858 | 0,0007 |
| SB-203580 | A specific inhibitor of p38-MAPK pathway | -0,8 | 0,0007 |
| MEVALOLACTONE | An inhibitor of Staphylococcus epidermidis adherence and biofilm formation | -0,799 | 0,01649 |
| ALPHA-YOHIMBINE | It behaves as an antagonist at α1-adrenergic, α2-adrenergic | -0,794 | 0,01785 |
| GUAIFENESIN | It may be acting as an NMDA receptor antagonist | -0,745 | 0,00054 |
| PROXYPHYLLINE | Xanthine derivative that acts as a cardiac stimulant | -0,704 | 0,01576 |
| BIO | GSK3 inhibitor | -0,692 | 0,0007 |
| GLYCOCHOLIC ACID | Crystalline bile acid involved in the emulsification of fats | -0,65 | 0,03537 |
| OXPRENOLOL | A non-selective beta blocker with some intrinsic sympathomimetic activity | -0,65 | 0,03543 |

C

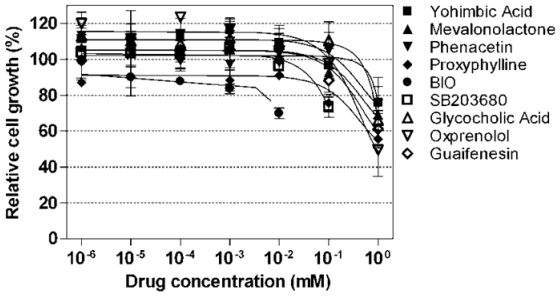



**Figure 20.** (A) Connectivity Map results. Only compounds with a negative score are represented in red. (B) The connections and perturbation stabilities of the nine significant drugs obtained for ANXA2-dependent transcriptional signature. (C) MTT assay on GBM cells. Starting from 10mM, scalar doses have been applied on three GBM patient cells, in order to determine the IG20 of the tested drugs, after 72h of treatment.

The 9 compounds selected were then tested in primary GBM culture to evaluate their ability to impair cells migratory and invasive properties. The treatment with Oxprenolol, BIO and SB203580 resulted in a dramatic inhibition of GBM cell migration during scratch assays and, in particular, the inhibitory effect on cell motility was detectable after 72h from treatment. Indeed, the treatment with these compounds prevented scratch closure of GBM cells, nevertheless without reducing their viability (Figure 21A, 21B) thus demonstrating the specific effects of these drugs on cell migration. The other six compounds tested did not show significant effects on GBM cell migration capacity (Figure 21C) so we excluded them from subsequent analysis.

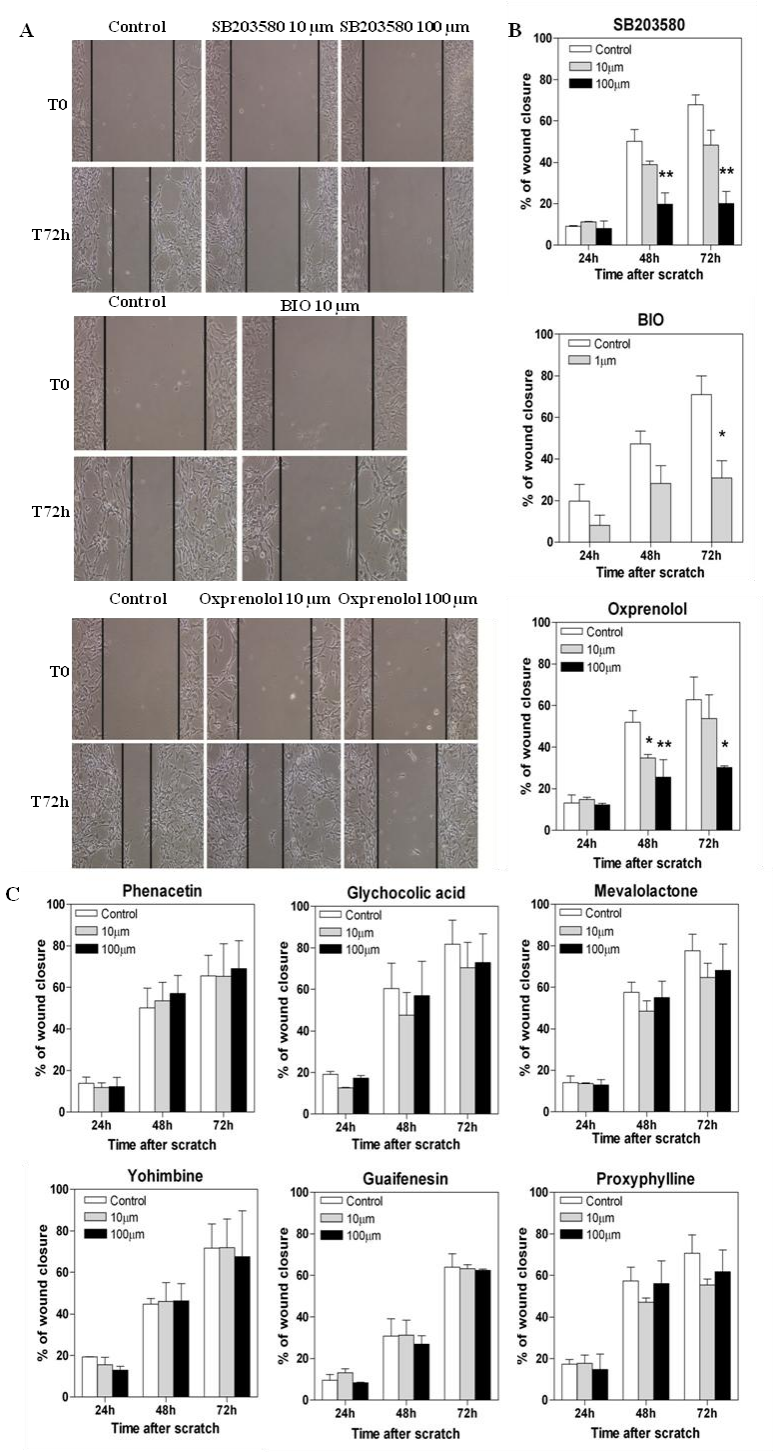



**Figure 21.** Treatment with SB203580, BIO and Oxprenolol impacts primary GBM cell migration compared to other compounds (A) Representative images showing the ability of primary GBM cells to close the wound within 72h after scratching the cell monolayer during scratch assays, after the treatment with SB203580, BIO and Oxprenolol. The distance between the two edges of the scratch is marked in brown and has been quantified by using Adobe Photoshop CS6. Original magnification 10x; bar: 50µm. (B, C) Bar graphs showing relative quantification of the distance between scratch edges in compounds-treated primary GBM cells at the indicated timepoints. *p<0.05; **p<0.01; ***p<0.001 by one-way ANOVA or paired t-test.

Therefore, we chose Oxprenolol, BIO and SB203580, which were resulted more efficient in previously scratch assays, to test the invasion ability of GBM cells in a basement membrane-like matrigel assay. In this condition, GBM cells grew as spheres and the treatment counteracted their invasive properties in a dose dependent manner (Figure 22). Importantly, the highest dose of compounds completely halted cell invasion until 72h after treatment, with GBM cells being restricted in the spheres without any spreading (Figure 22A, left panels).

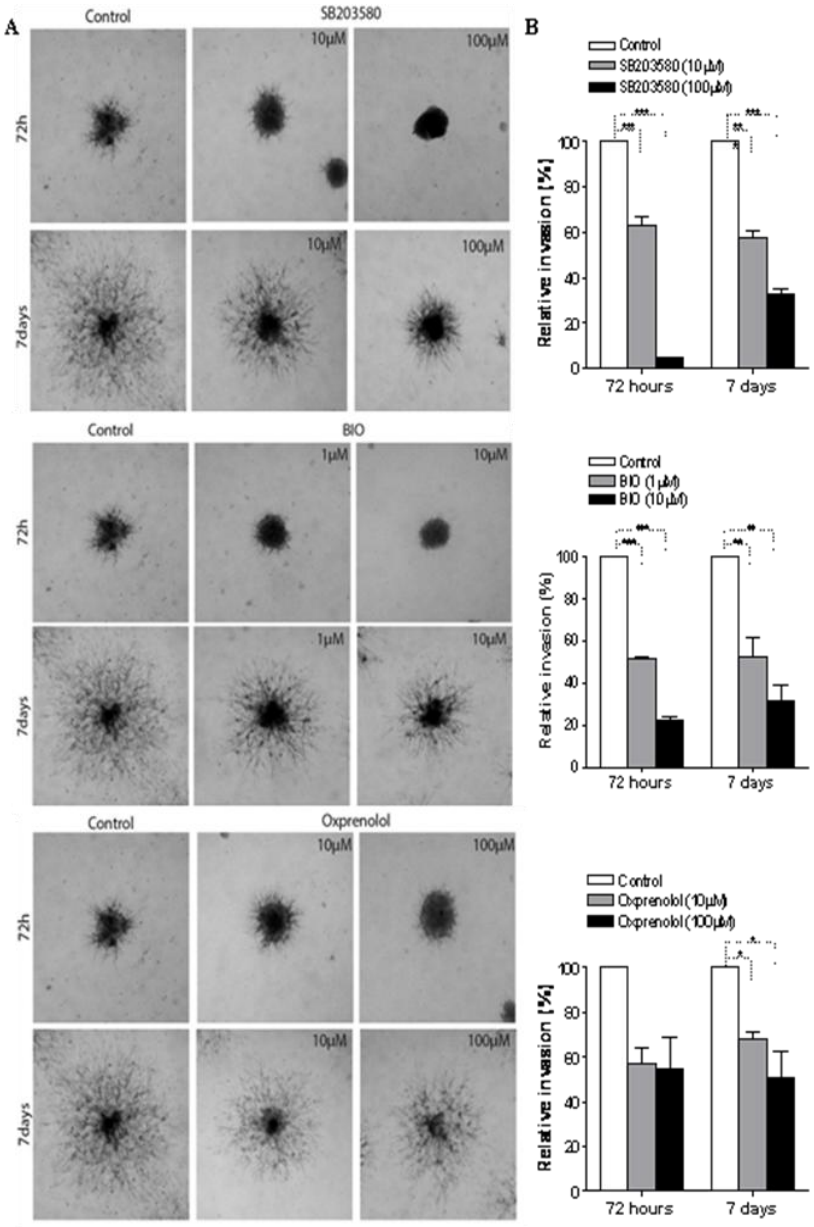



**Figure 22.** SB203580, BIO and Oxprenolol activity impacts primary GBM cell invasion. (A, left panels) Representative images of primary GBM cells growing as spheres on Matrigel-coated dishes and treated with compounds until the indicated timepoints. Original magnification 4x. (B, right panels) Relative quantification of the length of the protrusions invading the matrix and spreading away from the spheres showed in (A).

We then analyzed the possible effect of Oxprenolol, BIO and SB203580 in cytoskeletal remodeling as we did for ANXA2 inhibition and silencing. Indeed, phalloidin staining revealed that GBM cells are characterized by cytoskeletal fibers assembled in FA-like structures, indicative of a migrating phenotype (Figure 23, upper panels). Conversely, treated cells displayed a dramatic redistribution of F-actin fibers and an almost complete loss of FAs (Figure 23, lower panels) concordantly with the migration/invasion inhibition that we registered in the above described assays.

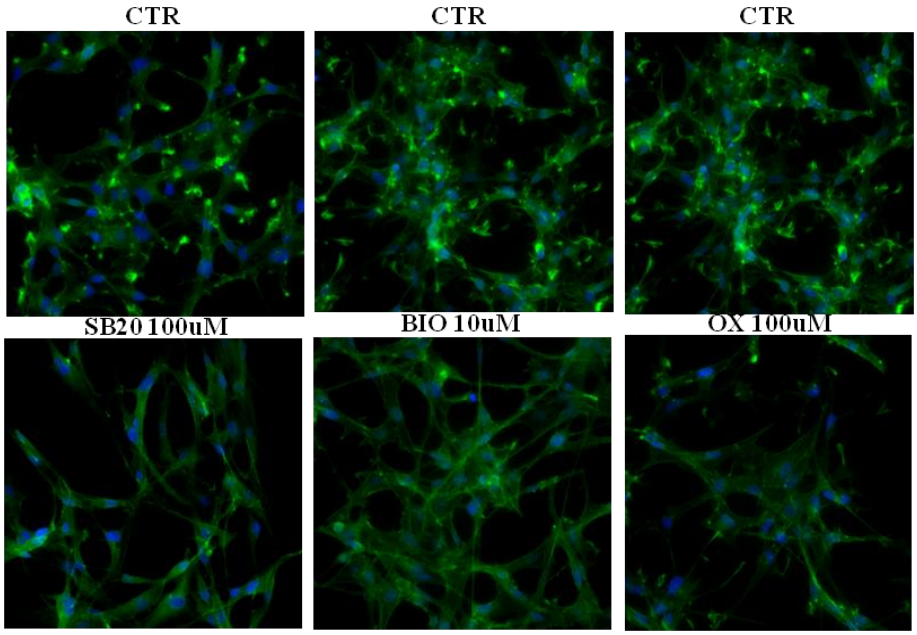
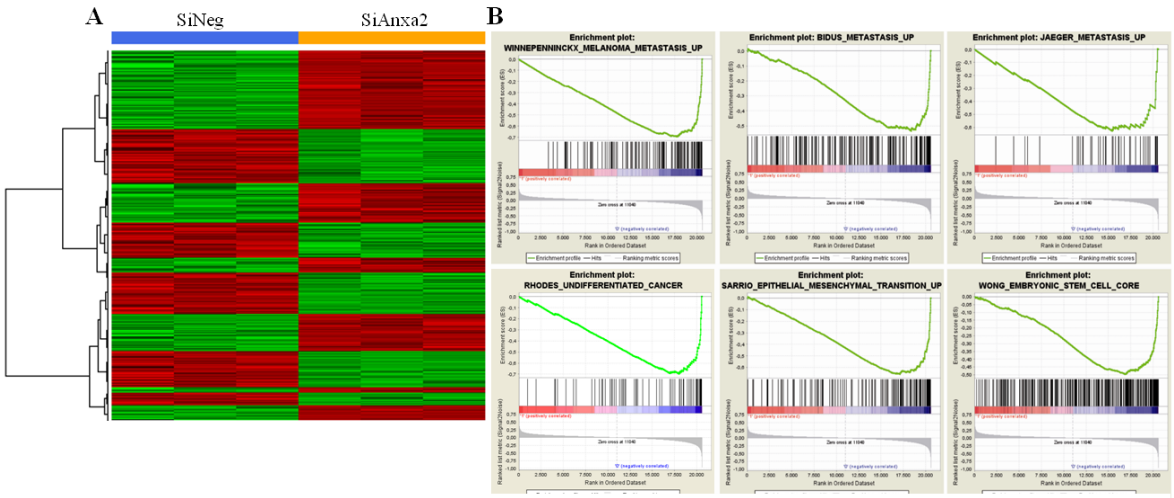



**Figure 23.** Treatment with SB203580, BIO and Oxprenolol induces a dramatic cytoskeletal remodeling. Representative immunofluorescence images of GBM cells after treatment of compounds and stained with a FITC-labeled phalloidin probe in order to reveal the distribution of F-actin (green). Cell nuclei have been counterstained with DAPI (blue). Original magnification 20x.

To go deeper in unveiling the specific role of ANXA2 in GBM, we generated an ANXA2 dependent transcriptional signature based on the expression profiles of ANXA2 silenced cells respect to relative controls. $ANXA2^{hi}$ cells were transfected with small interfering RNAs (siRNAs) against ANXA2 as well as with a non targeting siRNA (siNEG) and their transcriptional profile analyzed by Affymetrix chips. Supervised analysis on the specific signatures retrieved 3592 differentially expressed probes between siANXA2 or control-transfected GBM cells (1846 up- and 1746 down-regulated; Figure 24A and Supplementary Table 7). Interestingly, GSEA on ANXA2-silenced cells showed a negative enrichment for EMT and metastasis genes compared to control cells (Figure 24B), confirming previous gene

expression results obtained after ANXA2 neutralization by specific antibody (Figure 9). Moreover, GSEA on ANXA2-silenced cells reveled a negative enrichment also of genes related to stemness and cancer undifferentiated status (Figure 24B), highlighting the role of ANXA2 in controlling GBM differentiation.

To expand the results obtained by the Connectivity Map bioinformatic tool, we submitted to the QUADrATiC softwar [39] the ANXA2 dependent transcriptional signatures that we previously generated from ANXA2 treated- or transfected GBM cells, in order to identify perturbagens and FDA approved drugs able to reproduce the transcriptional effects mediated by ANXA2 activity down-modulation. Specifically, we retrieved 14 compounds significantly predicted ($p<0.05$) to be able to reproduce the transcriptional effects mediated by ANXA2 neutralizing antibody and 77 compounds significantly predicted to be able to reproduce the transcriptional effects obtained by ANXA2 specific silencing. Looking for a shared mechanism between the two signature obtained, we intercrossed the two drug lists and found 7 common compounds (Figure 24C). In particular, we identified the proteasome inhibitor Bortezomib as the most significant drug, and two cationic ion pump inhibitors (Digitoxin and Qubain) that are analogues of the previously tested Oxprenolol which demonstrated to be able to inhibit GBM cells invasion potential.




C


D

| Set ID | Num Profiles | Z-Score | Connection Score | P-Value |
|---|---|---|---|---|
| BORTEZOMIB | 8 | 6,4295 | 0,1004 | 1,19E-10 |
| DIGITOXIN | 2 | 6,10867 | 0,1441 | 1,08E-09 |
| OUABAIN | 1 | 5,03361 | 0,13798 | 5,29E-07 |
| AZACITIDINE | 2 | 4,80841 | 0,09329 | 1,7E-06 |
| NICLOSAMIDE | 10 | 3,59443 | 0,04939 | 0,00034 |
| PROBENECID | 6 | 3,46344 | 0,04186 | 0,00054 |
| HOMOHARRINGTONINE | 2 | 3,41055 | 0,07036 | 0,00071 |

**Figure 24.** (A) Heat map generated by supervised analysis of HuTuP174 primary GBM cells silenced with small interfering RNAs (siRNAs) against ANXA2 for 48h (3 non targeting siRNA (siNEG) vs. 3 SiANXA2 silenced cells) using the 3592 differentially expressed probe sets (lFDR<0.05). (B) Representative GSEA enrichment plots demonstrating that probes down-regulated after ANXA2 silencing are enriched for genes involved in the metastatic process (upper panels), and a stem-like/undifferentiated phenotype (lower panels). Plot were generated by c2 curated gene sets in the GSEA MSigDatabase. The green curves show the enrichment score and reflects the degree to which each gene (black vertical lines) is represented at the top or bottom of the ranked gene list. The heat map indicates the relative abundance (red to blue) of the genes specifically enriched in the SiANXA2-silenced as compared with the SiNEG-silenced cells. (C) Venn diagram representative of the intersection between the compound lists obtained by functional mapping of ANXA2-neutralized and ANXA2-silenced cells specific signature on the QUADrATiC tool. (D) The connections and perturbation stabilities of the seven significant drugs obtained from the intersection.

## 7. DISCUSSION.

Most GBM tumors recur within 2 cm from the original tumor margin. This peculiar characteristic of GBM relay on brain cancer cell ability to invade the surrounding normal brain tissues, thus escaping from surgical removal and localized radiotherapy [103]. In this context, we and others recently exploited 5-ALA in order to properly identify and characterize dispersed GBM cells at the tumor margin, demonstrating that some of these cells are still endowed with stem-like characteristics, potentially hampering treatments [22, 104, 105]. In this discouraging landscape, a more comprehensive knowledge of the mechanisms involved in GBM cell spreading becomes particularly relevant.

Agreeing to this view, we chose to elucidate the potential involvement of ANXA2 in regulating GBM cell dissemination. Indeed, ANXA2 has been proved to sustain EMT and invasion of pancreatic ductal adenocarcinoma [106], induce hepatocellular carcinoma and breast cancer metastasis [72, 83] and was found up-regulated in highly invasive carcinomas [63, 107, 108]. Moreover, ANXA2 has been correlated to the observed hyperfibrinolysis-dependent bleeding in acute promyelocytic leukemia [109]. Here, we show that ANXA2 is significantly over-expressed in GBM in three independent cohorts of patients (Figure 4A-4D) and that ANXA2 expression can be considered as an independent prognostic factor in glioma [97, 110, 112]. More importantly, we demonstrate that low/absent expression of ANXA2 identifies a subgroup of GBM patients endowed with better prognosis in three different cohorts of GBM patients (Figure 4E–4H), with ANXA2 IHC score retaining a strong prognostic value for PFS in multivariate analysis (Table 2).

Since ANXA2 has been involved in multiple cellular functions including vesicle trafficking, cell division, calcium signalling and cellular growth [113], we analyzed a gene expression profile correlated to low ANXA2 expression in GBM tumors and characterized the transcriptional changes associated to its inhibition in GBM cells *in vitro*. Importantly, besides its reported role in cell migration and invasion, GSEA pointed out the existence of a positive and negative correlation between genes associated to high ANXA2 expression and the "Mesenchymal" and "Proneural" molecular subtypes [95] respectively. This information is particularly relevant, since GBMs belonging to the Proneural subtype display clinical and molecular features often associated to less aggressive tumors and long surviving patients [95, 114, 117]. On the other hand, tumors from the Mesenchymal molecular subgroup are

characterized by high expression of EMT markers such as MET and CD44, reminiscent of de-differentiated aggressive tumors [95]. We also confirmed these findings by GSEA of ANXA2-inhibited GBM cells, which shows a significant negative enrichment of gene signatures associated to undifferentiated cancer and stem cell phenotype (Figure 9B), suggesting the potential involvement of ANXA2 also as a modulator of differentiation in GBM cells. Interestingly, we also examined the effects produced by intensive treatment protocols (defined as more than one cycle of single or concurrent chemo- and radiotherapy) in GBM patient subgroups generated on the basis of ANXA2 expression in the TCGA dataset. Our analyses show that aggressive treatment prolonged survival only in ANXA2 High tumors (HR=0,475; Figure 19A) rather than ANXA2 Very Low GBMs (HR=0,74; Figure 19B), resembling previous data on the Mesenchymal or Proneural subclasses respectively [95]. These latter results underline the potential and visionary clinical relevance of the assessment of ANXA2 expression in suggesting differential therapeutic strategies in GBM.

All these analyses recreate a complex scenario in which ANXA2 seems to sustain GBM cell aggressiveness at multiple levels. In addition, enrichment map generated by GO analysis of differentially expressed genes upon ANXA2 inhibition, points out a potential participation of ANXA2 also in the regulation of cytoskeletal organization and cell cycle dynamics (Figure 9C). Here we show that reduction of ANXA2 activity is sufficient to: i) dramatically impair GBM cell invasiveness; ii) induce a strong rearrangement of cytoskeletal structures; iii) inhibit cell proliferation. Although studies already reported that ANXA2 knockdown negatively affects invasiveness and proliferation of human and rodent glioma cell lines *in vitro* [118] and *in vivo* [97], to the best of our knowledge, we report for the first time the effects mediated by ANXA2 inhibition in patient-derived primary GBM cells, thus strengthening our conclusions. In particular, our data clearly indicate that ANXA2 down-modulation significantly reduces the expression of genes involved in DNA replication and chromosome segregation (Figure 9C, 9F, 9G), thus impairing GBM cell proliferation at the S-G2/M transition (Figure 16E-16H). This potential mechanism is added to different previous studies showing that ANXA2-mediated cell cycle effects could be attributed to p53 over-expression [119], Stat3 inhibition [120] or c-Myc-dependent cyclin D1 transcription [121].

Interestingly, ANXA2 over-expression did not alter GBM cell proliferation in our setting, suggesting that an intact ANXA2 function is necessary to sustain the complete oncogenic program engaged by GBM, but its up-regulation is not sufficient to trigger proliferation or

activate a de-differentiation program by itself. In a previous study, Rescher et al. demonstrated that insulin stimulation of normal BHK cells induced a massive rearrangement of actin fibers accompanied by cell spreading and detachment, and promoted a strong accumulation of F-actin and ANXA2 into FA-like structures at the cell periphery [122]. Authors proposed an ANXA2-mediated Rho/ROCK pathway control as the major responsible for the observed cytoskeletal remodeling. Our results are in line with these previous findings, showing that ANXA2$^{hi}$ cells organize actin fibers into FA-like structures at the cell periphery; conversely, ANXA2 inhibited/silenced GBM cells acquire a less "contracting" and more flattened cell shape (Figure 13A-13D). Moreover, it has recently been reported that ANXA2 should control the invasive properties of glioma cells by a double mechanism consisting of: i) augmented cancer cell binding to endothelial cells that eases the process of vascular co-option; ii) increase of VEGF and PDGF production which induce angiogenesis [123]. These data add further evidence to the multiple invasion mechanisms reported for ANXA2. Finally, based on gene expression data of ANXA2 neutralized cells, we were able to test the prognostic potential of an ANXA2$^{down}$ signature in multiple cancer datasets, demonstrating that expression of genes regulated (most likely indirectly) by ANXA2 fluctuations predict cancer patients outcome by themselves (Figure 18A-18F). These results are particularly relevant since they allow to generalize the prognostic potential of ANXA2 and/or ANXA2-modulated transcripts to multiple solid tumors, thus highlighting its relevance as a master controller of cancer cell dissemination and metastasis. In this context, increasing evidence suggests the participation of ANXA2 in regulating the localization as well as translation of specific transcripts. Indeed, specific ANXA2 domains are reported to bind to the 3′-UTRs of c-myc [89], collagen prolyl 4-hydroxylase-α(I) (C-P4H) [88] and N-methyl- D-aspartate R1 (NMDA-R1) [124] mRNAs, contributing to the post-transcriptional regulation of particular genes [125]. Therefore, a better comprehension of the direct or indirect effects mediated by ANXA2 on ECM degradation, cytoskeletal remodeling and gene transcription, will inevitably lead ANXA2 as future marker to be assessed for GBM management or to be targeted to inhibit dissemination.

Finally this project aimed to validate different bioinformatics tools for drug repurposing in GBM. To this purpose, we used the ANXA2 dependent transcriptional signatures derived from the comparison between ANXA2$^{hi}$ versus ANXA2$^{lo}$ expressing GBM patients in the TCGA and GSE13041 datasets by querying the Connectivity Map software [37]. The

software identified nine approved compounds able to revert the ANXA2-dependent signature of GBM aggressiveness, three of which have been functionally validated for their ability to inhibit cell proliferation, motility and invasion in primary GBM cultures *in vitro*, as ANXA2 modulation did. Thus, the Connectivity Map has proven to be a powerful and efficient tool to predict perturbagens and drugs able to reproduce the transcriptional effects mediated by ANXA2 activity down-modulation. Therefore, it can be considered a good gene-expression-based screening approach for poly-pharmacology drug discovery, in order to identify potential small molecule compounds, which may be further investigated as candidates for repurposing to cancer treatment.

More recently, the development of the QUADrATiC tool provided an improvement over existing connectivity map software, offering potential to biological researchers to analyze transcriptional data and generate potential therapeutics for focused study [39]. Indeed, QUADrATiC represents a step change in the process of investigating gene expression connectivity and provides more biologically and clinically relevant results than previous alternative solutions. For this reason, we decided to submit to the QUADrATiC software the ANXA2 dependent transcriptional signatures that we previously generated from primary GBM cell cultures after ANXA2 inhibition/silencing. Thus, we retrieved a list of seven FDA approved drugs in common between the two ANXA2-specific transcriptional profiles (Figure 24C, 24D). In particular, we found the therapeutic Bortezomib and the cardiac glycoside Oubain as the most significant drugs. Indeed, the effects of the bortezomib have been already evaluated in patients with recurrent malignant gliomas during a phase II trial [126] and a recent study revealed ouabain, as a sustainer of glioma cell apoptosis partly via ROS accumulation in glioblastoma cells [127]. These evidences highlight the relevance of QUADrATiC software for the identification of perturbagens and FDA approved drugs able to revert the gene signature of a specific cancer to a less aggressive or drug-sensitive transcriptional profile, with reported applications in brain tumors.

## 8. FUTURE PROSPECTIVES

This project allowed us to identify a new target protein (ANXA2) strictly involved in GBM aggressiveness and, as a further confirmation, we demonstrated that ANXA2 inhibition is an important step forward towards GBM therapy. In particular, we uncovered seven new FDA approved drugs able to revert the effects mediated by the high levels of ANXA2 in GBM by the QUADrATiC software. In the future, we aim to test these compounds in a series of established primary GBM cell lines for their ability to impair cell proliferation, motility and invasion both in "plastic-based" cell cultures and in organoid-culture models, a new three-dimensional *in vitro* culture system able to recapitulate the original tumor architecture. Moreover, given the results obtained by GSEA analysis we aim also to investigate drug effects on GBM cells phenotype and differentiation status.

Finally, in order to investigate the molecular mechanisms by which ANXA2 controls gene transcription and the relative intracellular functions, we propose to identify specific mRNAs, directly bound by intracellular cytoskeleton-associated ANXA2, to be considered as new potential GBM targets by exploiting the cross-linking immunoprecipitation (CLIP) technique. CLIP could be applied to at least three primary GBM cultures in order to map the binding of ANXA2 to specific transcripts on a genome-wide scale through RNA-sequencing. These new ANXA2-dependent targets, could be the starting point for the future set up of novel GBM targeting approaches.

## 9. MATERIALS AND METHODS

**Neurosurgical sample collection, isolation and gas-controlled expansion of GBM cells.**

Written informed consent for the donation of adult tumor brain tissues was obtained from patients before tissue collection under the auspices of the protocol for the acquisition of human brain tissues obtained from the Ethical Committee of the Padova University-Hospital. All tissues were acquired following the tenets of the Declaration of Helsinki. For this study we used GBM specimens isolated from 89 tumors taken at surgery and then formalin-fixed and paraffin embedded (FFPE) for subsequent IHC analysis. Moreover, 8 primary GBM cultures have been used for in vitro experiments. General characteristics of patients from which we derived GBM primary cells are listed in Suppl. Table S4. Primary GBM cells were isolated and maintained in culture as described previously [128]. Briefly, tumor biopsies were subjected to mechanical dissociation and the resulting cell suspension was cultured on fibronectin-coated dishes in DMEM/F12 medium supplemented with BIT9500 (Stemcell Technologies Inc., Vancouver, Canada), 20ng/ml basic Fibroblast Growth Factor (bFGF; Sigma-Aldrich S.r.l., Milan, Italy) and 20ng/ml Epidermal Growth Factor (EGF; R&D Systems, Minneapolis, MN). GBM cells were maintained in an atmosphere of 2% oxygen, 5% carbon dioxide and balanced nitrogen in a Ruskinn C300 system for a proper cell expansion in hypoxic conditions (Ruskinn Technology Ltd, Bridgend, UK). Cells were not cultured for more than 8 passages in vitro in order to avoid long term culture related effects. In some experiments, GBM cells were treated with an anti-ANXA2 monoclonal antibody (clone C-10; Santa Cruz Biotechnology, Santa Cruz, CA; Suppl. Table S8) at a final concentration of 5 or 20μg/ml [96, 97] and then cultured for 24-96h.

**Immunohistochemistry**

ANXA2 immunohistochemistry was conducted on 5μm sections from 89 FFPE GBM specimens with standard procedures. Briefly, sections were re-hydrated and then antigen retrieval was performed by incubation with citrate buffer 0.01M pH6 at 95°C. After saturation with the appropriate normal serum, slides were incubated with an anti-ANXA2 antibody (clone 5/Annexin II; BD Bioscience, San Jose, CA; Supplementary Table S8). After incubation, sections were washed and incubated with species-specific biotin-conjugated secondary antibodies (Vector Laboratories Inc. Burlingame, CA; Supplementary Table S8).

ANXA2 expression was revealed by using the Dako Liquid DAB$^+$ Substrate Chromogen System (Dako, Glostrup, Denmark) according to manufacturer's guidelines. Tissues were counterstained with Meyer's Hematoxylin and images acquired with a Zeiss Imager M1 microscope (Carl Zeiss, Oberkochen, Germany). The specificity of each staining procedure was confirmed by replacing the primary antibodies with an Isotype control. The expression level of ANXA2 was scored using a combined method accounting for both the staining intensity and the percentage of positive stained cells. The resulting combined score was calculated as the multiplication of the score accounting for the percentage of ANXA2$^+$ cells (0-6) and the intensity score (0-3). ANXA2 stained slides were independently evaluated by two different pathologists.

**Transfection of primary GBM cells.**

To achieve a suitable gene silencing, GBM cells were transfected with 200pmol of two different small interfering RNAs (siRNAs) against ANXA2 as well as with a non targeting siRNA (siNEG) using the Lipofectamine RNAiMAX reagent (Thermo Fisher Scientific, Waltham, MA) according to manufacturer's instructions. siANXA2#1 siRNA sequence: (RNA)-5′-GCG ACU ACC AGA AAG CGC UGC UGU A-3′; siANXA2#2 siRNA sequence: (RNA)-5′-GAC UGA UCU GGA GAA GGA CAU UAU U-3′ (Stealth RNAi™; siANXA2#1 cat.# 10620318, siANXA2#2 cat.# 10620319). For ANXA2-overexpression experiments, the ANXA2 complete cDNA sequence was cloned into a pcDNA3.1 empty vector in order to generate an expression vector named pcDNA3.1-ANXA2. Primers used for ANXA2 coding sequence amplification are listed in Supplementary Table S9. In over-expression experiments, GBM cells were transfected with an opportune quantity of pcDNA3.1-ANXA2 or pcDNA3.1 empty vector using the TransIT®-LT1 Transfection Reagent (Mirus Bio LLC, Madison, WI) according to manufacturer's instructions. Transfected cells were then cultured for 24-96h depending on the experimental endpoints. The analysis of silencing or overexpression specificity was achieved by WB and qRT-PCR.

**Western blot.**

Equal amounts of proteins (10μg) extracted from primary GBM cells were resolved using a SDS-PAGE gels and transferred to polyvinylidene difluoride (PVDF) Immobilon-p membrane (Merk-Millipore, Darmstadt, Germany). Membranes were blocked with I-block™

(Thermo Fisher Scientific, Waltham, MA) for at least 1 hour at room temperature and then were incubated overnight at 4°C under constant shaking with the primary antibody against Membranes were next incubated with HRP-labeled goat anti-mouse IgG (1:50000; Sigma-Aldrich, Milan, Italy; Supplementary Table S8) for 60 minutes. All membranes were visualized using ECL Select (GE Healthcare, Catania, Italy) and exposed to Amersham Hyperfilm ECL (GE Healthcare). β-actin staining (Sigma-Aldrich S.r.l., Milan, Italy; Supplementary Table S8) was used as loading control.

**Gene expression profiling of ANXA2 antibody-treated and silenced GBM cells and data analysis.**

For microarray experiments, in vitro transcription, hybridization and biotin labeling of RNA from GBM cells treated with anti-ANXA2 neutralizing antibody and siRNA against ANXA2 were performed according to Affymetrix 3'IVT Express Plus protocol, after 48h of treatment with ANXA2 antibody or a matched isotype control and 48h of silencing with siANXA2 as well as with a siNEG. GeneChip Human Genome U133 Plus 2.0 (Affymetrix, Santa Clara, CA) was used. Microarray data (CEL files) were generated using default Affymetrix microarray analysis parameters (Command Console suite software, Affymetrix). CEL files were normalized using the robust multiarray averaging expression measure of Affy-R package (www.bioconductor.org). Shrinkage t-test [129] was applied to identify genes that were differently expressed along ANXA2 antibody and isotype control-treated GBM cells in four independent experiments and along siANXA2 and siNEG-silenced GBM cells in three independent experiments. Local False Discovery Rate (lFDR)<0.05 was used as multiplicity correction of p-value to identify gene differently expressed. A heat map was generated by R software (www.R-project.org) using Euclidean distance as a distance measure between genes and Ward method for clustering probe sets. Expression data have been deposited into the Gene Expression Omnibus (GEO) database under Series Accession Number GSE76786 and are accessible without restrictions. Gene Set Enrichment Analysis (GSEA) was performed using GSEAv2.0 with probe sets ranked by signal-to-noise ratio and statistical significance determined by 1000 permutations [130]. Gene sets permutations (<7 replicates in each class) were used to enable direct comparisons between ANXA2 antibody and isotype control-treated GBM cells and siANXA2 and siNEG-silenced GBM cells. Minimum gene set size was set to 15; maximum of probe sets was used to collapse multiple probe sets into gene. For GSEA an

FDR cutoff <0.05 was used. MgSigDataBase derived from c2 curated dataset and c5 Gene Ontology dataset were selected to obtain the enrichment gene sets. Enrichment map was generated using Enrichment Map Cytoscape v3.2.1 plug-in [131]. Only Gene sets with FDR q value ≤0.05, derived from c5 Gene Ontolgy MSigDB GSEA were used to build the network. Node represents the functional gene sets and the size is proportional to size of gene set. Edge represents the degree of gene overlap that exist between two gene sets and the thickness is proportional to the overlap between the gene sets. To generate the gene sets relationship we used Overlap Coefficient parameters (Overlap Coefficient = [size of (A intersect B)] / [size of (minimum(A , B))], where A and B are two gene sets). Redundant gene sets with common biological function were grouped in cluster and manually labeled with Gene Ontology terms. Blue indicate enrichment in ANXA2 antibody-treated GBM cells.

**Reverse transcription and real-time PCR.**

RNA was extracted from GBM cells using TRIzol reagent (Thermo Fisher Scientific, Waltham, MA) according to manufacturer's instructions and 1–2µg of total RNA reverse-transcribed using SuperScript RNAse II Reverse Transcriptase (Thermo Fisher Scientific, Waltham, MA). Quantitative RT-PCR reactions were run in triplicate using Platinum SYBR Green Q-PCR Super Mix (Thermo Fisher Scientific, Waltham, MA). Fluorescent emission was recorded in real-time (Sequence Detection System 7900HT, Applied Biosystems, Foster City, CA). The specificity of primers was confirmed for every PCR run by dissociation curve analysis. Primers used are listed in Supplementary Table S9 and their specificity was confirmed by the software Human BLAT Search (http://genome.ucsc.edu). Relative RNA quantities were normalized to GUSB according to the ΔΔCt Method.

**Scratch-migration and invasion assays.**

To evaluate the effects of ANXA2 modulation on the migratory properties of GBM cells, they were cultured on 35-mm culture dishes until they reached at least 80% confluence. 24h after antibody treatment or 48h after ANXA2 silencing/over-expression, GBM cell monolayer has been gently scratched horizontally and vertically. After being scratched, GBM cells were washed twice with culture medium to remove cell debris and incubated until pre-determined endpoints. Migrated cells were defined as cells that moved into the scratch and detached away from the cell monolayer. Cell migration was evaluated by measuring the distance between the

two edges of the scratch in at least 8 random fields by using Adobe Photoshop CS6 (Adobe Systems Incorporated, La Jolla, CA; www.adobe.com). Images were acquired by using with a Nikon TS100 inverted microscope (Nikon, Melville, NY).

To assess the invasive capacity of GBM cells depending on ANXA2 levels, soluble extracellular matrix Matrigel was dispensed in 24-well plates and allowed to gel for about 45 min at 37°C. GBM cells were then added onto Matrigel layer in a volume of 0.5ml, treated with anti-ANXA2 antibody for 72h or 7 days at 5 or 20µg/ml. Images were captured with a Nikon TS100 inverted microscope (Nikon, Melville, NY). Calculation of number and length of branches and invading cells was performed with Angiogenesis plugin from ImageJ software (https://imagej.nih.gov). Moreover, GBM invasion was also evaluated using the CultreCoat® 24-Well BME Cell Invasion Assay (Trevigen, Gaithersburg, MD) according to the manufacturer's instructions. Invasion was measured 48h after plating, at 485-520nm using a VICTOR spectrophotometer (Perkin Elmer, Milan, Italy).

**Chick embryo chorioallantoic membrane invasion assay.**

Plastic rings were placed on the chorioallantoic membrane (CAM) of fertilized White Leghorn chicken eggs at day 8 (8-10 CAMs/experimental group). Then, 6µl of a cell suspension containing 1.5×105 EGFP-GBM cells (HuTuP13) were injected inside the ring. CAMs were treated with a solution containing 2µg of isotype or anti-ANXA2 antibodies every day for 3 consecutive days. On day 11, CAMs were fixed with PFA 3%, washed and mounted with Vectashield Antifade Mounting Medium (Vector Laboratories Inc. Burlingame, CA). Samples were acquired under an Axiovert 200 fluorescence microscope equipped with a EC Plan Neofluar 20x/0.5 NA objective and ApoTome system (Carl Zeiss, Oberkochen, Germany). EGFP-positive areas were quantified using Image-Pro Plus software (Media Cybernetics, Inc., Rockville, MD).

**Immunofluorescence.**

GBM cells were cultured on 4-well chamber slides (BD Bioscience, San Jose, CA), treated depending on the experimental plan. After treatment, cells were fixed in cold 4% formaldehyde and stored at +4°C prior to analysis. Primary antibody staining was performed for Nestin (Merk-Millipore, Darmstadt, Germany), Ki67, GFAP, S100 (all from Dako, Glostrup, Denmark), MAP2 (Sigma-Aldrich, Milan, Italy), OSP (Abcam, Cambridge, UK),

ANXA2 (clone C-10; Santa Cruz Biotechnology, Santa Cruz, CA), FITC-coniugated Phalloidin (1:1000; Sigma-Aldrich, Milan, Italy) and Sox2 (Cell Signaling Technology). For additional details on antibodies used for immunofluorescence, please see Supplementary Table S7. After incubation, cells were washed and incubated with species-specific secondary antibodies conjugated to Alexa dyes (Thermo Fisher Scientific, Waltham, MA; Supplementary Table S8). Cells were counterstained with DAPI (1:10000; Sigma-Aldrich, Milan, Italy) to measure total cell number. Staining was visualized by epifluorescence with a ViCo microscope (Vico, Nikon, Melville, NY).

**Cytofluorimetric analyses.**

CD133 were incubated with anti-human CD133 (clone CD133/1-PE; Miltenyi Biotec, Bergisch Gladbach, Germany) as previously described (Supplementary Table S8). Relative percentages of different subpopulations were calculated based on live gated cells (as indicated by physical parameters, side scatter and forward scatter). Unlabeled cells and cells incubated with appropriate isotype control antibodies were first acquired to ensure labelling specificity. To perform cell cycle analysis, GBM cells were collected after 72h of treatment (anti-ANXA2 antibody, ANXA2 silencing or over-expression), centrifuged and fixed with ice-cold ethanol (70%). Cells were then treated with permeabilization buffer containing RNAse A, 0.1% Triton X-100 and propidium iodide (PI) at room temperature for 30 minutes prior to analysis. DNA histograms were analyzed using Multi- Cycle® for Windows (Phoenix Flow Systems, San Diego, CA). Analysis of BrdU incorporation was performed with a BrdU Staining Kit for Flow Cytometry FITC (eBioscience, Hatfield, UK) according to the manufacturer's instructions. BrdU was incubated with cells for 72h. For all stainings, samples were acquired on a Cytomic FC500 flow cytometer (Beckman Coulter, Brea, CA).

**Correlation of ANXA2$^{down}$ signature to clinical outcome.**

The ANXA2$^{down}$ gene signature was generated by using the most significant down-regulated genes after treatment of GBM cells with the monoclonal antibody against ANXA2 (fold change $\leq$0.8; Suppl. Table S5). Then, we evaluated the prognostic potential of this signature in TCGA [92], GSE13041 [94], GSE17536 [100], E-MTAB-365 [101] and GSE31210 [102] datasets. The log2 expression values for each sample in each dataset were centered to zero mean. The sum of the mean-centered log2 expression values of the ANXA2$^{down}$ probe sets

was used as the Risk Score for each subject and the 519 subjects from TCGA, 191 from GSE13041, 177 from GSE17536, 409 from E-MTAB-365 and 217 from GSE31210 were split into high- and low-risk groups greater and less than the median risk score respectively [132]. These risk groups were assessed for prognostication of OS and PFS in univariate Cox analysis (log-rank test).

**Drug screening.**

Selected drugs were analyzed in vitro for their ability to inhibit GBM cell proliferation, motility and invasion. MTT assay was performed in order to determine the potential anti-proliferative effects of compounds and the optimal concentration to be used in subsequent experiments. GBM cells were treated at different concentrations and 10µl of 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) was added into 96-well, after 96h from treatment; cells were incubated for 3-4 hours and 100µl of isopropanol solution was then added to each well to dissolve crystals formed. Cell proliferation was subsequently evaluated by VICTOR spectrophotometer. Cell motility was investigated by scratching a monolayer of GBM cells and monitoring the ability to close the wound during time of 72h. Cell migration was evaluated by measuring the distance between the two edges of the scratch in at least 8 random fields by using Adobe Photoshop CS6 (Adobe Systems Incorporated, La Jolla, CA; www.adobe.com). Images were acquired by using with a Nikon TS100 inverted microscope (Nikon, Melville, NY). Moreover, invasion was assessed by measuring cell spreading onto Matrigel coated dishes after 72h or 7 days. Images were captured with a Nikon TS100 inverted microscope (Nikon, Melville, NY). Compounds able to significantly reduce disseminating properties of GBM cells were tested for their potential effect in reorganizing cytoskeletal fibers. To this end, treated cells were stained with FITC-coniugated Phalloidin (1:1000; Sigma-Aldrich, Milan, Italy) and staining was visualized by epifluorescence with a ViCo microscope (Vico, Nikon, Melville, NY).

**Statistics.**

Graphs and associated statistical analyses were generated using Graph Pad Prism 6.07 (GraphPad, La Jolla, CA). All data in bar graphs are presented as mean ± standard error of the mean (S.E.M.). Statistical significance was measured by one-way ANOVA with Newman–Keuls multiple comparison post test (for more than two comparisons) and paired t-test

(comparison of two groups); *p<0.05, **p<0.01, ***p<0.001, ****p<0.0001. For all graphs, asterisks over brackets indicate a significant difference with another variable as indicated and asterisks over bars indicate a significant difference with the control group.

Survival analyses were performed by generating Kaplan Meier survival curves and significance calculated by log-rank (Mantel-Cox) test. In all comparisons of survival, Hazard Ratio have been calculated as ANXA2 High risk/ANXA2 Very Low risk. Independent prognostic value of GBM patient subgroups generated on the basis of ANXA2 expression was calculated by applying a multivariate Cox analysis (Wald test) with SPSS 13 software (SPSS Inc., Chicago, IL).

## 10. REFERENCES


1. Ferluga S and Debinski W. Ephs and Ephrins in malignant gliomas. Growth factors (Chur, Switzerland). 2014; 32(6):190-201.

2. Louis DN, Ohgaki H, Wiestler OD, Cavenee WK, Burger PC, Jouvet A, Scheithauer BW and Kleihues P. The 2007 WHO classification of tumours of the central nervous system. Acta neuropathologica. 2007; 114(2):97-109.

3. Ohgaki H and Kleihues P. Epidemiology and etiology of gliomas. Acta neuropathologica. 2005; 109(1):93-108.

4. Villano JL, Seery TE and Bressler LR. Temozolomide in malignant gliomas: current use and future targets. Cancer Chemother Pharmacol. 2009; 64(4):647-655.

5. ABTA. Brain Tumors – A Handbook for the Newly Diagnosed. American Brain Tumors Association).

6. Westphal M and Lamszus K. The neurobiology of gliomas: from cell biology to the development of therapeutic approaches. Nature reviews Neuroscience. 2011; 12(9):495-508.

7. Dixit S, Hingorani M, Achawal S and Scott I. The sequential use of carmustine wafers (Gliadel(R)) and post-operative radiotherapy with concomitant temozolomide followed by adjuvant temozolomide: a clinical review. Br J Neurosurg. 2011; 25(4):459-469.

8. Stupp R, Mason WP, van den Bent MJ, Weller M, Fisher B, Taphoorn MJ, Belanger K, Brandes AA, Marosi C, Bogdahn U, Curschmann J, Janzer RC, Ludwin SK, Gorlia T, Allgeier A, Lacombe D, et al. Radiotherapy plus concomitant and adjuvant temozolomide for glioblastoma. N Engl J Med. 2005; 352(10):987-996.

9. Sanai N and Berger MS. Glioma extent of resection and its impact on patient outcome. Neurosurgery. 2008; 62(4):753-764; discussion 264-756.

10. Uchida N, Buck DW, He D, Reitsma MJ, Masek M, Phan TV, Tsukamoto AS, Gage FH and Weissman IL. Direct isolation of human central nervous system stem cells. Proc Natl Acad Sci U S A. 2000; 97(26):14720-14725.

11. Thomas AA, Brennan CW, DeAngelis LM and Omuro AM. Emerging therapies for glioblastoma. JAMA neurology. 2014; 71(11):1437-1444.

12. Della Puppa A, Ciccarino P, Lombardi G, Rolma G, Cecchin D and Rossetto M. 5-Aminolevulinic acid fluorescence in high grade glioma surgery: surgical outcome, intraoperative findings, and fluorescence patterns. BioMed research international. 2014; 2014:232561.

13. Pistollato F, Abbadi S, Rampazzo E, Persano L, Della Puppa A, Frasson C, Sarto E, Scienza R, D'Avella D and Basso G. Intratumoral hypoxic gradient drives stem cells distribution and MGMT expression in glioblastoma. Stem Cells. 2010; 28(5):851-862.

14. Della Puppa A, Persano L, Masi G, Rampazzo E, Sinigaglia A, Pistollato F, Denaro L, Barzon L, Palu G, Basso G, Scienza R and d'Avella D. MGMT expression and promoter methylation status may depend on the site of surgical sample collection within glioblastoma: a possible pitfall in stratification of patients? Journal of neuro-oncology. 2012; 106(1):33-41.

15. Stummer W, van den Bent MJ and Westphal M. Cytoreductive surgery of glioblastoma as the key to successful adjuvant therapies: new arguments in an old discussion. Acta Neurochir (Wien). 2011; 153(6):1211-1218.

16. Idoate MA, Diez Valle R, Echeveste J and Tejada S. Pathological characterization of the glioblastoma border as shown during surgery using 5-aminolevulinic acid-induced fluorescence. Neuropathology. 2011; 31(6):575-582.

17. Lacroix M, Abi-Said D, Fourney DR, Gokaslan ZL, Shi W, DeMonte F, Lang FF, McCutcheon IE, Hassenbusch SJ, Holland E, Hess K, Michael C, Miller D and Sawaya R. A multivariate analysis of 416 patients with glioblastoma multiforme: prognosis, extent of resection, and survival. J Neurosurg. 2001; 95(2):190-198.

18. Gaspar LE, Fisher BJ, Macdonald DR, LeBer DV, Halperin EC, Schold SC, Jr. and Cairncross JG. Supratentorial malignant glioma: patterns of recurrence and implications for external beam local treatment. Int J Radiat Oncol Biol Phys. 1992; 24(1):55-57.

19. Giese A, Bjerkvig R, Berens ME and Westphal M. Cost of migration: invasion of malignant gliomas and implications for treatment. J Clin Oncol. 2003; 21(8):1624-1636.

20. Stummer W, Stocker S, Wagner S, Stepp H, Fritsch C, Goetz C, Goetz AE, Kiefmann R and Reulen HJ. Intraoperative detection of malignant gliomas by 5-aminolevulinic acid-induced porphyrin fluorescence. Neurosurgery. 1998; 42(3):518-525; discussion 525-516.

21. Theeler BJ and Groves MD. High-grade gliomas. Curr Treat Options Neurol. 2011; 13(4):386-399.

22. Aldave G, Tejada S, Pay E, Marigil M, Bejarano B, Idoate MA and Diez-Valle R. Prognostic value of residual fluorescent tissue in glioblastoma patients after gross total resection in 5-aminolevulinic Acid-guided surgery. Neurosurgery. 2013; 72(6):915-920; discussion 920-911.

23. Stummer W, Novotny A, Stepp H, Goetz C, Bise K and Reulen HJ. Fluorescence-guided resection of glioblastoma multiforme by using 5-aminolevulinic acid-induced porphyrins: a prospective study in 52 consecutive patients. J Neurosurg. 2000; 93(6):1003-1013.

24. Chinot OL, Barrie M, Fuentes S, Eudes N, Lancelot S, Metellus P, Muracciole X, Braguer D, Ouafik L, Martin PM, Dufour H and Figarella-Branger D. Correlation between O6-methylguanine-DNA methyltransferase and survival in inoperable newly diagnosed glioblastoma patients treated with neoadjuvant temozolomide. J Clin Oncol. 2007; 25(12):1470-1475.

25. Hegi ME, Liu L, Herman JG, Stupp R, Wick W, Weller M, Mehta MP and Gilbert MR. Correlation of O6-methylguanine methyltransferase (MGMT) promoter methylation

with clinical outcomes in glioblastoma and clinical strategies to modulate MGMT activity. J Clin Oncol. 2008; 26(25):4189-4199.

26. Bates DO. Vascular endothelial growth factors and vascular permeability. Cardiovascular research. 2010; 87(2):262-271.

27. Gerstner ER, Duda DG, di Tomaso E, Ryg PA, Loeffler JS, Sorensen AG, Ivy P, Jain RK and Batchelor TT. VEGF inhibitors in the treatment of cerebral edema in patients with brain cancer. Nature reviews Clinical oncology. 2009; 6(4):229-236.

28. Cohen MH, Shen YL, Keegan P and Pazdur R. FDA drug approval summary: bevacizumab (Avastin) as treatment of recurrent glioblastoma multiforme. The oncologist. 2009; 14(11):1131-1138.

29. Takano S, Kimu H, Tsuda K, Osuka S, Nakai K, Yamamoto T, Ishikawa E, Akutsu H, Matsuda M and Matsumura A. Decrease in the apparent diffusion coefficient in peritumoral edema for the assessment of recurrent glioblastoma treated by bevacizumab. Acta neurochirurgica Supplement. 2013; 118:185-189.

30. Bota DA, Desjardins A, Quinn JA, Affronti ML and Friedman HS. Interstitial chemotherapy with biodegradable BCNU (Gliadel) wafers in the treatment of malignant gliomas. Therapeutics and clinical risk management. 2007; 3(5):707-715.

31. Westphal M, Hilt DC, Bortey E, Delavault P, Olivares R, Warnke PC, Whittle IR, Jaaskelainen J and Ram Z. A phase 3 trial of local chemotherapy with biodegradable carmustine (BCNU) wafers (Gliadel wafers) in patients with primary malignant glioma. Neuro-oncology. 2003; 5(2):79-88.

32. Affronti ML, Heery CR, Herndon JE, 2nd, Rich JN, Reardon DA, Desjardins A, Vredenburgh JJ, Friedman AH, Bigner DD and Friedman HS. Overall survival of newly diagnosed glioblastoma patients receiving carmustine wafers followed by radiation and concurrent temozolomide plus rotational multiagent chemotherapy. Cancer. 2009; 115(15):3501-3511.

33. De Bonis P, Anile C, Pompucci A, Fiorentino A, Balducci M, Chiesa S, Maira G and Mangiola A. Safety and efficacy of Gliadel wafers for newly diagnosed and recurrent glioblastoma. Acta Neurochir (Wien). 2012; 154(8):1371-1378.

34. Kleinberg L. Polifeprosan 20, 3.85% carmustine slow-release wafer in malignant glioma: evidence for role in era of standard adjuvant temozolomide. Core evidence. 2012; 7:115-130.

35. Nabors LB, Ammirati M, Bierman PJ, Brem H, Butowski N, Chamberlain MC, DeAngelis LM, Fenstermaker RA, Friedman A, Gilbert MR, Hesser D, Holdhoff M, Junck L, Lawson R, Loeffler JS, Maor MH, et al. Central nervous system cancers. Journal of the National Comprehensive Cancer Network : JNCCN. 2013; 11(9):1114-1151.

36. Cheng HW, Liang YH, Kuo YL, Chuu CP, Lin CY, Lee MH, Wu AT, Yeh CT, Chen EI, Whang-Peng J, Su CL and Huang CY. Identification of thioridazine, an antipsychotic

drug, as an antiglioblastoma and anticancer stem cell agent using public gene expression data. Cell Death Dis. 2015; 6:e1753.

37. Lamb J, Crawford ED, Peck D, Modell JW, Blat IC, Wrobel MJ, Lerner J, Brunet JP, Subramanian A, Ross KN, Reich M, Hieronymus H, Wei G, Armstrong SA, Haggarty SJ, Clemons PA, et al. The Connectivity Map: using gene-expression signatures to connect small molecules, genes, and disease. Science (New York, NY). 2006; 313(5795):1929-1935.

38. Faria CC, Agnihotri S, Mack SC, Golbourn BJ, Diaz RJ, Olsen S, Bryant M, Bebenek M, Wang X, Bertrand KC, Kushida M, Head R, Clark I, Dirks P, Smith CA, Taylor MD, et al. Identification of alsterpaullone as a novel small molecule inhibitor to target group 3 medulloblastoma. Oncotarget. 2015; 6(25):21718-21729.

39. O'Reilly PG, Wen Q, Bankhead P, Dunne PD, McArt DG, McPherson S, Hamilton PW, Mills KI and Zhang SD. QUADrATiC: scalable gene expression connectivity mapping for repurposing FDA-approved therapeutics. BMC bioinformatics. 2016; 17(1):198.

40. Chicoine MR and Silbergeld DL. Mitogens as motogens. Journal of neuro-oncology. 1997; 35(3):249-257.

41. Cuddapah VA, Robel S, Watkins S and Sontheimer H. A neurocentric perspective on glioma invasion. Nature reviews Neuroscience. 2014; 15(7):455-465.

42. Friedl P and Alexander S. Cancer invasion and the microenvironment: plasticity and reciprocity. Cell. 2011; 147(5):992-1009.

43. Xu R, Boudreau A and Bissell MJ. Tissue architecture and function: dynamic reciprocity via extra- and intra-cellular matrices. Cancer metastasis reviews. 2009; 28(1-2):167-176.

44. Midwood KS, Williams LV and Schwarzbauer JE. Tissue repair and the dynamics of the extracellular matrix. The international journal of biochemistry & cell biology. 2004; 36(6):1031-1037.

45. Bissell MJ, Kenny PA and Radisky DC. Microenvironmental regulators of tissue structure and function also regulate tumor induction and progression: the role of extracellular matrix and its degrading enzymes. Cold Spring Harbor symposia on quantitative biology. 2005; 70:343-356.

46. Bissell MJ, Hall HG and Parry G. How does the extracellular matrix direct gene expression? Journal of theoretical biology. 1982; 99(1):31-68.

47. Demuth T and Berens ME. Molecular mechanisms of glioma cell migration and invasion. Journal of neuro-oncology. 2004; 70(2):217-228.

48. Goldbrunner RH, Bernstein JJ and Tonn JC. Cell-extracellular matrix interaction in glioma invasion. Acta Neurochir (Wien). 1999; 141(3):295-305; discussion 304-295.

49. Cocucci E, Racchetti G and Meldolesi J. Shedding microvesicles: artefacts no more. Trends in cell biology. 2009; 19(2):43-51.

50. Skog J, Wurdinger T, van Rijn S, Meijer DH, Gainche L, Sena-Esteves M, Curry WT, Jr., Carter BS, Krichevsky AM and Breakefield XO. Glioblastoma microvesicles transport RNA and proteins that promote tumour growth and provide diagnostic biomarkers. Nature cell biology. 2008; 10(12):1470-1476.

51. Valadi H, Ekstrom K, Bossios A, Sjostrand M, Lee JJ and Lotvall JO. Exosome-mediated transfer of mRNAs and microRNAs is a novel mechanism of genetic exchange between cells. Nature cell biology. 2007; 9(6):654-659.

52. Naus CC and Laird DW. Implications and challenges of connexin connections to cancer. Nature reviews Cancer. 2010; 10(6):435-441.

53. Hajjar KA and Krishnan S. Annexin II: a mediator of the plasmin/plasminogen activator system. Trends Cardiovasc Med. 1999; 9(5):128-138.

54. Huebner K, Cannizzaro LA, Frey AZ, Hecht BK, Hecht F, Croce CM and Wallner BP. Chromosomal localization of the human genes for lipocortin I and lipocortin II. Oncogene research. 1988; 2(4):299-310.

55. Hajjar KA, Mauri L, Jacovina AT, Zhong F, Mirza UA, Padovan JC and Chait BT. Tissue plasminogen activator binding to the annexin II tail domain. Direct modulation by homocysteine. J Biol Chem. 1998; 273(16):9987-9993.

56. Johnsson N, Marriott G and Weber K. p36, the major cytoplasmic substrate of src tyrosine protein kinase, binds to its p11 regulatory subunit via a short amino-terminal amphiphatic helix. Embo j. 1988; 7(8):2435-2442.

57. Filipenko NR and Waisman DM. The C terminus of annexin II mediates binding to F-actin. J Biol Chem. 2001; 276(7):5310-5315.

58. Kassam G, Manro A, Braat CE, Louie P, Fitzpatrick SL and Waisman DM. Characterization of the heparin binding properties of annexin II tetramer. J Biol Chem. 1997; 272(24):15093-15100.

59. Hajjar KA, Jacovina AT and Chacko J. An endothelial cell receptor for plasminogen/tissue plasminogen activator. I. Identity with annexin II. J Biol Chem. 1994; 269(33):21191-21197.

60. Moss SE and Morgan RO. The annexins. Genome biology. 2004; 5(4):219.

61. Thiel C, Osborn M and Gerke V. The tight association of the tyrosine kinase substrate annexin II with the submembranous cytoskeleton depends on intact p11- and Ca(2+)-binding sites. J Cell Sci. 1992; 103 ( Pt 3):733-742.

62. Waisman DM. Annexin II tetramer: structure and function. Molecular and cellular biochemistry. 1995; 149-150:301-322.

63. Sharma MR, Koltowski L, Ownbey RT, Tuszynski GP and Sharma MC. Angiogenesis-associated protein annexin II in breast cancer: selective expression in invasive

breast cancer and contribution to tumor invasion and progression. Exp Mol Pathol. 2006; 81(2):146-156.

64. Vishwanatha JK, Chiang Y, Kumble KD, Hollingsworth MA and Pour PM. Enhanced expression of annexin II in human pancreatic carcinoma cells and primary pancreatic cancers. Carcinogenesis. 1993; 14(12):2575-2579.

65. Domoto T, Miyama Y, Suzuki H, Teratani T, Arai K, Sugiyama T, Takayama T, Mugiya S, Ozono S and Nozawa R. Evaluation of S100A10, annexin II and B-FABP expression as markers for renal cell carcinoma. Cancer Sci. 2007; 98(1):77-82.

66. Reeves SA, Chavez-Kappel C, Davis R, Rosenblum M and Israel MA. Developmental regulation of annexin II (Lipocortin 2) in human brain and expression in high grade glioma. Cancer Res. 1992; 52(24):6871-6876.

67. Yeatman TJ, Updyke TV, Kaetzel MA, Dedman JR and Nicolson GL. Expression of annexins on the surfaces of non-metastatic and metastatic human and rodent tumor cells. Clinical & experimental metastasis. 1993; 11(1):37-44.

68. Inokuchi J, Narula N, Yee DS, Skarecky DW, Lau A, Ornstein DK and Tyson DR. Annexin A2 positively contributes to the malignant phenotype and secretion of IL-6 in DU145 prostate cancer cells. International journal of cancer. 2009; 124(1):68-74.

69. Bao H, Jiang M, Zhu M, Sheng F, Ruan J and Ruan C. Overexpression of Annexin II affects the proliferation, apoptosis, invasion and production of proangiogenic factors in multiple myeloma. Int J Hematol. 2009; 90(2):177-185.

70. Diaz VM, Hurtado M, Thomson TM, Reventos J and Paciucci R. Specific interaction of tissue-type plasminogen activator (t-PA) with annexin II on the membrane of pancreatic cancer cells activates plasminogen and promotes invasion in vitro. Gut. 2004; 53(7):993-1000.

71. Liu JW, Shen JJ, Tanzillo-Swarts A, Bhatia B, Maldonado CM, Person MD, Lau SS and Tang DG. Annexin II expression is reduced or lost in prostate cancer cells and its re-expression inhibits prostate cancer cell migration. Oncogene. 2003; 22(10):1475-1485.

72. Sharma M, Ownbey RT and Sharma MC. Breast cancer cell surface annexin II induces cell migration and neoangiogenesis via tPA dependent plasmin generation. Exp Mol Pathol. 2010; 88(2):278-286.

73. Hayes MJ, Shao D, Bailly M and Moss SE. Regulation of actin dynamics by annexin 2. EMBO J. 2006; 25(9):1816-1826.

74. Dassah M, Deora AB, He K and Hajjar KA. The endothelial cell annexin A2 system and vascular fibrinolysis. General physiology and biophysics. 2009; 28 Spec No Focus:F20-28.

75. Kwon M, Caplan JF, Filipenko NR, Choi KS, Fitzpatrick SL, Zhang L and Waisman DM. Identification of annexin II heterotetramer as a plasmin reductase. J Biol Chem. 2002; 277(13):10903-10911.

76. Mai J, Waisman DM and Sloane BF. Cell surface complex of cathepsin B/annexin II tetramer in malignant progression. Biochim Biophys Acta. 2000; 1477(1-2):215-230.

77. Roda O, Valero ML, Peiro S, Andreu D, Real FX and Navarro P. New insights into the tPA-annexin A2 interaction. Is annexin A2 CYS8 the sole requirement for this association? J Biol Chem. 2003; 278(8):5702-5709.

78. Tressler RJ, Updyke TV, Yeatman T and Nicolson GL. Extracellular annexin II is associated with divalent cation-dependent tumor cell-endothelial cell adhesion of metastatic RAW117 large-cell lymphoma cells. Journal of cellular biochemistry. 1993; 53(3):265-276.

79. Myrvang HK, Guo X, Li C and Dekker LV. Protein interactions between surface annexin A2 and S100A10 mediate adhesion of breast cancer cells to microvascular endothelial cells. FEBS letters. 2013; 587(19):3210-3215.

80. Zhang F, Zhang L, Zhang B, Wei X, Yang Y, Qi RZ, Ying G, Zhang N and Niu R. Anxa2 plays a critical role in enhanced invasiveness of the multidrug resistant human breast cancer cells. Journal of proteome research. 2009; 8(11):5041-5047.

81. Shiozawa Y, Havens AM, Jung Y, Ziegler AM, Pedersen EA, Wang J, Wang J, Lu G, Roodman GD, Loberg RD, Pienta KJ and Taichman RS. Annexin II/annexin II receptor axis regulates adhesion, migration, homing, and growth of prostate cancer. Journal of cellular biochemistry. 2008; 105(2):370-380.

82. Lokman NA, Elder AS, Ween MP, Pyragius CE, Hoffmann P, Oehler MK and Ricciardelli C. Annexin A2 is regulated by ovarian cancer-peritoneal cell interactions and promotes metastasis. Oncotarget. 2013; 4(8):1199-1211.

83. Zhao P, Zhang W, Tang J, Ma XK, Dai JY, Li Y, Jiang JL, Zhang SH and Chen ZN. Annexin II promotes invasion and migration of human hepatocellular carcinoma cells in vitro via its interaction with HAb18G/CD147. Cancer Sci. 2010; 101(2):387-395.

84. Cesarman GM, Guevara CA and Hajjar KA. An endothelial cell receptor for plasminogen/tissue plasminogen activator (t-PA). II. Annexin II-mediated enhancement of t-PA-dependent plasminogen activation. J Biol Chem. 1994; 269(33):21198-21203.

85. Ranson M and Andronicos NM. Plasminogen binding and cancer: promises and pitfalls. Frontiers in bioscience : a journal and virtual library. 2003; 8:s294-304.

86. Liu J and Vishwanatha JK. Regulation of nucleo-cytoplasmic shuttling of human annexin A2: a proposed mechanism. Molecular and cellular biochemistry. 2007; 303(1-2):211-220.

87. Eberhard DA, Karns LR, VandenBerg SR and Creutz CE. Control of the nuclear-cytoplasmic partitioning of annexin II by a nuclear export signal and by p11 binding. J Cell Sci. 2001; 114(Pt 17):3155-3166.

88. Fahling M, Mrowka R, Steege A, Nebrich G, Perlewitz A, Persson PB and Thiele BJ. Translational control of collagen prolyl 4-hydroxylase-alpha(I) gene expression under hypoxia. J Biol Chem. 2006; 281(36):26089-26101.

89. Mickleburgh I, Burtle B, Hollas H, Campbell G, Chrzanowska-Lightowlers Z, Vedeler A and Hesketh J. Annexin A2 binds to the localization signal in the 3' untranslated region of c-myc mRNA. FEBS J. 2005; 272(2):413-421.

90. Sun L, Hui AM, Su Q, Vortmeyer A, Kotliarov Y, Pastorino S, Passaniti A, Menon J, Walling J, Bailey R, Rosenblum M, Mikkelsen T and Fine HA. Neuronal and glioma-derived stem cell factor induces angiogenesis within the brain. Cancer Cell. 2006; 9(4):287-300.

91. Murat A, Migliavacca E, Gorlia T, Lambiv WL, Shay T, Hamou MF, de Tribolet N, Regli L, Wick W, Kouwenhoven MC, Hainfellner JA, Heppner FL, Dietrich PY, Zimmer Y, Cairncross JG, Janzer RC, et al. Stem cell-related "self-renewal" signature and high epidermal growth factor receptor expression associated with resistance to concomitant chemoradiotherapy in glioblastoma. J Clin Oncol. 2008; 26(18):3015-3024.

92. Cancer Genome Atlas Research N. Comprehensive genomic characterization defines human glioblastoma genes and core pathways. Nature. 2008; 455(7216):1061-1068.

93. Cancer Genome Atlas Research N, Weinstein JN, Collisson EA, Mills GB, Shaw KR, Ozenberger BA, Ellrott K, Shmulevich I, Sander C and Stuart JM. The Cancer Genome Atlas Pan-Cancer analysis project. Nat Genet. 2013; 45(10):1113-1120.

94. Lee Y, Scheck AC, Cloughesy TF, Lai A, Dong J, Farooqi HK, Liau LM, Horvath S, Mischel PS and Nelson SF. Gene expression analysis of glioblastomas identifies the major molecular basis for the prognostic benefit of younger age. BMC Med Genomics. 2008; 1:52.

95. Verhaak RG, Hoadley KA, Purdom E, Wang V, Qi Y, Wilkerson MD, Miller CR, Ding L, Golub T, Mesirov JP, Alexe G, Lawrence M, O'Kelly M, Tamayo P, Weir BA, Gabriel S, et al. Integrated genomic analysis identifies clinically relevant subtypes of glioblastoma characterized by abnormalities in PDGFRA, IDH1, EGFR, and NF1. Cancer Cell. 2010; 17(1):98-110.

96. Chen CY, Lin YS, Chen CL, Chao PZ, Chiou JF, Kuo CC, Lee FP, Lin YF, Sung YH, Lin YT, Li CF, Chen YJ and Chen CH. Targeting annexin A2 reduces tumorigenesis and therapeutic resistance of nasopharyngeal carcinoma. Oncotarget. 2015; 6(29):26946-26959.

97. Zhai H, Acharya S, Gravanis I, Mehmood S, Seidman RJ, Shroyer KR, Hajjar KA and Tsirka SE. Annexin A2 promotes glioma cell invasion and tumor progression. J Neurosci. 2011; 31(40):14346-14360.

98. Critchley DR, Holt MR, Barry ST, Priddle H, Hemmings L and Norman J. Integrin-mediated cell adhesion: the cytoskeletal connection. Biochem Soc Symp. 1999; 65:79-99.

99. Wozniak MA, Modzelewska K, Kwong L and Keely PJ. Focal adhesion regulation of cell behavior. Biochim Biophys Acta. 2004; 1692(2-3):103-119.

100. Smith JJ, Deane NG, Wu F, Merchant NB, Zhang B, Jiang A, Lu P, Johnson JC, Schmidt C, Bailey CE, Eschrich S, Kis C, Levy S, Washington MK, Heslin MJ, Coffey RJ, et al. Experimentally derived metastasis gene expression profile predicts recurrence and death in patients with colon cancer. Gastroenterology. 2010; 138(3):958-968.

101. Guedj M, Marisa L, de Reynies A, Orsetti B, Schiappa R, Bibeau F, MacGrogan G, Lerebours F, Finetti P, Longy M, Bertheau P, Bertrand F, Bonnet F, Martin AL, Feugeas JP, Bieche I, et al. A refined molecular taxonomy of breast cancer. Oncogene. 2012; 31(9):1196-1206.

102. Okayama H, Kohno T, Ishii Y, Shimada Y, Shiraishi K, Iwakawa R, Furuta K, Tsuta K, Shibata T, Yamamoto S, Watanabe S, Sakamoto H, Kumamoto K, Takenoshita S, Gotoh N, Mizuno H, et al. Identification of genes upregulated in ALK-positive and EGFR/KRAS/ALK-negative lung adenocarcinomas. Cancer Res. 2012; 72(1):100-111.

103. Hou LC, Veeravagu A, Hsu AR and Tse VC. Recurrent glioblastoma multiforme: a review of natural history and management options. Neurosurg Focus. 2006; 20(4):E5.

104. Piccirillo SG, Dietz S, Madhu B, Griffiths J, Price SJ, Collins VP and Watts C. Fluorescence-guided surgical sampling of glioblastoma identifies phenotypically distinct tumour-initiating cell populations in the tumour mass and margin. Br J Cancer. 2012; 107(3):462-468.

105. Rampazzo E, Della Puppa A, Frasson C, Battilana G, Bianco S, Scienza R, Basso G and Persano L. Phenotypic and functional characterization of Glioblastoma cancer stem cells identified through 5-aminolevulinic acid-assisted surgery [corrected]. Journal of neuro-oncology. 2014; 116(3):505-513.

106. Zheng L, Foley K, Huang L, Leubner A, Mo G, Olino K, Edil BH, Mizuma M, Sharma R, Le DT, Anders RA, Illei PB, Van Eyk JE, Maitra A, Laheru D and Jaffee EM. Tyrosine 23 phosphorylation-dependent cell-surface localization of annexin A2 is required for invasion and metastases of pancreatic cancer. PLoS One. 2011; 6(4):e19390.

107. Emoto K, Yamada Y, Sawada H, Fujimoto H, Ueno M, Takayama T, Kamada K, Naito A, Hirao S and Nakajima Y. Annexin II overexpression correlates with stromal tenascin-C overexpression: a prognostic marker in colorectal carcinoma. Cancer. 2001; 92(6):1419-1426.

108. Ohno Y, Izumi M, Kawamura T, Nishimura T, Mukai K and Tachibana M. Annexin II represents metastatic potential in clear-cell renal cell carcinoma. Br J Cancer. 2009; 101(2):287-294.

109. Liu Y, Wang Z, Jiang M, Dai L, Zhang W, Wu D and Ruan C. The expression of annexin II and its role in the fibrinolytic activity in acute promyelocytic leukemia. Leuk Res. 2011; 35(7):879-884.

110. Gao H, Yu B, Yan Y, Shen J, Zhao S, Zhu J, Qin W and Gao Y. Correlation of expression levels of ANXA2, PGAM1, and CALR with glioma grade and prognosis. J Neurosurg. 2013; 118(4):846-853.

111. Iwadate Y, Sakaida T, Hiwasa T, Nagai Y, Ishikura H, Takiguchi M and Yamaura A. Molecular classification and survival prediction in human gliomas based on proteome analysis. Cancer Res. 2004; 64(7):2496-2501.

112. Nygaard SJ, Haugland HK, Kristoffersen EK, Lund-Johansen M, Laerum OD and Tysnes OB. Expression of annexin II in glioma cell lines and in brain tumor biopsies. Journal of neuro-oncology. 1998; 38(1):11-18.

113. Mussunoor S and Murray GI. The role of annexins in tumour development and progression. J Pathol. 2008; 216(2):131-140.

114. Arjona D, Rey JA and Taylor SM. Early genetic changes involved in low-grade astrocytic tumor development. Curr Mol Med. 2006; 6(6):645-650.

115. Phillips HS, Kharbanda S, Chen R, Forrest WF, Soriano RH, Wu TD, Misra A, Nigro JM, Colman H, Soroceanu L, Williams PM, Modrusan Z, Feuerstein BG and Aldape K. Molecular subclasses of high-grade glioma predict prognosis, delineate a pattern of disease progression, and resemble stages in neurogenesis. Cancer Cell. 2006; 9(3):157-173.

116. Watanabe K, Tachibana O, Sata K, Yonekawa Y, Kleihues P and Ohgaki H. Overexpression of the EGF receptor and p53 mutations are mutually exclusive in the evolution of primary and secondary glioblastomas. Brain Pathol. 1996; 6(3):217-223; discussion 223-214.

117. Yan H, Parsons DW, Jin G, McLendon R, Rasheed BA, Yuan W, Kos I, Batinic-Haberle I, Jones S, Riggins GJ, Friedman H, Friedman A, Reardon D, Herndon J, Kinzler KW, Velculescu VE, et al. IDH1 and IDH2 mutations in gliomas. N Engl J Med. 2009; 360(8):765-773.

118. Tatenhorst L, Rescher U, Gerke V and Paulus W. Knockdown of annexin 2 decreases migration of human glioma cells in vitro. Neuropathol Appl Neurobiol. 2006; 32(3):271-277.

119. Wang CY, Chen CL, Tseng YL, Fang YT, Lin YS, Su WC, Chen CC, Chang KC, Wang YC and Lin CF. Annexin A2 silencing induces G2 arrest of non-small cell lung cancer cells through p53-dependent and -independent mechanisms. J Biol Chem. 2012; 287(39):32512-32524.

120. Wang YQ, Zhang F, Tian R, Ji W, Zhou Y, Sun XM, Liu Y, Wang ZY and Niu RF. Tyrosine 23 Phosphorylation of Annexin A2 Promotes Proliferation, Invasion, and Stat3 Phosphorylation in the Nucleus of Human Breast Cancer SK-BR-3 Cells. Cancer Biol Med. 2012; 9(4):248-253.

121. Wu B, Zhang F, Yu M, Zhao P, Ji W, Zhang H, Han J and Niu R. Up-regulation of Anxa2 gene promotes proliferation and invasion of breast cancer MCF-7 cells. Cell Prolif. 2012; 45(3):189-198.

122. Rescher U, Ludwig C, Konietzko V, Kharitonenkov A and Gerke V. Tyrosine phosphorylation of annexin A2 regulates Rho-mediated actin rearrangement and cell adhesion. J Cell Sci. 2008; 121(Pt 13):2177-2185.

123. Onishi M, Ichikawa T, Kurozumi K, Inoue S, Maruo T, Otani Y, Fujii K, Ishida J, Shimazu Y, Yoshida K, Michiue H, Antonio Chiocca E and Date I. Annexin A2 regulates angiogenesis and invasion phenotypes of malignant glioma. Brain Tumor Pathol. 2015; 32(3):184-194.

124. Anji A and Kumari M. A cis-acting region in the N-methyl-d-aspartate R1 3'-untranslated region interacts with the novel RNA-binding proteins beta subunit of alpha glucosidase II and annexin A2--effect of chronic ethanol exposure in vivo. Eur J Neurosci. 2011; 34(8):1200-1211.

125. Vedeler A, Hollas H, Grindheim AK and Raddum AM. Multiple roles of annexin A2 in post-transcriptional regulation of gene expression. Curr Protein Pept Sci. 2012; 13(4):401-412.

126. Raizer JJ, Chandler JP, Ferrarese R, Grimm SA, Levy RM, Muro K, Rosenow J, Helenowski I, Rademaker A, Paton M and Bredel M. A phase II trial evaluating the effects and intra-tumoral penetration of bortezomib in patients with recurrent malignant gliomas. Journal of neuro-oncology. 2016; 129(1):139-146.

127. Yan X, Liang F, Li D and Zheng J. Ouabain elicits human glioblastoma cells apoptosis by generating reactive oxygen species in ERK-p66SHC-dependent pathway. Molecular and cellular biochemistry. 2015; 398(1-2):95-104.

128. Rampazzo E, Persano L, Pistollato F, Moro E, Frasson C, Porazzi P, Della Puppa A, Bresolin S, Battilana G, Indraccolo S, Te Kronnie G, Argenton F, Tiso N and Basso G. Wnt activation promotes neuronal differentiation of glioblastoma. Cell Death Dis. 2013; 4:e500.

129. Opgen-Rhein R and Strimmer K. Accurate ranking of differentially expressed genes by a distribution-free shrinkage approach. Stat Appl Genet Mol Biol. 2007; 6:Article9.

130. Subramanian A, Tamayo P, Mootha VK, Mukherjee S, Ebert BL, Gillette MA, Paulovich A, Pomeroy SL, Golub TR, Lander ES and Mesirov JP. Gene set enrichment analysis: a knowledge-based approach for interpreting genome-wide expression profiles. Proc Natl Acad Sci U S A. 2005; 102(43):15545-15550.

131. Merico D, Isserlin R, Stueker O, Emili A and Bader GD. Enrichment map: a network-based method for gene-set enrichment visualization and interpretation. PLoS One. 2010; 5(11):e13984.

132. Eppert K, Takenaka K, Lechman ER, Waldron L, Nilsson B, van Galen P, Metzeler KH, Poeppl A, Ling V, Beyene J, Canty AJ, Danska JS, Bohlander SK, Buske C, Minden MD, Golub TR, et al. Stem cell gene expression programs influence clinical outcome in human leukemia. Nat Med. 2011; 17(9):1086-1093.

## 11. SUPPLEMENTARY TABLES

### 11.1 Newman-Keuls multiple comparisons test from GSE4290.

| Comparison | p value |
|---|---|
| Normal Brain vs. Glioma II | p<0.05 |
| Normal Brain vs. Glioma III | p<0.001 |
| Normal Brain vs. GBM | p<0.0001 |
| Glioma II vs. Glioma III | p<0.05 |
| Glioma II vs. GBM | p<0.0001 |
| Glioma III vs. GBM | p<0.001 |

### 11.2 Clinical characteristics of glioma patients included in survival and multivariate analyses.

| *Sample ID* | *Age (y)* | *Gen-der* | *Grade* | *Occurence* | *Site of Lesion* | *Performance Score* | *Methylation of MGMT promoter* | *IDH mutation* | *Surgery* |
|---|---|---|---|---|---|---|---|---|---|
| **HuTuP07** | 66 | m | 4 | primary | frontal | 1 | u | wt | GTR |
| **HuTuP10** | 75 | f | 4 | primary | temporal | n/a | n/a | n/a | GTR |
| **HuTuP14** | 39 | f | 4 | primary | temporal | 0 | u | wt | GTR |
| **HuTuP16** | 66 | m | 4 | primary | parietal | n/a | n/a | n/a | GTR |
| **HuTuP17** | 65 | f | 3 | primary | parietal | 1 | m | mut | GTR |
| **HuTuP20** | 60 | m | 4 | primary | frontal | 1 | m | wt | GTR |
| **HuTuP26** | 62 | m | 4 | primary | temporal | n/a | n/a | n/a | GTR |
| **HuTuP31** | 53 | m | 4 | primary | frontal | 0 | m | mut | GTR |
| **HuTuP34** | 57 | f | 4 | primary | occipital | 1 | u | wt | GTR |
| **HuTuP36** | 49 | f | 4 | primary | temporal | n/a | n/a | n/a | GTR |
| **HuTuP37** | 79 | f | 4 | primary | temporal | 0 | m | wt | GTR |
| **HuTuP40** | 68 | f | 4 | primary | parietal | n/a | n/a | n/a | STR |
| **HuTuP47** | 81 | f | 4 | primary | frontal | n/a | n/a | n/a | GTR |
| **HuTuP53** | 70 | m | 4 | primary | parietal | n/a | n/a | n/a | GTR |
| **HuTuP55** | 62 | m | 4 | primary | frontal | 1 | m | wt | GTR |
| **HuTuP56** | 50 | m | 4 | primary | frontal | 1 | u | wt | GTR |
| **HuTuP58** | 63 | f | 4 | primary | temporal | 3 | u | wt | GTR |
| **HuTuP60** | 62 | m | 4 | primary | parietal | 2 | m | wt | STR |
| **HuTuP63** | 40 | f | 4 | secondary | parietal | 0 | u | mut | GTR |
| **HuTuP65** | 56 | f | 4 | secondary | temporal | 0 | m | mut | GTR |
| **HuTuP67** | 52 | m | 4 | primary | occipital | 1 | u | wt | GTR |
| **HuTuP69** | 47 | m | 4 | secondary | frontal | 1 | u | wt | GTR |
| **HuTuP70** | 43 | m | 4 | primary | frontal | 2 | u | wt | GTR |
| **HuTuP77** | 62 | m | 2 | primary | occipital | 1 | m | mut | GTR |
| **HuTuP82** | 53 | m | 4 | primary | frontal | 0 | m | wt | GTR |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **HuTuP83** | 57 | m | 4 | primary | frontal | 2 | u | wt | GTR |
| **HuTuP88** | 71 | m | 4 | primary | frontal | 2 | u | wt | GTR |
| **HuTuP89** | 47 | f | 3 | primary | parietal | 0 | m | mut | GTR |
| **HuTuP91** | 38 | f | 2 | primary | parietal | 2 | m | wt | GTR |
| **HuTuP95** | 68 | m | 4 | primary | frontal | 1 | m | wt | GTR |
| **HuTuP97** | 52 | m | 2 | primary | frontal | 1 | u | wt | GTR |
| **HuTuP99** | 42 | m | 4 | primary | temporal | 3 | n/a | n/a | GTR |
| **HutuP100** | 59 | m | 4 | primary | temporal | 0 | n/a | n/a | STR |
| **HuTuP102** | 42 | f | 2 | primary | temporal | 0 | m | mut | GTR |
| **HuTuP102** | 42 | f | 4 | primary | temporal | 0 | m | mut | GTR |
| **HuTuP106** | 74 | m | 4 | primary | occipital | 0 | m | mut | GTR |
| **HuTuP107** | 67 | m | 4 | primary | parietal | 2 | u | wt | GTR |
| **HuTuP108** | 64 | m | 4 | primary | frontal | 0 | u | wt | GTR |
| **HuTuP109** | 60 | m | 4 | primary | frontal | 1 | u | wt | GTR |
| **HuTuP113** | 50 | m | 4 | secondary | parietal | 1 | u | wt | GTR |
| **HuTuP116** | 65 | m | 4 | primary | occipital | 1 | u | wt | STR |
| **HuTuP117** | 40 | m | 4 | secondary | frontal | n/a | n/a | n/a | GTR |
| **HuTuP119** | 56 | m | 4 | primary | frontal | 3 | u | wt | GTR |
| **HuTuP120** | 56 | m | 4 | primary | temporal | 2 | u | wt | GTR |
| **HuTuP121** | 53 | f | 4 | primary | occipital | 0 | m | wt | GTR |
| **HuTuP122** | 44 | f | 4 | primary | frontal | 0 | m | mut | GTR |
| **HuTuP127** | 75 | m | 4 | secondary | occipital | 2 | m | wt | GTR |
| **HuTuP129** | 68 | m | 4 | primary | parietal | 0 | m | wt | STR |
| **HuTuP135** | 50 | f | 4 | primary | parietal | 0 | u | wt | GTR |
| **HuTuP136** | 70 | f | 4 | primary | parietal | 3 | u | wt | GTR |
| **HuTuP138** | 71 | m | 4 | primary | temporal | 1 | m | wt | GTR |
| **HuTuP142** | 65 | m | 4 | primary | temporal | 3 | u | wt | GTR |
| **HuTuP145** | 51 | m | 4 | primary | parietal | 0 | u | wt | GTR |
| **HuTuP147** | 65 | m | 4 | primary | parietal | 2 | u | wt | GTR |
| **HuTuP151** | 52 | f | 4 | primary | frontal | n/a | n/a | n/a | GTR |
| **HuTuP152** | 67 | m | 4 | primary | frontal | 1 | u | wt | GTR |
| **HuTuP153** | 79 | f | 4 | primary | temporal | 2 | n/a | n/a | GTR |
| **HuTuP154** | 68 | f | 4 | primary | temporal | 1 | u | wt | GTR |
| **HuTuP155** | 49 | f | 4 | primary | temporal | 1 | u | wt | GTR |

(y): years; m: male, f: female; u: unmethylated, m: methylated; wt: wild type, mut: mutated, GTR: gross total removal (>90%), STR: sub-total removal (<90%). All patients underwent standard Stupp protocol of treatment.

## 11.3 Differentially expressed genes in common between TGCA and GSE13041 datasets derived from comparison between ANXA2 Very Low and ANXA2 High patients.

| Genes | Regulation | Genes | Regulation | Genes | Regulation |
|---|---|---|---|---|---|
| *ABCA1* | Up | *CA3* | Up | *COL4A1* | Up |
| *ABCC3* | Up | *CA9* | Up | *COL4A2* | Up |
| *ACSL1* | Up | *CALD1* | Up | *COL5A1* | Up |
| *ACTA2* | Up | *CAPG* | Up | *COL5A2* | Up |
| *ACTN1* | Up | *CASP1* | Up | *COL6A1* | Up |
| *ADAM12* | Up | *CAV1* | Up | *COL6A2* | Up |
| *ADAM28* | Up | *CAV2* | Up | *COL6A3* | Up |
| *ADAMTS1* | Up | *CBR1* | Up | *COL8A2* | Up |
| *ADM* | Up | *CCDC109B* | Up | *COLEC12* | Up |
| *AEBP1* | Up | *CCL18* | Up | *CP* | Up |
| *AHNAK2* | Up | *CCL2* | Up | *CPVL* | Up |
| *AHR* | Up | *CCL20* | Up | *CRIP1* | Up |
| *AIM1* | Up | *CCR1* | Up | *CRISPLD2* | Up |
| *AKAP12* | Up | *CD14* | Up | *CSRP2* | Up |
| *ALOX5* | Up | *CD163* | Up | *CSTA* | Up |
| *ALOX5AP* | Up | *CD44* | Up | *CTGF* | Up |
| *AMIGO2* | Up | *CD53* | Up | *CTSC* | Up |
| *ANGPT2* | Up | *CD58* | Up | *CTSH* | Up |
| *ANGPTL4* | Up | *CD74* | Up | *CTSK* | Up |
| *ANXA1* | Up | *CD86* | Up | *CTSS* | Up |
| *ANXA2* | Up | *CD93* | Up | *CTSZ* | Up |
| *ANXA4* | Up | *CD99* | Up | *CXCL10* | Up |
| *APOC1* | Up | *CDH11* | Up | *CXCL11* | Up |
| *AQP9* | Up | *CDH6* | Up | *CXCL14* | Up |
| *ARL4C* | Up | *CDKN1A* | Up | *CXCL2* | Up |
| *ASPN* | Up | *CEBPD* | Up | *CXCL3* | Up |
| *ATF3* | Up | *CECR1* | Up | *CXCL5* | Up |
| *BCAT1* | Up | *CFB* | Up | *CXCR4* | Up |
| *BCL2A1* | Up | *CFI* | Up | *CYBB* | Up |
| *BHLHE40* | Up | *CH25H* | Up | *CYP1B1* | Up |
| *BIRC3* | Up | *CHI3L1* | Up | *CYR61* | Up |
| *BST2* | Up | *CHI3L2* | Up | *DAB2* | Up |
| *C10orf10* | Up | *CHRNA9* | Up | *DCN* | Up |
| *C1QA* | Up | *CHST2* | Up | *DIRAS3* | Up |
| *C1QB* | Up | *CHST7* | Up | *DOK5* | Up |
| *C1R* | Up | *CLEC2B* | Up | *DPYD* | Up |
| *C1RL* | Up | *CLEC5A* | Up | *DPYSL3* | Up |
| *C1S* | Up | *CLIC4* | Up | *DSE* | Up |
| *C21orf62* | Up | *CLU* | Up | *DUSP1* | Up |
| *C3* | Up | *CNGA3* | Up | *DUSP4* | Up |
| *C5AR1* | Up | *COL15A1* | Up | *DUSP5* | Up |
| *C8orf4* | Up | *COL1A1* | Up | *DUSP6* | Up |
| *CA12* | Up | *COL1A2* | Up | *ECHDC2* | Up |
| *CA2* | Up | *COL3A1* | Up | *ECM2* | Up |

| | |
|---|---|
| *EFEMP1* | Up |
| *EFEMP2* | Up |
| *EFHC2* | Up |
| *EFNB2* | Up |
| *EGR1* | Up |
| *ELOVL2* | Up |
| *EMP1* | Up |
| *EMP3* | Up |
| *ENO1* | Up |
| *ERAP2* | Up |
| *ETV5* | Up |
| *F13A1* | Up |
| *F2RL1* | Up |
| *F3* | Up |
| *FABP5* | Up |
| *FABP7* | Up |
| *FAM129A* | Up |
| *FAS* | Up |
| *FBLN1* | Up |
| *FBLN5* | Up |
| *FBN1* | Up |
| *FCER1G* | Up |
| *FCGBP* | Up |
| *FCGR1B* | Up |
| *FCGR2A* | Up |
| *FCGR2B* | Up |
| *FCGR2C* | Up |
| *FERMT2* | Up |
| *FJX1* | Up |
| *FKBP5* | Up |
| *FLNC* | Up |
| *FMOD* | Up |
| *FN1* | Up |
| *FOS* | Up |
| *FPR1* | Up |
| *FXYD5* | Up |
| *FZD7* | Up |
| *G0S2* | Up |
| *GADD45B* | Up |
| *GAP43* | Up |
| *GBP1* | Up |
| *GBP2* | Up |
| *GCH1* | Up |
| *GDF15* | Up |
| *GEM* | Up |
| *GFPT2* | Up |
| *GLIPR1* | Up |
| *GPNMB* | Up |
| *NDRG1* | Up |
| *NES* | Up |

| | |
|---|---|
| *GRB10* | Up |
| *GSAP* | Up |
| *HAMP* | Up |
| *HAS2* | Up |
| *HCK* | Up |
| *HCLS1* | Up |
| *HILPDA* | Up |
| *HK2* | Up |
| *HLA-DMA* | Up |
| *HLA-DMB* | Up |
| *HLA-DPA1* | Up |
| *HLA-DPB1* | Up |
| *HLA-DQB1* | Up |
| *HLA-DRA* | Up |
| *HMOX1* | Up |
| *HP* | Up |
| *HRH1* | Up |
| *HSPA6* | Up |
| *ICAM1* | Up |
| *IER3* | Up |
| *IFI16* | Up |
| *IFI30* | Up |
| *IFI35* | Up |
| *IFI44* | Up |
| *IFITM1* | Up |
| *IGF2BP2* | Up |
| *IGFBP2* | Up |
| *IGFBP3* | Up |
| *IGFBP4* | Up |
| *IGFBP5* | Up |
| *IL13RA1* | Up |
| *IL1R1* | Up |
| *IL1R2* | Up |
| *IL1RAP* | Up |
| *IL6* | Up |
| *IL8* | Up |
| *IQCG* | Up |
| *IQGAP1* | Up |
| *ITGA7* | Up |
| *ITGAM* | Up |
| *ITGB2* | Up |
| *ITGB4* | Up |
| *KCNE4* | Up |
| *KCTD12* | Up |
| *KIAA0226L* | Up |
| *KYNU* | Up |
| *LAMA2* | Up |
| *LAMA4* | Up |
| *RARRES1* | Up |
| *RARRES2* | Up |

| | |
|---|---|
| *LAMB1* | Up |
| *LAPTM5* | Up |
| *LDLR* | Up |
| *LEF1* | Up |
| *LGALS3* | Up |
| *LIF* | Up |
| *LMO2* | Up |
| *LOX* | Up |
| *LOXL1* | Up |
| *LOXL2* | Up |
| *LPHN2* | Up |
| *LRRFIP1* | Up |
| *LTF* | Up |
| *LUM* | Up |
| *LY96* | Up |
| *LYPD1* | Up |
| *LYVE1* | Up |
| *LYZ* | Up |
| *LZTS1* | Up |
| *MAFB* | Up |
| *MAFF* | Up |
| *MAN1A1* | Up |
| *MAN1C1* | Up |
| *MAOB* | Up |
| *MDFIC* | Up |
| *MDK* | Up |
| *MEOX2* | Up |
| *MEST* | Up |
| *MFAP2* | Up |
| *MFAP4* | Up |
| *MGP* | Up |
| *MMP7* | Up |
| *MMP9* | Up |
| *MNDA* | Up |
| *MOXD1* | Up |
| *MRC1* | Up |
| *MREG* | Up |
| *MRPS17* | Up |
| *MS4A4A* | Up |
| *MS4A6A* | Up |
| *MSR1* | Up |
| *MT1E* | Up |
| *MX1* | Up |
| *MXRA5* | Up |
| *MYL9* | Up |
| *MYOF* | Up |
| *NAMPT* | Up |
| *NCF2* | Up |
| *STC1* | Up |
| *STEAP1* | Up |

| | |
|---|---|
| *NID2* | Up |
| *NNMT* | Up |
| *NPL* | Up |
| *NR2E1* | Up |
| *NRP1* | Up |
| *NUPR1* | Up |
| *OLFML2B* | Up |
| *OLFML3* | Up |
| *OSBPL3* | Up |
| *OXTR* | Up |
| *P4HA2* | Up |
| *PCOLCE* | Up |
| *PCOLCE2* | Up |
| *PCSK5* | Up |
| *PDGFA* | Up |
| *PDGFD* | Up |
| *PDLIM1* | Up |
| *PDLIM3* | Up |
| *PDLIM4* | Up |
| *PDPN* | Up |
| *PHLDA2* | Up |
| *PI3* | Up |
| *PLA2G2A* | Up |
| *PLA2G5* | Up |
| *PLAGL1* | Up |
| *PLAT* | Up |
| *PLAU* | Up |
| *PLAUR* | Up |
| *PLIN2* | Up |
| *PLP2* | Up |
| *PLTP* | Up |
| *PMP22* | Up |
| *POSTN* | Up |
| *PPIC* | Up |
| *PROS1* | Up |
| *PRRX1* | Up |
| *PRSS23* | Up |
| *PSRC1* | Up |
| *PTGER4* | Up |
| *PTGS1* | Up |
| *PTGS2* | Up |
| *PTPRC* | Up |
| *PTRF* | Up |
| *PTX3* | Up |
| *PXDN* | Up |
| *PYGL* | Up |
| *ZYX* | Up |

| **Genes** | **Regulation** |
|---|---|
| *ABAT* | Down |

| | |
|---|---|
| *RARRES3* | Up |
| *RBM47* | Up |
| *RBP1* | Up |
| *RBPMS* | Up |
| *RCAN1* | Up |
| *RFTN1* | Up |
| *RGS1* | Up |
| *RGS2* | Up |
| *RNASE6* | Up |
| *S100A10* | Up |
| *S100A11* | Up |
| *S100A13* | Up |
| *S100A4* | Up |
| *S100A8* | Up |
| *S100A9* | Up |
| *SAMSN1* | Up |
| *SDC2* | Up |
| *SDC4* | Up |
| *SEC61G* | Up |
| *SEL1L3* | Up |
| *SERPINA1* | Up |
| *SERPINA3* | Up |
| *SERPINB1* | Up |
| *SERPINE1* | Up |
| *SERPING1* | Up |
| *SFRP4* | Up |
| *SKAP2* | Up |
| *SLAMF8* | Up |
| *SLC16A3* | Up |
| *SLC2A10* | Up |
| *SLC2A3* | Up |
| *SLC2A5* | Up |
| *SLC39A8* | Up |
| *SLN* | Up |
| *SLPI* | Up |
| *SNAI2* | Up |
| *SOCS2* | Up |
| *SPP1* | Up |
| *SPRY1* | Up |
| *SPRY2* | Up |
| *SPRY4* | Up |
| *SQRDL* | Up |
| *SRGN* | Up |
| *SRPX* | Up |
| *SRPX2* | Up |
| *STAB1* | Up |
| **Genes** | **Regulation** |
| *CDKN1C* | Down |
| *CHD7* | Down |
| *CHGA* | Down |

| | |
|---|---|
| *STEAP3* | Up |
| *SVIL* | Up |
| *SYNC* | Up |
| *SYNM* | Up |
| *SYNPO* | Up |
| *SYPL1* | Up |
| *TAGLN* | Up |
| *TDO2* | Up |
| *TFPI2* | Up |
| *TGFB2* | Up |
| *TGFBI* | Up |
| *TGFBR2* | Up |
| *THBD* | Up |
| *THBS1* | Up |
| *THBS2* | Up |
| *THEMIS2* | Up |
| *TIMP1* | Up |
| *TM4SF1* | Up |
| *TMEM158* | Up |
| *TMEM176B* | Up |
| *TMEM45A* | Up |
| *TNC* | Up |
| *TNFAIP2* | Up |
| *TNFAIP3* | Up |
| *TNFAIP6* | Up |
| *TNFAIP8* | Up |
| *TNFSF10* | Up |
| *TNFSF13* | Up |
| *TOM1L1* | Up |
| *TPM2* | Up |
| *TREM1* | Up |
| *TREM2* | Up |
| *TRIM22* | Up |
| *TUBB6* | Up |
| *TYROBP* | Up |
| *UPP1* | Up |
| *VAMP3* | Up |
| *VAMP5* | Up |
| *VAMP8* | Up |
| *VCAM1* | Up |
| *VEGFA* | Up |
| *VOPP1* | Up |
| *VSIG4* | Up |
| *WWTR1* | Up |
| *YME1L1* | Up |
| *ZFP36* | Up |
| **Genes** | **Regulation** |
| *FXYD6* | Down |
| *FXYD7* | Down |
| *GABBR1* | Down |

| | |
|---|---|
| *ABCG2* | Down |
| *ACTL6B* | Down |
| *ADAM22* | Down |
| *ADCY1* | Down |
| *ADCY2* | Down |
| *AK5* | Down |
| *AKAP7* | Down |
| *ALCAM* | Down |
| *ALDH5A1* | Down |
| *ALDOC* | Down |
| *AMOTL2* | Down |
| *AMPH* | Down |
| *ANK3* | Down |
| *APBA2* | Down |
| *ARHGEF4* | Down |
| *ARPP21* | Down |
| *ASCL1* | Down |
| *ASTN1* | Down |
| *ASTN2* | Down |
| *ATP1A2* | Down |
| *ATP2B2* | Down |
| *ATP6V1G2* | Down |
| *ATP8A1* | Down |
| *ATRNL1* | Down |
| *BAALC* | Down |
| *BAI3* | Down |
| *BASP1* | Down |
| *BCAN* | Down |
| *BCAS1* | Down |
| *BEX1* | Down |
| *BRINP1* | Down |
| BRINP2 | Down |
| *C14orf132* | Down |
| *C1QL1* | Down |
| *C1orf61* | Down |
| *CA10* | Down |
| *CACNA1A* | Down |
| *CADM3* | Down |
| *CAMTA1* | Down |
| *CAPN3* | Down |
| *CCK* | Down |
| *CDH10* | Down |
| *CDK5R* | Down |
| *LAMP5* | Down |
| *LDB2* | Down |
| *LDOC1* | Down |
| *LPHN3* | Down |
| *LPPR1* | Down |

| | |
|---|---|
| *CHGB* | Down |
| *CHRDL1* | Down |
| *CLASP2* | Down |
| *CLGN* | Down |
| *CNTN1* | Down |
| *CNTNAP2* | Down |
| *CSGALNACT1* | Down |
| *CSPG5* | Down |
| *CTNNA2* | Down |
| *CTNND2* | Down |
| *CXorf57* | Down |
| *DAAM2* | Down |
| *DCX* | Down |
| *DIRAS2* | Down |
| *DLL3* | Down |
| *DNAJC6* | Down |
| *DNM1* | Down |
| *DNM3* | Down |
| *DPP6* | Down |
| *DPY19L2P2* | Down |
| *DPYSL4* | Down |
| *DYNC1I1* | Down |
| *EEF1A2* | Down |
| *EFHD1* | Down |
| *ELAVL4* | Down |
| *ELMO1* | Down |
| *EPHB1* | Down |
| *ERBB3* | Down |
| *ERBB4* | Down |
| *ERC2* | Down |
| *ETNPPL* | Down |
| *EYA1* | Down |
| *FA2H* | Down |
| *FAIM2* | Down |
| *FAM107A* | Down |
| *FAM171A1* | Down |
| *FAM5C* | Down |
| *FERMT1* | Down |
| *FGF13* | Down |
| *FGF14* | Down |
| *FGF9* | Down |
| *FGFR2* | Down |
| *FUT9* | Down |
| *NTSR2* | Down |
| *OLFM1* | Down |
| *OLIG2* | Down |
| *OMG* | Down |
| *OPCML* | Down |

| | |
|---|---|
| *GABBR2* | Down |
| *GABRA2* | Down |
| *GABRB1* | Down |
| *GAD1* | Down |
| *GAD2* | Down |
| *GNAI1* | Down |
| *GNAL* | Down |
| *GNAO1* | Down |
| *GNAS* | Down |
| *GNG3* | Down |
| *GNG4* | Down |
| *GOLGA8A* | Down |
| *GPM6A* | Down |
| *GPR17* | Down |
| *GPRASP1* | Down |
| *GPRC5B* | Down |
| *GRIA2* | Down |
| *GRIA3* | Down |
| *GRIK2* | Down |
| *GRM3* | Down |
| *HLF* | Down |
| *HMP19* | Down |
| *HPCA* | Down |
| *HPCAL4* | Down |
| *HRASLS* | Down |
| *HSPA12A* | Down |
| *INA* | Down |
| *ITM2A* | Down |
| *KAT2B* | Down |
| *KBTBD11* | Down |
| *KCNB1* | Down |
| *KCND2* | Down |
| *KCND3* | Down |
| *KCNK1* | Down |
| *KCNN2* | Down |
| *KCNN3* | Down |
| *KCNQ2* | Down |
| *KIAA1107* | Down |
| *KIF1A* | Down |
| *KIF5C* | Down |
| *KIT* | Down |
| *KLRC3* | Down |
| *L1CAM* | Down |
| *RTN1* | Down |
| *RUFY3* | Down |
| *RUNDC3A* | Down |
| *RUNX1T1* | Down |
| *S100A1* | Down |

| | |
|---|---|
| *LRP4* | Down |
| *LRRTM2* | Down |
| *LY6H* | Down |
| *MAG* | Down |
| *MAP1A* | Down |
| *MAP2* | Down |
| *MAPT* | Down |
| *MBP* | Down |
| *MEG3* | Down |
| *MLLT11* | Down |
| *MMP16* | Down |
| *MOBP* | Down |
| *MOG* | Down |
| *MPPED2* | Down |
| *MYCN* | Down |
| *MYO10* | Down |
| *MYRF* | Down |
| *MYT1L* | Down |
| *NAP1L2* | Down |
| *NAP1L3* | Down |
| *NAV3* | Down |
| *NBEA* | Down |
| *NCALD* | Down |
| *NCAM1* | Down |
| *NCAN* | Down |
| *NDN* | Down |
| *NDRG2* | Down |
| *NDRG4* | Down |
| *NEFL* | Down |
| *NEFM* | Down |
| *NET1* | Down |
| *NEUROD1* | Down |
| *NKX2-2* | Down |
| *NMNAT2* | Down |
| *NPY* | Down |
| *NRGN* | Down |
| *NRXN1* | Down |
| *NRXN2* | Down |
| *NRXN3* | Down |
| *NTM* | Down |
| *NTRK2* | Down |
| *NTRK3* | Down |
| *LAMP5* | Down |
| *TF* | Down |
| *THSD7A* | Down |
| *TMEM100* | Down |
| *TMEM246* | Down |
| *TMEM35* | Down |
| *TOX* | Down |
| *TOX3* | Down |

| | |
|---|---|
| *PAIP1* | Down |
| *PAK3* | Down |
| *PAQR6* | Down |
| *PCDH17* | Down |
| *PCLO* | Down |
| *PCSK1N* | Down |
| *PCSK2* | Down |
| *PDE4DIP* | Down |
| *PDE8B* | Down |
| *PDGFRA* | Down |
| *PDYN* | Down |
| *PEG10* | Down |
| *PEG3* | Down |
| *PHLPP1* | Down |
| *PID1* | Down |
| *PKIA* | Down |
| *PKP4* | Down |
| *PLCB1* | Down |
| *PLEKHB1* | Down |
| *PLLP* | Down |
| *PLP1* | Down |
| *PNMAL1* | Down |
| *PPP1R16B* | Down |
| *PPP1R1A* | Down |
| *PRKCB* | Down |
| *PRKCZ* | Down |
| *PSAT1* | Down |
| *PSD3* | Down |
| *PTCH1* | Down |
| *PTPRD* | Down |
| *RAB33A* | Down |
| *RAB6B* | Down |
| *RALYL* | Down |
| *RAP1GAP* | Down |
| *RAPGEF2* | Down |
| *RAPGEF4* | Down |
| *RAPGEF5* | Down |
| *REEP1* | Down |
| *RGCC* | Down |
| *RGS5* | Down |
| *RGS7* | Down |
| *RIMS3* | Down |
| *NTSR2* | Down |
| *TRIL* | Down |
| *TSFM* | Down |
| *TSPAN7* | Down |
| *TTYH1* | Down |
| *TUBB4A* | Down |
| *TUSC3* | Down |
| *UGT8* | Down |

| | |
|---|---|
| *SATB1* | Down |
| *SCG3* | Down |
| *SCN1A* | Down |
| *SCN3A* | Down |
| *SCN3B* | Down |
| *SEMA6A* | Down |
| *SERPINE2* | Down |
| *SERPINI1* | Down |
| *SEZ6L* | Down |
| *SH3GL2* | Down |
| *SH3GL3* | Down |
| *SLC12A5* | Down |
| *SLC14A1* | Down |
| *SLC15A2* | Down |
| *SLC16A7* | Down |
| *SLC17A6* | Down |
| *SLC1A1* | Down |
| *SLC24A3* | Down |
| *SLC38A1* | Down |
| *SLC6A1* | Down |
| *SLITRK3* | Down |
| *SLITRK5* | Down |
| *SNAP25* | Down |
| *SNAP91* | Down |
| *SOBP* | Down |
| *SOX10* | Down |
| *SOX4* | Down |
| *SPEN* | Down |
| *SPOCK1* | Down |
| *SPON1* | Down |
| *SST* | Down |
| *ST18* | Down |
| *STMN2* | Down |
| *STMN4* | Down |
| *STXBP1* | Down |
| *SUSD5* | Down |
| *SYBU* | Down |
| *SYN1* | Down |
| *SYNGR3* | Down |
| *SYT1* | Down |
| *TAGLN3* | Down |
| *TCEAL2* | Down |
| *RTN1* | Down |
| *WASF1* | Down |
| *WASF3* | Down |
| *XYLT1* | Down |
| *ZDHHC11* | Down |
| *ZFPM2* | Down |
| *ZNF365* | Down |
| *ZNF423* | Down |

## 11.4 Primary GBM cells used in the study.

| *Code* | *Diagnosis* | *Age (y)* | *Sex* |
|---|---|---|---|
| HuTuP13 | GBM | 67 | male |
| HuTuP53 | GBM | 70 | male |
| HuTuP82 | GBM | 50 | male |
| HuTuP83 | GBM | 55 | male |
| HuTuP107 | GBM | 65 | male |
| HuTuP174 | GBM | 69 | male |
| HuTuP175 | GBM | 54 | female |
| HuTuP176 | GBM | 59 | male |

## 11.5 Differentially expressed genes between Isotype and anti-ANXA2 antibody treated GBM cells.

| Probe set | Gene symbol | Lfdr | log2 means_Group Isotype | log2 means_Group anti-ANXA2 |
|---|---|---|---|---|
| 1555347_at | *PDXDC1* | 4,00E-13 | 5,514516676 | 7,363199447 |
| 211214_s_at | *DAPK1* | 4,00E-13 | 5,879259494 | 7,47110523 |
| 1554332_a_at | *LOC100127888* | 4,00E-13 | 8,045837747 | 9,883646295 |
| 239802_at | *SAP30L* | 4,00E-13 | 5,207306733 | 6,287556134 |
| 222293_at | *CADM4* | 4,00E-13 | 6,828035875 | 8,049482022 |
| 222026_at | *RBM3* | 4,00E-13 | 8,118242 | 9,124756523 |
| 202813_at | *TARBP1* | 4,00E-13 | 9,111752136 | 8,373073718 |
| 39817_s_at | *DNPH1* | 4,00E-13 | 8,075397829 | 7,231631191 |
| 203227_s_at | *TSPAN31* | 4,00E-13 | 9,919584351 | 8,737609922 |
| 213244_at | *SCAMP4* | 4,00E-13 | 8,244489664 | 7,247913843 |
| 206397_x_at | *NA* | 4,00E-13 | 10,75188841 | 9,451924427 |
| 209759_s_at | *ECI1* | 4,00E-13 | 8,991284665 | 7,867415131 |
| 218400_at | *OAS3* | 4,00E-13 | 8,504700069 | 7,354669487 |
| 228791_at | *NA* | 4,00E-13 | 8,454710102 | 7,298677071 |
| 238440_at | *CLYBL* | 4,00E-13 | 7,236900712 | 6,11548114 |
| 226722_at | *FAM20C* | 4,00E-13 | 10,61036612 | 8,959940703 |
| 213245_at | *ADCY1* | 4,00E-13 | 7,889058412 | 6,551059084 |
| 209502_s_at | *BAIAP2* | 4,00E-13 | 7,684178499 | 6,198075267 |
| 203006_at | *INPP5A* | 4,00E-13 | 8,66694804 | 6,966453732 |
| 1556216_s_at | *NA* | 4,00E-13 | 7,606679076 | 5,951444222 |
| 226325_at | *ADSSL1* | 4,00E-13 | 6,673487897 | 5,201096182 |
| 203570_at | *LOXL1* | 4,00E-13 | 12,12706334 | 9,31239658 |
| 235275_at | *BMP8B* | 4,00E-13 | 8,667808242 | 6,573537974 |
| 225060_at | *LRP11* | 4,00E-13 | 10,16131565 | 7,70361025 |
| 224478_s_at | *C7orf50* | 4,00E-13 | 9,714294266 | 7,176805864 |
| 221973_at | *NA* | 4,00E-13 | 6,187823966 | 4,159297846 |

| | | | | |
|---|---|---|---|---|
| 46142_at | *LMF1* | 4,00E-13 | 7,568654472 | 4,455740893 |
| 237094_at | *FAM19A5* | 4,00E-13 | 7,625734943 | 4,351092194 |
| 229459_at | *FAM19A5* | 4,00E-13 | 8,701234021 | 4,903387036 |
| 242281_at | *GLUL* | 1,62E-11 | 6,518014998 | 7,547374567 |
| 213110_s_at | *COL4A5* | 1,62E-11 | 11,1246341 | 10,07232139 |
| 210006_at | *ABHD14A* | 1,62E-11 | 7,410678278 | 5,977322812 |
| 229656_s_at | *EML6* | 1,62E-11 | 9,39690791 | 7,400688445 |
| 41660_at | *CELSR1* | 5,79E-11 | 9,288742944 | 7,46769201 |
| 229655_at | *FAM19A5* | 5,79E-11 | 8,135754405 | 5,896075968 |
| 225918_at | *GLG1* | 7,72E-11 | 9,299843409 | 8,281618871 |
| 210410_s_at | *NA* | 7,72E-11 | 8,636934397 | 7,112332821 |
| 233893_s_at | *UVSSA* | 7,72E-11 | 8,691053741 | 6,984356762 |
| 235776_x_at | *LINC00475* | 9,46E-11 | 6,0863453 | 6,885207331 |
| 226446_at | *HES6* | 9,46E-11 | 9,367021212 | 10,37206735 |
| 227420_at | *TNFAIP8L1* | 9,46E-11 | 8,197355479 | 7,074368292 |
| 205248_at | *DOPEY2* | 9,46E-11 | 5,611972177 | 4,376208125 |
| 219543_at | *PBLD* | 9,46E-11 | 5,870401367 | 4,428868859 |
| 219135_s_at | *LMF1* | 9,46E-11 | 7,51175052 | 5,226885107 |
| 231219_at | *CMTM1* | 2,67E-10 | 6,07723334 | 7,077246829 |
| 208691_at | *TFRC* | 2,67E-10 | 12,25581851 | 13,09477444 |
| 218387_s_at | *PGLS* | 2,67E-10 | 10,21466295 | 9,227874412 |
| 214140_at | *SLC25A16* | 2,67E-10 | 6,306315465 | 5,131966917 |
| 1564083_at | *NA* | 2,67E-10 | 5,940790241 | 4,654325825 |
| 219828_at | *RABL6* | 3,92E-10 | 7,642411513 | 9,616256767 |
| 205262_at | *KCNH2* | 3,92E-10 | 8,401967913 | 7,536167185 |
| 212811_x_at | *SLC1A4* | 3,92E-10 | 8,058318434 | 7,096887917 |
| 1556097_at | *HOMER2* | 3,92E-10 | 8,626040155 | 7,473386727 |
| 51200_at | *C19orf60* | 3,92E-10 | 9,228341122 | 7,743440461 |
| 37590_g_at | *NA* | 3,92E-10 | 8,777813839 | 7,271173062 |
| 212890_at | *SLC38A10* | 3,92E-10 | 7,773566382 | 6,093442334 |
| 203115_at | *FECH* | 4,98E-10 | 8,412548924 | 7,479072624 |
| 225008_at | *ASPH* | 5,68E-10 | 8,603556904 | 7,755888652 |
| 204078_at | *LEPREL4* | 5,68E-10 | 9,303773183 | 8,250107722 |
| 1560371_at | *LINC00997* | 5,68E-10 | 6,139893442 | 5,186208209 |
| 244435_at | *FAM196A* | 2,00E-09 | 7,852492356 | 5,68134306 |
| 219136_s_at | *LMF1* | 2,00E-09 | 8,53330488 | 6,114393491 |
| 213703_at | *LINC00342* | 2,00E-09 | 6,37655699 | 4,527883563 |
| 203449_s_at | *TERF1* | 5,83E-09 | 8,11582943 | 7,417359288 |
| 226891_at | *XXYLT1* | 5,83E-09 | 8,712109226 | 6,582942821 |
| 229050_s_at | *NA* | 1,37E-08 | 9,58212427 | 10,74128325 |
| 207332_s_at | *TFRC* | 1,37E-08 | 11,63653707 | 12,63646667 |
| 205961_s_at | *PSIP1* | 1,37E-08 | 11,56152312 | 10,63628831 |
| 220227_at | *CDH4* | 1,37E-08 | 11,2251775 | 10,00869333 |
| 230763_at | *SPATA17* | 1,37E-08 | 5,211454598 | 4,440231029 |
| 203758_at | *CTSO* | 1,37E-08 | 8,229748682 | 6,350409224 |
| 203116_s_at | *FECH* | 1,53E-08 | 9,974853884 | 9,354482743 |
| 224996_at | *ASPH* | 1,53E-08 | 9,718808272 | 9,06677036 |
| 219479_at | *KDELC1* | 1,53E-08 | 9,56443422 | 8,736243919 |
| 227778_at | *NA* | 1,53E-08 | 7,748408321 | 6,825974676 |
| 201900_s_at | *AKR1A1* | 1,53E-08 | 8,847394231 | 7,674468989 |

| | | | | |
|---|---|---|---|---|
| 229883_at | *GRIN2D* | 1,53E-08 | 7,916844727 | 6,811708236 |
| 204337_at | *RGS4* | 1,53E-08 | 11,16751461 | 9,408823972 |
| 201911_s_at | *FARP1* | 5,08E-08 | 9,176320691 | 8,217474207 |
| 1557137_at | *TMEM17* | 5,08E-08 | 8,435410644 | 7,368231609 |
| 210130_s_at | *TM7SF2* | 5,08E-08 | 8,873196648 | 7,292724465 |
| 1558430_at | *PDXDC1* | 5,08E-08 | 5,898300725 | 4,640008733 |
| 1553978_at | *MEF2BNB* | 5,08E-08 | 6,115577863 | 4,807055685 |
| 203197_s_at | *C1orf123* | 9,02E-08 | 9,51456283 | 8,485692718 |
| 218918_at | *MAN1C1* | 9,02E-08 | 7,645431238 | 6,076203122 |
| 203608_at | *ALDH5A1* | 1,57E-07 | 9,045013354 | 8,348058543 |
| 213657_s_at | *NA* | 1,57E-07 | 9,280611775 | 7,729752966 |
| 205405_at | *SEMA5A* | 1,61E-07 | 10,93705824 | 9,722102202 |
| 213992_at | *COL4A6* | 1,61E-07 | 8,204305321 | 6,444585693 |
| 210896_s_at | *ASPH* | 1,95E-07 | 10,74775663 | 9,96357459 |
| 226145_s_at | *FRAS1* | 1,95E-07 | 12,20063032 | 10,46784887 |
| 229354_at | *AHRR* | 1,95E-07 | 9,859870814 | 8,353125327 |
| 231867_at | *TENM2* | 1,95E-07 | 6,176301733 | 5,115256068 |
| 234193_at | *NA* | 2,44E-07 | 4,955558734 | 5,518985113 |
| 211779_x_at | *AP2A2* | 2,44E-07 | 9,823511278 | 9,071371996 |
| 209337_at | *PSIP1* | 2,44E-07 | 12,17528791 | 11,21135632 |
| 218388_at | *PGLS* | 2,44E-07 | 10,76159531 | 9,858845159 |
| 219048_at | *PIGN* | 2,44E-07 | 8,658162225 | 7,888010096 |
| 207980_s_at | *CITED2* | 2,44E-07 | 8,012126139 | 7,148603956 |
| 1552291_at | *PIGX* | 2,44E-07 | 8,391548353 | 7,386128633 |
| 238692_at | *BTBD11* | 2,44E-07 | 6,539676611 | 5,668501124 |
| 227903_x_at | *TPGS1* | 2,44E-07 | 7,657309024 | 6,521247011 |
| 213995_at | *ATP5S* | 2,44E-07 | 7,493791179 | 6,128169283 |
| 238957_at | *NA* | 2,44E-07 | 5,545043354 | 4,229772075 |
| 236660_at | *NA* | 6,76E-07 | 8,104201364 | 8,903127205 |
| 230131_x_at | *ARSD* | 6,76E-07 | 7,092267013 | 6,08963049 |
| 226923_at | *SCFD2* | 7,48E-07 | 12,48901837 | 11,52174562 |
| 214647_s_at | *HFE* | 7,48E-07 | 5,937404454 | 4,75214035 |
| 1554646_at | *OSBPL1A* | 8,79E-07 | 6,634366716 | 7,24541223 |
| 204285_s_at | *PMAIP1* | 8,79E-07 | 12,0700976 | 11,43343063 |
| 223148_at | *PIGS* | 8,79E-07 | 9,30107596 | 8,718914766 |
| 212692_s_at | *LRBA* | 8,79E-07 | 10,34195084 | 9,33791864 |
| 233375_at | *EFCAB2* | 8,79E-07 | 6,73894247 | 5,992980979 |
| 202952_s_at | *ADAM12* | 8,79E-07 | 10,04687923 | 8,750362608 |
| 206087_x_at | *HFE* | 8,79E-07 | 8,127752062 | 7,014170138 |
| 212364_at | *MYO1B* | 8,79E-07 | 5,351551112 | 4,314737309 |
| 228388_at | *NFKBIB* | 1,08E-06 | 6,481655219 | 7,397892811 |
| 226206_at | *MAFK* | 1,08E-06 | 7,622065487 | 8,481331613 |
| 209726_at | *CA11* | 1,08E-06 | 7,235605741 | 6,647382918 |
| 235502_at | *NA* | 1,08E-06 | 6,103471523 | 5,38376106 |
| 227094_at | *DHTKD1* | 1,08E-06 | 8,414800172 | 7,336592705 |
| 226612_at | *UBE2QL1* | 1,08E-06 | 6,305490822 | 4,6719334 |
| 215259_s_at | *CADM4* | 1,62E-06 | 7,351026925 | 8,620417945 |
| 225617_at | *ODF2* | 1,62E-06 | 9,057765706 | 8,210767079 |
| 240402_at | *KIRREL3* | 1,62E-06 | 6,042143976 | 5,175929728 |
| 218844_at | *ACSF2* | 1,63E-06 | 8,339882381 | 7,280744995 |

| | | | | |
|---|---|---|---|---|
| 213321_at | *BCKDHB* | 2,49E-06 | 7,917546028 | 7,357037757 |
| 212159_x_at | *AP2A2* | 2,49E-06 | 9,892970817 | 9,175450465 |
| 218046_s_at | *MRPS16* | 2,49E-06 | 8,455320039 | 7,626850347 |
| 202729_s_at | *LTBP1* | 2,49E-06 | 9,052154311 | 8,042935756 |
| 225868_at | *TRIM47* | 4,08E-06 | 8,718976816 | 9,391274889 |
| 219077_s_at | *WWOX* | 4,08E-06 | 8,231254942 | 7,407996849 |
| 223411_at | *MIF4GD* | 4,08E-06 | 8,276764022 | 7,35572144 |
| 204800_s_at | *DHRS12* | 4,08E-06 | 7,370652119 | 6,305670838 |
| 221586_s_at | *E2F5* | 4,08E-06 | 9,122434991 | 7,611404605 |
| 217904_s_at | *BACE1* | 4,08E-06 | 8,656560513 | 6,968282344 |
| 218755_at | *KIF20A* | 4,08E-06 | 9,231658787 | 6,437711513 |
| 240084_at | *CBX2* | 4,53E-06 | 7,124987676 | 8,490441663 |
| 228796_at | *CPNE4* | 4,53E-06 | 7,932482638 | 6,963998455 |
| 225182_at | *TMEM50B* | 4,53E-06 | 10,09682554 | 8,791752667 |
| 238183_at | *NA* | 5,12E-06 | 7,154283329 | 8,698171382 |
| 219905_at | *ERMAP* | 5,12E-06 | 7,53688713 | 6,815768834 |
| 230547_at | *KCNC1* | 5,12E-06 | 8,40583103 | 7,059735006 |
| 205652_s_at | *TTLL1* | 6,70E-06 | 8,551432533 | 7,570385246 |
| 212810_s_at | *SLC1A4* | 6,70E-06 | 7,348956934 | 6,215922703 |
| 213591_at | *ALDH7A1* | 7,66E-06 | 6,439556759 | 5,634119961 |
| 213223_at | *RPL28* | 1,12E-05 | 8,926299621 | 9,785266326 |
| 218552_at | *ECHDC2* | 1,12E-05 | 8,921085225 | 8,240909258 |
| 213195_at | *LYRM9* | 1,12E-05 | 7,147310024 | 6,501842298 |
| 243594_x_at | *SPIRE2* | 1,12E-05 | 7,002397505 | 6,179957748 |
| 229647_at | *NDUFS1* | 1,12E-05 | 7,613047242 | 6,525522777 |
| 235311_at | *FKBP14* | 1,12E-05 | 6,951819245 | 5,893552652 |
| 223636_at | *ZMYND12* | 1,12E-05 | 5,904782745 | 4,967696049 |
| 223464_at | *OSBPL5* | 1,12E-05 | 6,825681628 | 5,176814927 |
| 205150_s_at | *TRIL* | 1,12E-05 | 7,449592253 | 5,370382639 |
| 205367_at | *SH2B2* | 1,22E-05 | 7,804542254 | 8,894136204 |
| 217995_at | *SQRDL* | 1,22E-05 | 7,318784346 | 8,209846775 |
| 226079_at | *FLYWCH2* | 1,22E-05 | 7,508189748 | 6,668701684 |
| 209871_s_at | *APBA2* | 1,22E-05 | 9,297151045 | 8,077333669 |
| 213947_s_at | *NUP210* | 1,22E-05 | 8,757115413 | 7,423820856 |
| 220325_at | *TAF7L* | 1,23E-05 | 3,982299226 | 4,699932331 |
| 235422_at | *NA* | 1,23E-05 | 7,823823802 | 9,086848076 |
| 1559893_at | *GPATCH11* | 1,23E-05 | 4,399677756 | 4,890458476 |
| 205412_at | *ACAT1* | 1,23E-05 | 10,82888382 | 10,17559159 |
| 204295_at | *SURF1* | 1,23E-05 | 10,08731757 | 9,397452814 |
| 225366_at | *PGM2* | 1,23E-05 | 8,421597299 | 7,782728979 |
| 225302_at | *TMX3* | 1,23E-05 | 11,22170533 | 10,32232401 |
| 232297_at | *KLHL5* | 1,23E-05 | 8,12434185 | 7,385130636 |
| 223917_s_at | *SLC39A3* | 1,23E-05 | 8,608738602 | 7,726332246 |
| 202944_at | *NAGA* | 1,23E-05 | 8,01908337 | 7,033818387 |
| 218958_at | *C19orf60* | 1,23E-05 | 7,45625678 | 6,422062165 |
| 224821_at | *ABHD14B* | 1,23E-05 | 5,961008256 | 5,091423082 |
| 242064_at | *SDK2* | 1,23E-05 | 8,956648071 | 7,10376132 |
| 228943_at | *MAP6* | 4,06E-05 | 8,730117192 | 8,095417366 |
| 230129_at | *PSTK* | 4,06E-05 | 7,076219167 | 6,456258571 |

| | | | | |
|---|---|---|---|---|
| 209610_s_at | *SLC1A4* | 4,06E-05 | 7,855462366 | 6,713977347 |
| 206083_at | *BAI1* | 4,06E-05 | 7,535985186 | 6,414691028 |
| 204792_s_at | *IFT140* | 4,06E-05 | 5,945686744 | 5,020588797 |
| 225704_at | *FBRSL1* | 4,06E-05 | 8,08785236 | 6,266893281 |
| 230954_at | *C20orf112* | 4,34E-05 | 6,593948318 | 7,854651215 |
| 241478_at | *MICALL2* | 4,34E-05 | 6,755975184 | 7,639986652 |
| 1556127_at | *DIP2A* | 4,34E-05 | 6,781224606 | 7,613163999 |
| 208833_s_at | *ATXN10* | 4,34E-05 | 12,58405581 | 11,93010099 |
| 226935_s_at | *CLPTM1L* | 4,34E-05 | 10,14522875 | 9,270766058 |
| 203859_s_at | *PALM* | 4,34E-05 | 7,844873391 | 6,868555488 |
| 207548_at | *GRM7* | 4,34E-05 | 6,502495408 | 5,121186373 |
| 225503_at | *DHRSX* | 4,73E-05 | 9,580189257 | 8,973020812 |
| 218317_x_at | *NA* | 4,73E-05 | 8,116564137 | 7,500663147 |
| 64942_at | *GPR153* | 4,73E-05 | 9,958177679 | 9,120318074 |
| 1554701_a_at | *TBC1D16* | 4,73E-05 | 7,546354384 | 6,866617857 |
| 228570_at | *BTBD11* | 4,73E-05 | 8,517238596 | 7,631876083 |
| 219419_at | *RBFA* | 4,73E-05 | 8,338499075 | 7,43976327 |
| 208291_s_at | *TH* | 4,73E-05 | 6,263316742 | 4,878698965 |
| 224870_at | *DANCR* | 7,37E-05 | 9,710102257 | 10,82939525 |
| 211475_s_at | *BAG1* | 7,37E-05 | 8,427985546 | 9,267912464 |
| 202814_s_at | *HEXIM1* | 7,37E-05 | 8,5443679 | 9,367933878 |
| 229480_at | *MAGI2-AS3* | 7,37E-05 | 7,163240165 | 7,671012211 |
| 203919_at | *TCEA2* | 7,37E-05 | 10,50917655 | 9,62100583 |
| 229588_at | *DNAJC10* | 7,37E-05 | 7,876508664 | 7,044540915 |
| 239221_at | *GPR123* | 7,37E-05 | 7,905787019 | 6,970009897 |
| 213169_at | *SEMA5A* | 7,37E-05 | 11,60570695 | 10,1859005 |
| 233543_s_at | *FAM175A* | 7,37E-05 | 6,016180826 | 5,128452158 |
| 204238_s_at | *DNPH1* | 7,37E-05 | 7,276618508 | 5,861388777 |
| 213658_at | *NA* | 7,37E-05 | 6,987989035 | 5,580792732 |
| 1556496_a_at | *NA* | 7,77E-05 | 5,427249256 | 6,288970476 |
| 244360_at | *FBXL17* | 7,77E-05 | 6,899544302 | 7,982231988 |
| 205028_at | *TRO* | 7,77E-05 | 6,978629651 | 7,498323304 |
| 202108_at | *PEPD* | 7,77E-05 | 9,442296198 | 8,654164558 |
| 203741_s_at | *ADCY7* | 7,77E-05 | 5,787761355 | 5,058293061 |
| 224674_at | *TTYH3* | 7,77E-05 | 10,15266514 | 8,726866688 |
| 203764_at | *DLGAP5* | 7,77E-05 | 10,10503033 | 7,956775429 |
| 1560069_at | *PLEKHM3* | 8,81E-05 | 6,128683198 | 6,855211377 |
| 228318_s_at | *CRIPAK* | 8,81E-05 | 8,470959194 | 6,822804297 |
| 236273_at | *NBPF1* | 8,90E-05 | 8,817468249 | 9,772676868 |
| 235174_s_at | *LINC01003* | 8,90E-05 | 10,60121036 | 11,41629089 |
| 225174_at | *DNAJC10* | 8,90E-05 | 10,90989961 | 10,05163667 |
| 225280_x_at | *ARSD* | 8,90E-05 | 7,394906183 | 6,39117306 |
| 211330_s_at | *HFE* | 8,90E-05 | 6,315576295 | 4,985336667 |
| 227211_at | *PHF19* | 8,90E-05 | 8,792007273 | 10,09513448 |
| 242794_at | *MAML3* | 8,90E-05 | 6,616161929 | 5,549146434 |
| 223194_s_at | *SLC22A23* | 8,90E-05 | 9,599400831 | 7,731575837 |
| 231202_at | *ALDH1L2* | 8,90E-05 | 6,245268124 | 4,213404065 |
| 230622_at | *MLLT4* | 9,43E-05 | 6,461982638 | 7,188828818 |
| 200962_at | *RPL31* | 9,43E-05 | 8,635909979 | 9,285834624 |

| | | | | |
|---|---|---|---|---|
| 209238_at | *STX3* | 9,43E-05 | 8,916363024 | 9,585679584 |
| 227966_s_at | *NA* | 9,43E-05 | 9,318924684 | 8,807834519 |
| 225198_at | *VAPA* | 9,43E-05 | 10,37411621 | 9,680700206 |
| 210046_s_at | *IDH2* | 9,43E-05 | 10,56011105 | 9,686216055 |
| 221883_at | *PKNOX1* | 9,43E-05 | 8,016410326 | 7,279435337 |
| 230036_at | *SAMD9L* | 9,43E-05 | 6,701727309 | 6,084467982 |
| 213116_at | *NEK3* | 9,43E-05 | 7,714989553 | 6,898164623 |
| 226932_at | *SSPN* | 9,43E-05 | 9,474883087 | 8,101979348 |
| 223696_at | *ARSD* | 9,43E-05 | 8,260833185 | 6,963596202 |
| 226519_s_at | *PHYKPL* | 0,00016474 | 7,915359766 | 7,138537219 |
| 1553285_s_at | *RAD9B* | 0,00016474 | 3,926682273 | 3,364125086 |
| 1563345_at | *NA* | 0,000192793 | 6,594551152 | 7,290222598 |
| 230508_at | *DKK3* | 0,000192793 | 10,99714162 | 11,95469791 |
| 204058_at | *ME1* | 0,000192793 | 8,554847359 | 9,139797372 |
| 225042_s_at | *CSRNP2* | 0,000192793 | 7,719052582 | 8,244961114 |
| 219520_s_at | *WWC3* | 0,000192793 | 9,957053936 | 9,455912398 |
| 225708_at | *MED29* | 0,000192793 | 9,010155 | 8,539661113 |
| 213980_s_at | *CTBP1* | 0,000192793 | 11,25801494 | 10,64515152 |
| 213041_s_at | *ATP5D* | 0,000192793 | 10,79795519 | 10,15895665 |
| 213904_at | *NA* | 0,000192793 | 9,00215264 | 8,431937103 |
| 202916_s_at | *FAM20B* | 0,000192793 | 9,159756833 | 8,549971028 |
| 214198_s_at | *DGCR2* | 0,000192793 | 9,487045803 | 8,850767448 |
| 202867_s_at | *DNAJB12* | 0,000192793 | 6,344235187 | 5,720615319 |
| 241411_at | *NA* | 0,000192793 | 7,666692105 | 6,888407238 |
| 1555824_a_at | *PACS2* | 0,000192793 | 7,368801338 | 6,619314801 |
| 205500_at | *C5* | 0,000192793 | 7,66437496 | 6,828095278 |
| 214109_at | *LRBA* | 0,000192793 | 8,75140646 | 7,70052828 |
| 214068_at | *BEAN1* | 0,000192793 | 5,07809801 | 4,423284558 |
| 210380_s_at | *CACNA1G* | 0,000192793 | 7,054661858 | 6,004808051 |
| 205229_s_at | *COCH* | 0,000192793 | 6,765093409 | 5,504955206 |
| 203418_at | *CCNA2* | 0,000192793 | 8,484416485 | 6,731593298 |
| 211105_s_at | *NFATC1* | 0,000192793 | 7,351608278 | 5,548495324 |
| 244452_at | *ERLEC1* | 0,000320843 | 5,790301309 | 7,016037179 |
| 206777_s_at | *NA* | 0,000320843 | 8,326212983 | 9,252445848 |
| 221640_s_at | *PIDD* | 0,000320843 | 8,311894238 | 9,109477524 |
| 219129_s_at | *SAP30L* | 0,000320843 | 8,623020637 | 9,159279785 |
| 214789_x_at | *SRSF8* | 0,000320843 | 10,71535223 | 11,30712577 |
| 226344_at | *ZMAT1* | 0,000320843 | 7,836238442 | 7,082360836 |
| 213259_s_at | *NA* | 0,000320843 | 7,365937206 | 6,567548722 |
| 224150_s_at | *CEP70* | 0,000320843 | 7,415312669 | 6,610498755 |
| 218928_s_at | *SLC37A1* | 0,000320843 | 7,258685648 | 6,388802689 |
| 202177_at | *GAS6* | 0,000320843 | 6,769380741 | 5,810624993 |
| 1554597_at | *NA* | 0,000320843 | 7,262379398 | 6,167482479 |
| 205151_s_at | *TRIL* | 0,000320843 | 7,799464914 | 6,606267323 |
| 225834_at | *NA* | 0,000320843 | 10,88777145 | 8,963406067 |
| 220940_at | *ANKRD36B* | 0,000320843 | 7,143233742 | 5,015494719 |
| 230612_at | *WDR73* | 0,00047641 | 6,233391838 | 6,93527546 |
| 237954_x_at | *ARHGEF40* | 0,00047641 | 5,869565687 | 6,474305398 |
| 208820_at | *PTK2* | 0,00047641 | 11,58808584 | 11,0054537 |
| 1568629_s_at | *PIK3R2* | 0,00047641 | 11,36032941 | 10,78356243 |

| | | | | |
|---|---|---|---|---|
| 236359_at | *SCN4B* | 0,00047641 | 8,77674388 | 8,035925821 |
| 36553_at | *ASMTL* | 0,00047641 | 9,295755292 | 8,407024102 |
| 241049_at | *GRM7* | 0,00047641 | 5,401748264 | 4,630692787 |
| 218983_at | *C1RL* | 0,00047641 | 7,990625633 | 5,358454154 |
| 1554018_at | *GPNMB* | 0,000744147 | 4,668434268 | 6,585210522 |
| 1553448_at | *FLJ34503* | 0,000744147 | 3,910641191 | 5,190366506 |
| 1558706_a_at | *ATOH8* | 0,000744147 | 7,460848188 | 9,050685637 |
| 242786_at | *SBF2-AS1* | 0,000744147 | 6,612267544 | 7,408985318 |
| 237033_at | *FAM159A* | 0,000744147 | 6,252433425 | 6,878237543 |
| 220685_at | *FAM120C* | 0,000744147 | 6,371301764 | 6,99339194 |
| 238525_at | *DDX56* | 0,000744147 | 7,816662784 | 8,573441148 |
| 228378_at | *C12orf29* | 0,000744147 | 7,97947433 | 8,689769694 |
| 202387_at | *BAG1* | 0,000744147 | 8,68965289 | 9,425512501 |
| 219019_at | *PIDD* | 0,000744147 | 9,111610755 | 9,842642482 |
| 225466_at | *PATL1* | 0,000744147 | 9,834317196 | 10,49715509 |
| 225098_at | *ABI2* | 0,000744147 | 11,49139321 | 10,97957177 |
| 208964_s_at | *NA* | 0,000744147 | 10,37631269 | 9,892475461 |
| 209273_s_at | *ISCA1* | 0,000744147 | 9,585346922 | 9,094772851 |
| 217809_at | *BZW2* | 0,000744147 | 10,92734017 | 10,29482016 |
| 201620_at | *MBTPS1* | 0,000744147 | 9,565633462 | 8,905463418 |
| 204591_at | *CHL1* | 0,000744147 | 12,55839648 | 11,6579601 |
| 1554314_at | *C6orf141* | 0,000744147 | 10,18864393 | 9,412767024 |
| 231017_at | *STK11* | 0,000744147 | 8,076896811 | 7,391780991 |
| 222062_at | *IL27RA* | 0,000744147 | 8,035334043 | 7,257510129 |
| 212912_at | *RPS6KA2* | 0,000744147 | 9,637273335 | 8,575981623 |
| 213155_at | *NA* | 0,000744147 | 11,46140392 | 10,18417278 |
| 223695_s_at | *ARSD* | 0,000744147 | 6,898065141 | 6,087065286 |
| 212314_at | *SEL1L3* | 0,000744147 | 11,5544666 | 10,17579092 |
| 1552439_s_at | *MEGF11* | 0,000744147 | 7,447732322 | 6,551575812 |
| 243512_x_at | *NA* | 0,000744147 | 7,223121612 | 6,247512485 |
| 221892_at | *H6PD* | 0,000744147 | 7,492304056 | 6,367056633 |
| 1552701_a_at | *CARD16* | 0,000744147 | 5,311625867 | 4,494296344 |
| 234994_at | *TMEM200A* | 0,000744147 | 6,591829253 | 5,549763426 |
| 228199_at | *NA* | 0,000744147 | 6,550109732 | 5,441407301 |
| 212488_at | *COL5A1* | 0,000744147 | 8,437678746 | 6,937911421 |
| 1556308_at | *PRRT3* | 0,000744147 | 7,347666894 | 5,838680709 |
| 204962_s_at | *NA* | 0,000744147 | 9,569490588 | 7,562435804 |
| 209010_s_at | *TRIO* | 0,00084956 | 4,980760694 | 5,590694342 |
| 208033_s_at | *ZFHX3* | 0,00084956 | 6,188689503 | 6,623415321 |
| 212461_at | *AZIN1* | 0,00084956 | 11,00199044 | 10,24841303 |
| 238569_at | *GABBR1* | 0,00084956 | 7,976959796 | 7,354644053 |
| 225973_at | *TAP2* | 0,00084956 | 8,917658687 | 8,111098068 |
| 230454_at | *ICA1L* | 0,00084956 | 8,346889612 | 7,503884177 |
| 212316_at | *NUP210* | 0,00084956 | 8,080393103 | 7,193577799 |
| 212315_s_at | *NUP210* | 0,00084956 | 6,991292924 | 5,909852011 |
| 228488_at | *TBC1D16* | 0,00084956 | 7,355411994 | 6,172994334 |
| 212022_s_at | *MKI67* | 0,00084956 | 8,450220923 | 6,878180641 |
| 217584_at | *NPC1* | 0,001016322 | 6,452908506 | 7,173644053 |
| 223625_at | *FAM126A* | 0,001016322 | 8,435982461 | 9,090558285 |
| 206364_at | *KIF14* | 0,001016322 | 8,62432718 | 6,915338752 |

| | | | | |
|---|---|---|---|---|
| 209709_s_at | *HMMR* | 0,001016322 | 8,23412549 | 6,36916367 |
| 1552257_a_at | *TTLL12* | 0,001903541 | 7,799735433 | 6,852612604 |
| 205380_at | *PDZK1* | 0,001918907 | 4,858231923 | 6,150935314 |
| 1555323_at | *ABCB9* | 0,001918907 | 5,147938783 | 6,188706229 |

## 11.6 Summary of Log-rank analysis for ANXA2-dependent Risk Score on TCGA, GSE13041, GSE17536, E-MTAB-365 and GSE31210 cohorts of cancer patients.

| ***Tumour type (origin of data)*** | ***Survival*** | ***ANXA2 status*** | ***Median Survival (months)*** | ***Log-rank (Mantel-Cox) p value*** | ***Hazard Ratio (logrank) Risk score low/Risk score high*** |
|---|---|---|---|---|---|
| *GBM from TCGA* | PFS | Risk Score High<br>Risk Score Low | 7.83<br>8.72 | 0.019 | 1.288 |
| | OS | Risk Score High<br>Risk Score Low | 12.93<br>14.41 | 0.0261 | 1.242 |
| *GBM from GSE13041* | OS | Risk Score High<br>Risk Score Low | 11.7<br>13.55 | 0.0486 | 1.353 |
| *Colon cancer from GSE17536* | DSS | Risk Score High<br>Risk Score Low | 77.6<br>N.D. | 0.006 | 2.149 |
| *Breast cancer from E-MTAB-365* | RFS | Risk Score High<br>Risk Score Low | N.D.<br>N.D. | 0.002 | 1.739 |
| *Lung adenocarcinoma from GSE31210* | RFS | Risk Score High<br>Risk Score Low | N.D.<br>N.D. | 0.0605 | 1.61 |

N.D. Not Determined

## 11.7 Differentially expressed genes between SiNEG and SiANXA2 transfected GBM cells.

| Probe set | Gene symbol | log2 means_Group SiNEG | log2 means_Group SiANXA2 |
|---|---|---|---|
| 229947_at | PI15 | 3,775176372 | 7,332248918 |
| 204298_s_at | LOX | 4,950343226 | 9,322598731 |
| 220415_at | NA | 3,206882819 | 5,830594434 |
| 215442_s_at | TSHR | 2,835625138 | 5,152342142 |
| 224275_at | ADGRV1 | 3,163232954 | 5,725282716 |
| 219949_at | LRRC2 | 3,231599698 | 5,788707525 |
| 231930_at | NA | 5,588319618 | 9,873290444 |
| 214822_at | BRINP2 | 5,262941358 | 9,132007604 |
| 209990_s_at | GABBR2 | 4,027621796 | 6,988252245 |
| 229407_at | SDK1 | 4,698773003 | 8,072064245 |
| 210055_at | TSHR | 3,432514142 | 5,850187566 |
| 228235_at | NA | 5,017397219 | 8,470908386 |
| 220148_at | ALDH8A1 | 3,46596668 | 5,828624744 |
| 223582_at | ADGRV1 | 5,155129473 | 8,649960941 |
| 221019_s_at | COLEC12 | 5,424897421 | 9,073726606 |
| 215446_s_at | LOX | 6,711539644 | 11,14749781 |
| 205943_at | TDO2 | 3,107986793 | 5,142119023 |
| 207242_s_at | GRIK1 | 6,274758277 | 10,3509047 |
| 214611_at | GRIK1 | 5,220012916 | 8,59283502 |
| 216191_s_at | NA | 5,11981276 | 8,413321656 |
| 205609_at | ANGPT1 | 4,323696643 | 7,070394633 |
| 208096_s_at | COL21A1 | 3,906225532 | 6,369709408 |
| 243183_at | NA | 4,243725008 | 6,899411434 |
| 206529_x_at | SLC26A4 | 4,624893808 | 7,514592426 |
| 229912_at | SDK1 | 5,880817024 | 9,522035809 |
| 238262_at | SPDYA | 3,160894638 | 5,10150804 |
| 242005_at | LINC00973 | 3,119822127 | 5,030633491 |
| 237302_at | CNKSR3 | 3,439279279 | 5,545686376 |
| 227752_at | SPTLC3 | 4,185523441 | 6,744594677 |
| 1570445_a_at | LOC643201 | 4,107585429 | 6,538621847 |
| 237973_at | NA | 4,490303447 | 7,143246153 |
| 209301_at | CA2 | 4,843694085 | 7,687186819 |
| 230250_at | PTPRB | 3,059417138 | 4,855330803 |
| 225016_at | APCDD1 | 5,419458347 | 8,583285197 |
| 203789_s_at | SEMA3C | 3,926285927 | 6,216006514 |
| 217280_x_at | GABRA5 | 3,678954069 | 5,805434743 |
| 201110_s_at | THBS1 | 4,336123853 | 6,840016022 |
| 239148_at | MARVELD3 | 3,694447061 | 5,801285137 |
| 205466_s_at | HS3ST1 | 5,385619666 | 8,448949216 |
| 208498_s_at | NA | 4,328129209 | 6,783827677 |
| 205100_at | GFPT2 | 4,635884469 | 7,260874183 |
| 243541_at | IL31RA | 4,849726664 | 7,590179524 |
| 215443_at | TSHR | 3,602759596 | 5,608757557 |
| 241986_at | BMPER | 3,444826315 | 5,362049284 |
| 1553614_a_at | LINC01198 | 3,489094634 | 5,425478687 |
| 239006_at | SLC26A7 | 5,146218155 | 7,998286054 |
| 226228_at | AQP4 | 4,802139472 | 7,414965132 |
| 206698_at | XK | 3,91223922 | 6,033936678 |
| 239761_at | GCNT1 | 4,914309274 | 7,573525627 |
| 229927_at | LEMD1 | 5,826995696 | 8,964923555 |
| 1558404_at | LINC00622 | 2,902176131 | 4,458227886 |
| 215531_s_at | GABRA5 | 4,39628119 | 6,735581843 |
| 206185_at | CRYBB1 | 4,802609652 | 7,348796048 |
| 243163_at | HECW1 | 2,786111284 | 4,259800738 |
| 1552880_at | SEC16B | 3,696583871 | 5,631907226 |
| 231438_x_at | CDH8 | 5,648661806 | 8,594898568 |
| 227654_at | FAM65C | 4,823010972 | 7,317174166 |
| 205505_at | GCNT1 | 4,468090621 | 6,75998922 |
| 236201_at | SPTLC3 | 4,762832227 | 7,196117641 |
| 229580_at | CLSTN2 | 4,297919317 | 6,489073823 |
| 201109_s_at | THBS1 | 3,944433956 | 5,932710241 |
| 213830_at | YME1L1 | 5,825266338 | 8,73849588 |
| 1570444_at | LOC643201 | 2,693618855 | 4,037802796 |
| 204114_at | NID2 | 4,051162693 | 6,072764395 |
| 1563488_at | TMEM132B | 4,334079685 | 6,49602947 |
| 225328_at | FBXO32 | 4,663145974 | 6,946908328 |
| 1559256_at | MAGI1 | 3,839636403 | 5,697618226 |
| 206456_at | GABRA5 | 5,731679663 | 8,484875506 |
| 239556_at | LOC645513 | 3,653973105 | 5,405008592 |
| 213075_at | OLFML2A | 5,972605032 | 8,826458074 |
| 1565638_at | PMP22 | 3,404849246 | 5,009551941 |
| 213241_at | PLXNC1 | 4,10805884 | 6,041720915 |
| 217143_s_at | YME1L1 | 6,283370971 | 9,230240068 |
| 1569512_at | NA | 3,51111017 | 5,140260368 |
| 206300_s_at | PTHLH | 4,774467206 | 6,967371916 |
| 239519_at | NA | 3,111001171 | 4,53548375 |
| 211756_at | PTHLH | 5,266878905 | 7,665360976 |
| 220266_s_at | KLF4 | 4,350207653 | 6,330127529 |
| 231234_at | CTSC | 5,360049107 | 7,792780192 |
| 220679_s_at | CDH7 | 3,745041822 | 5,443627306 |
| 230865_at | LIX1 | 2,815856847 | 4,075129134 |
| 232060_at | ROR1 | 3,855433721 | 5,57430409 |
| 233871_at | NA | 5,871124469 | 8,456656311 |
| 215578_at | NA | 3,936201863 | 5,666633143 |
| 209955_s_at | FAP | 5,058481542 | 7,25186599 |
| 228469_at | PPID | 5,520385187 | 7,911318323 |
| 1555431_a_at | IL31RA | 3,013556198 | 4,311995645 |
| 201438_at | COL6A3 | 4,019152286 | 5,740211515 |
| 225646_at | CTSC | 6,952460553 | 9,8882529 |
| 236089_at | HECW2 | 3,978402213 | 5,610964582 |
| 219450_at | C4orf19 | 5,138674253 | 7,238834405 |
| 241762_at | FBXO32 | 2,82254773 | 3,972663056 |
| 221900_at | COL8A2 | 6,260091972 | 8,794919498 |
| 1569052_at | NA | 3,960450953 | 5,545364994 |
| 240898_at | SPAG16 | 4,365208878 | 6,108317256 |
| 1559923_at | GRIK1 | 3,25226404 | 4,549648714 |
| 230220_at | UNC80 | 5,075047491 | 7,097849953 |
| 221841_s_at | KLF4 | 6,43948032 | 8,98966781 |
| 223634_at | RASD2 | 6,245356325 | 8,702656902 |
| 215081_at | KIAA1024 | 4,260330318 | 5,92915294 |
| 222725_s_at | PALMD | 3,040552119 | 4,226956556 |
| 213125_at | OLFML2B | 4,65982295 | 6,475676995 |
| 1553219_a_at | AMMECR1 | 4,352897359 | 6,048916644 |
| 213217_at | ADCY2 | 6,121417197 | 8,501942125 |
| 1569167_at | NA | 4,492356312 | 6,237582868 |
| 208025_s_at | HMGA2 | 4,081098488 | 5,66480795 |

| | | | |
|---|---|---|---|
| 230962_at | DCLK1 | 5,754749094 | 7,978134377 |
| 210305_at | PDE4DIP | 4,946258269 | 6,824043564 |
| 226273_at | CLCN5 | 4,582352762 | 6,317906661 |
| 205338_s_at | DCT | 3,755638963 | 5,171966944 |
| 1556499_s_at | COL1A1 | 4,792002705 | 6,588139794 |
| 230179_at | LOC285812 | 4,148639553 | 5,690640051 |
| 206466_at | ACSBG1 | 3,395018696 | 4,653698633 |
| 227240_at | NGEF | 5,423624706 | 7,388743936 |
| 215076_s_at | COL3A1 | 3,535270536 | 4,814475084 |
| 230303_at | SYNPR | 3,33181995 | 4,537298202 |
| 225647_s_at | CTSC | 7,536000456 | 10,25560666 |
| 214963_at | NUP160 | 4,953292348 | 6,739467582 |
| 226912_at | ZDHHC23 | 5,048875597 | 6,86494677 |
| 236994_at | FBXL4 | 5,377995998 | 7,309074968 |
| 242587_at | SLC9A9 | 4,702009133 | 6,375118695 |
| 203304_at | BAMBI | 5,594891492 | 7,583849136 |
| 235350_at | C4orf19 | 4,476480555 | 6,060869042 |
| 228546_at | DPP6 | 5,942051788 | 8,043307184 |
| 204513_s_at | ELMO1 | 7,075778217 | 9,561778182 |
| 236796_at | NA | 4,649631958 | 6,276154755 |
| 227911_at | ARHGAP28 | 3,366407221 | 4,540522609 |
| 238533_at | EPHA7 | 6,972090626 | 9,401683697 |
| 231384_at | GRIN2A | 3,6916463 | 4,969596941 |
| 209700_x_at | PDE4DIP | 5,002603585 | 6,733907312 |
| 202436_s_at | CYP1B1 | 5,799849473 | 7,799033753 |
| 228740_at | NA | 5,855492704 | 7,868532521 |
| 240455_at | NA | 3,724694014 | 5,001034042 |
| 201852_x_at | COL3A1 | 3,233603347 | 4,339933183 |
| 214797_s_at | CDK18 | 5,002312731 | 6,713301099 |
| 218858_at | DEPTOR | 4,532357284 | 6,081122646 |
| 221234_s_at | BACH2 | 6,56057668 | 8,79288694 |
| 221107_at | CHRNA9 | 7,631340126 | 10,22690321 |
| 214321_at | NOV | 5,13506307 | 6,874537207 |
| 213496_at | LPPR4 | 5,284554884 | 7,05850455 |
| 229441_at | PRSS23 | 5,347259143 | 7,123184042 |
| 223395_at | ABI3BP | 3,177590895 | 4,232696564 |
| 239650_at | NCKAP5 | 4,055970341 | 5,400411648 |
| 218063_s_at | CDC42EP4 | 5,136450854 | 6,837323954 |
| 226333_at | IL6R | 4,674295049 | 6,218180646 |
| 231358_at | MRO | 3,980625851 | 5,289072488 |
| 232049_at | SNX2 | 4,189234908 | 5,566112111 |
| 1558387_at | UG0898H09 | 5,170697917 | 6,869371643 |
| 202458_at | PRSS23 | 7,685050085 | 10,20931087 |
| 52651_at | COL8A2 | 6,285394863 | 8,345759033 |
| 226279_at | PRSS23 | 6,954790368 | 9,22064911 |
| 1558668_s_at | SPATA22 | 3,026227385 | 4,011799294 |
| 215303_at | DCLK1 | 6,44780521 | 8,540483499 |
| 239230_at | HES5 | 5,907036888 | 7,823948716 |
| 240472_at | NA | 4,12453929 | 5,462685026 |
| 225803_at | FBXO32 | 5,219872055 | 6,904359183 |
| 217574_at | CDH8 | 6,491280573 | 8,578607422 |
| 202435_s_at | CYP1B1 | 5,808621458 | 7,669358513 |
| 229437_at | NA | 6,087122161 | 8,032214 |
| 206852_at | EPHA7 | 5,70497306 | 7,526685972 |
| 212713_at | MFAP4 | 6,189161312 | 8,158633647 |
| 242540_at | DNHD1 | 3,304142289 | 4,347084171 |

| | | | |
|---|---|---|---|
| 223529_at | SYT4 | 5,250601574 | 6,8992595 |
| 207789_s_at | DPP6 | 6,179484037 | 8,118737472 |
| 202283_at | SERPINF1 | 4,929226723 | 6,475743978 |
| 241500_at | CDH8 | 5,482869609 | 7,195833131 |
| 229256_at | PGM2L1 | 7,295157873 | 9,568423097 |
| 225345_s_at | FBXO32 | 3,987320115 | 5,227155049 |
| 225207_at | PDK4 | 6,197357431 | 8,115175835 |
| 227361_at | HS3ST3B1 | 6,60507123 | 8,647283442 |
| 203066_at | CHST15 | 6,584296558 | 8,600665661 |
| 242639_at | ICE2 | 5,104039933 | 6,666309555 |
| 223605_at | SLC25A18 | 6,48449894 | 8,464073533 |
| 1559257_a_at | MAGI1 | 4,839738516 | 6,313795371 |
| 230493_at | SHISA2 | 2,634366448 | 3,435175179 |
| 1554789_a_at | PDE8B | 5,49791292 | 7,15903682 |
| 205651_x_at | RAPGEF4 | 5,624968656 | 7,318524331 |
| 232181_at | PPARGC1B | 3,891298365 | 5,062360346 |
| 1554378_a_at | PDE1C | 5,219213672 | 6,789623909 |
| 209906_at | C3AR1 | 6,239222126 | 8,111650988 |
| 223644_s_at | CRYGS | 5,649933598 | 7,340747835 |
| 204051_s_at | SFRP4 | 5,204398834 | 6,758394671 |
| 210518_at | CDH8 | 5,754208167 | 7,470436362 |
| 228150_at | SEC16B | 6,04709604 | 7,840259601 |
| 210732_s_at | LGALS8 | 3,672305824 | 4,760164561 |
| 1559521_at | NA | 5,358609727 | 6,943713174 |
| 229951_x_at | NA | 4,74297164 | 6,145903923 |
| 233081_at | NA | 4,271938807 | 5,527558963 |
| 203881_s_at | DMD | 4,344819215 | 5,619061213 |
| 219414_at | CLSTN2 | 3,860817059 | 4,990347668 |
| 1560556_a_at | PLEKHA8 | 4,197614191 | 5,424434791 |
| 208063_s_at | CAPN9 | 4,837520231 | 6,249398012 |
| 52255_s_at | COL5A3 | 6,139352709 | 7,928545509 |
| 201141_at | GPNMB | 4,089642872 | 5,275426326 |
| 206167_s_at | ARHGAP6 | 5,936053129 | 7,642449365 |
| 214475_x_at | CAPN3 | 4,54054041 | 5,845684578 |
| 224480_s_at | GPAT3 | 7,292151028 | 9,387693665 |
| 238688_at | TPM1 | 6,237897641 | 8,029853497 |
| 1562904_s_at | FAM86B3P | 4,206096759 | 5,414152037 |
| 211668_s_at | PLAU | 5,639517867 | 7,258477819 |
| 219938_s_at | PSTPIP2 | 5,306007765 | 6,828589515 |
| 201739_at | SGK1 | 6,035612182 | 7,764451741 |
| 228111_s_at | DNAH1 | 4,258054441 | 5,46978186 |
| 1557177_at | LOC100506258 | 3,787298708 | 4,864260278 |
| 226811_at | FAM46C | 4,168277882 | 5,351072519 |
| 232994_s_at | ARHGEF28 | 6,20730963 | 7,96723372 |
| 240709_at | SEZ6L | 4,052720272 | 5,200696361 |
| 1558522_at | MPP6 | 5,980103154 | 7,667595913 |
| 1556200_a_at | C10orf90 | 4,652682405 | 5,963634517 |
| 235004_at | RBM24 | 5,273460636 | 6,755046119 |
| 215435_at | NA | 4,696101934 | 6,01503294 |
| 229784_at | NA | 4,969588828 | 6,363005339 |
| 232429_at | DTWD1 | 4,11727922 | 5,266619841 |
| 241497_at | NA | 4,094690043 | 5,236747112 |
| 231214_at | NA | 6,006489553 | 7,67580026 |
| 231364_at | NFIA-AS2 | 3,717970824 | 4,751073479 |
| 209189_at | FOS | 6,021014848 | 7,691190967 |
| 1557260_a_at | ZNF382 | 3,999651129 | 5,108657797 |

| | | | |
|---|---|---|---|
| 223772_s_at | TMEM87A | 5,132576753 | 6,551697249 |
| 206465_at | ACSBG1 | 6,656856077 | 8,487151277 |
| 238462_at | UBASH3B | 6,650984771 | 8,478897258 |
| 1563621_at | NA | 5,024878498 | 6,403592161 |
| 205528_s_at | RUNX1T1 | 5,764064076 | 7,339138848 |
| 227532_at | LRRC39 | 3,91810436 | 4,986463994 |
| 225630_at | EEPD1 | 5,912922962 | 7,52413635 |
| 204984_at | GPC4 | 8,248409643 | 10,48914969 |
| 238752_at | GPLD1 | 4,497969789 | 5,717372771 |
| 212187_x_at | PTGDS | 7,792243802 | 9,903958817 |
| 226218_at | IL7R | 5,099346583 | 6,472306422 |
| 213415_at | CLIC2 | 4,046081614 | 5,133835714 |
| 204983_s_at | GPC4 | 7,63950238 | 9,689580568 |
| 223827_at | TNFRSF19 | 5,880320083 | 7,45754057 |
| 1559062_at | NA | 4,009357577 | 5,084605488 |
| 227791_at | SLC9A9 | 6,870239594 | 8,709639908 |
| 220021_at | TMC7 | 4,802961594 | 6,087815558 |
| 230534_at | ZNF678 | 5,231535672 | 6,630334207 |
| 205668_at | LY75 | 6,018332712 | 7,624016214 |
| 226274_at | CLCN5 | 6,354333947 | 8,047514841 |
| 238417_at | PGM2L1 | 6,439797918 | 8,150665776 |
| 210121_at | B3GALT2 | 5,585728827 | 7,060807711 |
| 234051_at | NA | 4,011112145 | 5,069375272 |
| 206144_at | MAGI1 | 6,276124489 | 7,930149048 |
| 226997_at | ADAMTS12 | 7,249155365 | 9,156273473 |
| 236197_at | NA | 3,502696529 | 4,423369946 |
| 228461_at | SH3RF3 | 5,55482167 | 7,013500694 |
| 228827_at | RUNX1T1 | 6,665822177 | 8,409906077 |
| 1562926_at | NA | 4,412844012 | 5,562683002 |
| 207303_at | PDE1C | 6,321485024 | 7,962733997 |
| 209627_s_at | OSBPL3 | 7,139114403 | 8,985722155 |
| 229725_at | ACSL6 | 5,5600462 | 6,994923247 |
| 230451_at | NA | 4,913739053 | 6,181027829 |
| 1554910_at | PRKD3 | 4,756707048 | 5,982658004 |
| 211748_x_at | PTGDS | 8,068244031 | 10,14518399 |
| 204184_s_at | ADRBK2 | 6,233021451 | 7,83272267 |
| 235761_at | NA | 4,971365183 | 6,242779692 |
| 229288_at | EPHA7 | 8,883974433 | 11,1519055 |
| 213228_at | PDE8B | 6,492641142 | 8,149552839 |
| 235020_at | TAF4B | 5,525999571 | 6,93615339 |
| 238890_at | BRWD1 | 6,021432795 | 7,548738481 |
| 230248_x_at | NA | 4,007975949 | 5,022333725 |
| 205805_s_at | ROR1 | 4,094071888 | 5,128709872 |
| 236179_at | CDH11 | 6,599036678 | 8,261382294 |
| 1557345_at | LOC283516 | 3,088364428 | 3,866053416 |
| 204796_at | EML1 | 6,778967121 | 8,482692719 |
| 212594_at | NA | 4,939014713 | 6,178761748 |
| 206117_at | TPM1 | 5,835428846 | 7,297451151 |
| 236795_at | NA | 4,765279632 | 5,958756186 |
| 232803_at | NA | 2,611763193 | 3,263919884 |
| 218002_s_at | CXCL14 | 7,377458312 | 9,208346847 |
| 242593_at | NA | 4,534096934 | 5,658218659 |
| 1559966_a_at | ZFHX4-AS1 | 6,590472298 | 8,221717605 |
| 202834_at | AGT | 8,52652754 | 10,63208675 |
| 218850_s_at | LIMD1 | 6,96422458 | 8,683782486 |
| 219714_s_at | CACNA2D3 | 3,679420911 | 4,587144708 |

| | | | |
|---|---|---|---|
| 226982_at | ELL2 | 4,629900147 | 5,771236666 |
| 1564150_a_at | LINC01619 | 3,077252276 | 3,835501864 |
| 239218_at | PDE1C | 8,207993649 | 10,23008251 |
| 239476_at | NA | 5,33281137 | 6,646153503 |
| 205960_at | PDK4 | 3,845057025 | 4,791833236 |
| 232538_at | NA | 5,432900164 | 6,769570532 |
| 230908_at | TACR1 | 4,201435194 | 5,233827665 |
| 217452_s_at | B3GALT2 | 5,849857103 | 7,278826917 |
| 223601_at | OLFM2 | 5,854766829 | 7,282810488 |
| 210954_s_at | TSC22D2 | 3,38807614 | 4,213048265 |
| 239835_at | KBTBD8 | 5,599002837 | 6,959246258 |
| 207414_s_at | NA | 4,518483025 | 5,615523583 |
| 1557685_at | ASAP1-IT2 | 5,668520841 | 7,043427121 |
| 226418_at | ERGIC2 | 5,193786992 | 6,445643832 |
| 205560_at | PCSK5 | 6,081182651 | 7,54350414 |
| 1556773_at | NA | 3,703587112 | 4,588474669 |
| 227828_s_at | EVA1A | 5,099394608 | 6,316101745 |
| 214967_at | NA | 4,594745504 | 5,689907223 |
| 224489_at | NA | 4,930033355 | 6,104717541 |
| 238658_at | NA | 5,638063348 | 6,980136673 |
| 219610_at | ARHGEF28 | 6,482382286 | 8,02458788 |
| 206591_at | RAG1 | 2,86791038 | 3,548904726 |
| 230495_at | LINC01102 | 7,062498257 | 8,736017269 |
| 212473_s_at | MICAL2 | 6,211923454 | 7,68146446 |
| 242443_at | NA | 5,401105585 | 6,671004265 |
| 227038_at | SGMS2 | 5,520228798 | 6,817235648 |
| 240061_at | NA | 5,134506633 | 6,336997129 |
| 221935_s_at | EOGT | 6,710999683 | 8,279679324 |
| 215318_at | MINOS1P1 | 4,543329239 | 5,605113657 |
| 238587_at | UBASH3B | 6,546934794 | 8,074007086 |
| 1554824_at | ZNF585A | 5,420120162 | 6,683769897 |
| 212298_at | NRP1 | 7,599073756 | 9,367208556 |
| 1559965_at | ZFHX4-AS1 | 7,606223036 | 9,374430738 |
| 214930_at | SLITRK5 | 4,388944197 | 5,409135562 |
| 231807_at | KIAA1217 | 5,130833578 | 6,323458039 |
| 227173_s_at | BACH2 | 7,080810217 | 8,726206304 |
| 1554741_s_at | NA | 3,994356142 | 4,922434002 |
| 205479_s_at | PLAU | 6,907444918 | 8,51169299 |
| 239350_at | MARVELD3 | 5,286150419 | 6,513771204 |
| 218062_x_at | CDC42EP4 | 9,167015166 | 11,29316081 |
| 225631_at | EEPD1 | 5,061968233 | 6,235881796 |
| 235209_at | SBSPON | 4,577057973 | 5,638068016 |
| 213652_at | PCSK5 | 6,685407072 | 8,234265032 |
| 205932_s_at | MSX1 | 8,620106885 | 10,61623351 |
| 220456_at | SPTLC3 | 3,348562539 | 4,123533603 |
| 1565639_a_at | PMP22 | 6,038490763 | 7,435900945 |
| 1558250_s_at | NA | 6,278190221 | 7,730609226 |
| 203498_at | RCAN2 | 9,855949499 | 12,12735569 |
| 222484_s_at | CXCL14 | 7,423587917 | 9,133180015 |
| 202431_s_at | MYC | 7,076835037 | 8,703109141 |
| 230278_at | NA | 5,731180619 | 7,046860652 |
| 212489_at | COL5A1 | 6,631184774 | 8,152080819 |
| 244663_at | ZNF431 | 6,002932859 | 7,378159424 |
| 235970_at | LCORL | 5,789315873 | 7,114964442 |
| 229521_at | CCDC71L | 6,374675309 | 7,832860033 |
| 238623_at | NA | 6,842531951 | 8,406505772 |

| | | | |
|---|---|---|---|
| 211679_x_at | GABBR2 | 4,426436257 | 5,437184518 |
| 229178_at | PRTG | 5,495341837 | 6,749865747 |
| 219523_s_at | TENM3 | 5,655773093 | 6,946194976 |
| 1560814_a_at | C15orf57 | 5,721444288 | 7,026153807 |
| 222520_s_at | IFT57 | 3,910421781 | 4,801747407 |
| 215209_at | SEC24D | 3,871854359 | 4,753503536 |
| 220454_s_at | SEMA6A | 6,020055053 | 7,390103794 |
| 232000_at | TTC39B | 5,015336976 | 6,15604101 |
| 209829_at | FAM65B | 7,339530218 | 9,007042643 |
| 1569029_at | METAP1D | 4,555949954 | 5,590476893 |
| 212240_s_at | PIK3R1 | 8,129315447 | 9,97354029 |
| 211925_s_at | PLCB1 | 5,191612408 | 6,368734442 |
| 236824_at | TMEM132B | 9,659140073 | 11,84843436 |
| 227755_at | ERN1 | 5,894586215 | 7,227908476 |
| 235683_at | SESN3 | 6,437534308 | 7,884065629 |
| 235658_at | NA | 5,416388057 | 6,62815307 |
| 213601_at | SLIT1 | 6,896628123 | 8,436281228 |
| 235497_at | LINC01128 | 5,973970577 | 7,30616972 |
| 1558388_a_at | UG0898H09 | 8,15075178 | 9,968221439 |
| 219313_at | GRAMD1C | 7,181385313 | 8,779566827 |
| 233801_s_at | SEMA6D | 7,696864334 | 9,408160591 |
| 243042_at | FAM73A | 6,049293409 | 7,389220094 |
| 206116_s_at | TPM1 | 9,112596998 | 11,1298247 |
| 204976_s_at | AMMECR1 | 7,539886331 | 9,208756068 |
| 238495_at | LRRC57 | 5,479276849 | 6,690171333 |
| 233555_s_at | SULF2 | 8,392222035 | 10,24224499 |
| 204149_s_at | GSTM4 | 6,282081022 | 7,664554319 |
| 242979_at | IRS1 | 5,068203936 | 6,180142668 |
| 214721_x_at | CDC42EP4 | 9,486837348 | 11,56548592 |
| 239698_at | NA | 4,804129228 | 5,854494277 |
| 238484_s_at | SSBP2 | 6,048345646 | 7,3669754 |
| 232384_s_at | LOC101927272 | 3,440942596 | 4,189802538 |
| 242342_at | GUCY1A2 | 4,500304174 | 5,477590657 |
| 208944_at | TGFBR2 | 6,301817323 | 7,668975905 |
| 207426_s_at | TNFSF4 | 5,44760455 | 6,623468245 |
| 240557_at | TSC22D2 | 7,184612834 | 8,73539514 |
| 232313_at | TMEM132C | 4,528266215 | 5,50552576 |
| 210068_s_at | AQP4 | 3,815350229 | 4,637982864 |
| 220467_at | NA | 3,657607248 | 4,442709596 |
| 235545_at | DEPDC1 | 7,681781429 | 9,326628787 |
| 233609_at | PTPRK | 5,197835206 | 6,310000407 |
| 1557506_a_at | NA | 5,070890149 | 6,154153392 |
| 243851_at | NA | 4,35639051 | 5,287003029 |
| 220141_at | C11orf63 | 6,014297507 | 7,2989165 |
| 215386_at | NA | 4,938576309 | 5,992485427 |
| 1569685_at | COX10 | 4,995730154 | 6,060716347 |
| 226076_s_at | NA | 5,070794469 | 6,148167809 |
| 242088_at | KLHL24 | 4,55974732 | 5,526302924 |
| 239999_at | MIR99AHG | 6,805599964 | 8,246220282 |
| 241370_at | LOC286052 | 5,838743056 | 7,074464697 |
| 227046_at | SLC39A11 | 6,981966564 | 8,459275006 |
| 235888_at | NA | 5,077216748 | 6,150780917 |
| 213609_s_at | SEZ6L | 8,749909555 | 10,59824434 |
| 205442_at | MFAP3L | 4,978923447 | 6,030337068 |
| 1557433_at | NA | 6,597713838 | 7,990576133 |
| 236717_at | FAM179A | 5,194908491 | 6,291458332 |

| | | | |
|---|---|---|---|
| 210987_x_at | TPM1 | 9,348753923 | 11,31719524 |
| 221796_at | NTRK2 | 3,421542123 | 4,140704188 |
| 218975_at | COL5A3 | 6,09121358 | 7,369103693 |
| 229132_at | MINA | 5,546961263 | 6,707020899 |
| 230763_at | SPATA17 | 4,570801865 | 5,525371061 |
| 228188_at | FOSL2 | 7,934539748 | 9,590127169 |
| 229553_at | PGM2L1 | 7,852666711 | 9,489593335 |
| 232355_at | SNORD114-3 | 6,423080631 | 7,761092138 |
| 229073_at | PRTG | 5,687131884 | 6,870177619 |
| 229091_s_at | CCNJ | 5,599858348 | 6,760242107 |
| 235416_at | LOC643201 | 5,779346713 | 6,974959303 |
| 231468_at | SH3BP4 | 4,066106152 | 4,904642556 |
| 204183_s_at | ADRBK2 | 5,849383936 | 7,049330737 |
| 217565_at | GRIA3 | 5,884747009 | 7,091730671 |
| 210944_s_at | CAPN3 | 6,175895307 | 7,442538991 |
| 1562059_at | NA | 4,628695485 | 5,576542938 |
| 227775_at | CELF6 | 3,751152033 | 4,516488847 |
| 203325_s_at | COL5A1 | 7,225084601 | 8,694553919 |
| 219279_at | DOCK10 | 6,258261887 | 7,530204539 |
| 221583_s_at | KCNMA1 | 5,555208112 | 6,6841236 |
| 233055_at | NA | 5,679507791 | 6,831969782 |
| 240172_at | ERGIC2 | 6,682543394 | 8,035302848 |
| 1560407_at | MARK1 | 5,128822998 | 6,162123015 |
| 214962_s_at | NUP160 | 5,470994473 | 6,572691839 |
| 215523_at | ZNF391 | 4,060343218 | 4,876687854 |
| 212256_at | GALNT10 | 7,912638765 | 9,499394728 |
| 213139_at | SNAI2 | 8,177154651 | 9,815757724 |
| 230650_at | SLCO5A1 | 7,633512683 | 9,162557788 |
| 241156_at | NA | 5,050595522 | 6,060783235 |
| 233882_s_at | SEMA6D | 8,984561965 | 10,78037392 |
| 235111_at | LSAMP | 8,109040912 | 9,729667721 |
| 216724_at | DCLK2 | 6,303903743 | 7,562018236 |
| 226886_at | GFPT1 | 7,664959763 | 9,193882756 |
| 203865_s_at | ADARB1 | 5,465368629 | 6,554957595 |
| 1558945_s_at | CACNA1A | 5,219611298 | 6,258380128 |
| 235348_at | ABHD13 | 6,173931258 | 7,400957138 |
| 204345_at | COL16A1 | 8,792022736 | 10,5377617 |
| 221103_s_at | CFAP44 | 6,099205834 | 7,310190231 |
| 227213_at | ADAT2 | 5,889427731 | 7,058622324 |
| 233297_s_at | NA | 4,477386186 | 5,363943479 |
| 203884_s_at | RAB11FIP2 | 7,331531553 | 8,781038337 |
| 227568_at | HECTD2 | 8,704572442 | 10,42246827 |
| 216452_at | TRPM3 | 4,572551246 | 5,474191541 |
| 212249_at | PIK3R1 | 7,107001494 | 8,506507237 |
| 214748_at | N4BP2L2 | 7,910118292 | 9,466847262 |
| 207434_s_at | NA | 4,794361268 | 5,737253933 |
| 204501_at | NOV | 4,771803474 | 5,708324482 |
| 210986_s_at | TPM1 | 9,996449774 | 11,95485333 |
| 215715_at | SLC6A2 | 5,535058753 | 6,618905594 |
| 222735_at | TMEM38B | 8,018726776 | 9,588098221 |
| 236163_at | LIX1 | 3,977760802 | 4,755424016 |
| 205429_s_at | MPP6 | 7,822898756 | 9,349574076 |
| 235382_at | LVRN | 3,174763879 | 3,79423591 |
| 236769_at | LOC158402 | 5,739930592 | 6,855754785 |
| 201811_x_at | SH3BP5 | 8,273456082 | 9,879755718 |
| 1554640_at | PALM2 | 4,339073408 | 5,181062634 |

| | | | |
|---|---|---|---|
| 202883_s_at | PPP2R1B | 8,632801363 | 10,30181686 |
| 201487_at | CTSC | 7,899179374 | 9,423596055 |
| 214193_s_at | DIEXF | 6,372294171 | 7,597206441 |
| 226018_at | MTURN | 7,321455233 | 8,725590942 |
| 238537_at | CA8 | 4,688066182 | 5,586296368 |
| 234258_at | NA | 3,965597765 | 4,725173858 |
| 222315_at | LOC100996756 | 6,254448021 | 7,449709183 |
| 1569940_at | SLC6A16 | 4,418516916 | 5,262917911 |
| 228481_at | NA | 6,407788495 | 7,631251441 |
| 223044_at | SLC40A1 | 8,09088897 | 9,63411402 |
| 236097_at | NA | 5,946833447 | 7,080432721 |
| 215028_at | SEMA6A | 8,107144125 | 9,651446334 |
| 210641_at | CAPN9 | 4,204734879 | 5,004520716 |
| 242923_at | ZNF678 | 7,047837018 | 8,387590951 |
| 1554462_a_at | DNAJB9 | 8,093754379 | 9,632010011 |
| 222820_at | TNRC6C | 6,642601149 | 7,902084857 |
| 233020_at | NA | 5,567249888 | 6,620712755 |
| 231249_at | SZT2 | 4,741204851 | 5,637405728 |
| 230655_at | NA | 7,202442391 | 8,562702221 |
| 64408_s_at | CALML4 | 5,236269066 | 6,225094666 |
| 236335_at | GUCY1A2 | 6,203075249 | 7,373995898 |
| 228375_at | IGSF11 | 7,290872363 | 8,667056088 |
| 202008_s_at | NID1 | 7,838788228 | 9,317914774 |
| 202481_at | DHRS3 | 5,012965252 | 5,957482024 |
| 223694_at | TRIM7 | 6,051415752 | 7,191273504 |
| 213413_at | STON1 | 5,966625705 | 7,089433609 |
| 228949_at | WLS | 8,264075686 | 9,818326043 |
| 233528_s_at | GATSL3 | 6,799206802 | 8,077769144 |
| 1552486_s_at | LACTB | 5,889525423 | 6,996878567 |
| 240277_at | NA | 6,501022414 | 7,722434737 |
| 204194_at | BACH1 | 8,374463146 | 9,943933842 |
| 227314_at | ITGA2 | 5,40263743 | 6,415011941 |
| 207873_x_at | SEZ6L | 6,59926755 | 7,83502141 |
| 207172_s_at | CDH11 | 7,682362087 | 9,120923853 |
| 204797_s_at | EML1 | 7,983851788 | 9,47802683 |
| 207173_x_at | CDH11 | 8,673912975 | 10,29703088 |
| 203504_s_at | ABCA1 | 7,854171118 | 9,323089721 |
| 230861_at | DKFZP434L187 | 6,29188664 | 7,467487442 |
| 1559005_s_at | CNTLN | 4,32329913 | 5,130702648 |
| 204854_at | P3H3 | 6,629411125 | 7,867314832 |
| 203196_at | ABCC4 | 6,104328647 | 7,243664009 |
| 215501_s_at | DUSP10 | 5,324182187 | 6,316110869 |
| 227614_at | HKDC1 | 6,866453929 | 8,141913954 |
| 228473_at | MSX1 | 5,439908634 | 6,450380136 |
| 244030_at | STYX | 6,50248071 | 7,709016488 |
| 214896_at | LINC01314 | 7,361013602 | 8,725543729 |
| 1553208_s_at | ARL10 | 3,869268181 | 4,586197283 |
| 224728_at | ATPAF1 | 7,807734314 | 9,249889659 |
| 232589_at | LOC102606465 | 6,66974235 | 7,897354377 |
| 1568619_s_at | ITPRIPL2 | 8,816653666 | 10,4389553 |
| 210912_x_at | GSTM4 | 6,513615443 | 7,711718655 |
| 224724_at | SULF2 | 9,801607937 | 11,60363288 |
| 205872_x_at | PDE4DIP | 6,050808159 | 7,162186703 |
| 213222_at | PLCB1 | 9,072184545 | 10,73632883 |

| | | | |
|---|---|---|---|
| 204949_at | ICAM3 | 6,373447488 | 7,54140892 |
| 239360_at | LOC102723886 | 4,249459844 | 5,027976287 |
| 226158_at | KLHL24 | 8,435356292 | 9,980389287 |
| 226613_at | GATSL3 | 6,754667429 | 7,990986863 |
| 222360_at | DPH5 | 6,843899777 | 8,095288616 |
| 201810_s_at | SH3BP5 | 7,915240758 | 9,360376064 |
| 226601_at | SLC30A7 | 8,119219081 | 9,601258269 |
| 220574_at | SEMA6D | 7,301337451 | 8,632694951 |
| 227488_at | NA | 6,662006371 | 7,874146738 |
| 1554004_a_at | ARHGEF28 | 6,094702617 | 7,203118616 |
| 203549_s_at | LPL | 7,505860097 | 8,870421037 |
| 227095_at | LEPROT | 8,274285038 | 9,77664756 |
| 244761_at | C5orf63 | 5,181356987 | 6,122070691 |
| 222670_s_at | MAFB | 9,571991118 | 11,3097582 |
| 213103_at | STARD13 | 7,176183577 | 8,477511051 |
| 231919_at | DBT | 6,513567954 | 7,694022232 |
| 205525_at | CALD1 | 7,726402069 | 9,125983952 |
| 213372_at | PAQR3 | 9,051251121 | 10,68988368 |
| 211894_x_at | SEZ6L | 6,675826095 | 7,883645684 |
| 213943_at | TWIST1 | 6,822028646 | 8,054609456 |
| 228256_s_at | EPB41L4A | 6,088137813 | 7,187564224 |
| 1570360_s_at | DDX3Y | 7,157940399 | 8,450536019 |
| 240083_at | NA | 5,288873216 | 6,24231962 |
| 209966_x_at | ESRRG | 4,901499423 | 5,784872001 |
| 243491_at | ZNF431 | 5,771242056 | 6,809228992 |
| 1558754_at | ZNF763 | 3,321465752 | 3,918747162 |
| 223449_at | SEMA6A | 9,49170935 | 11,19787757 |
| 1559397_s_at | PRR14 | 5,991830009 | 7,066973023 |
| 232791_at | NA | 4,013060881 | 4,732314005 |
| 1553613_s_at | FOXC1 | 6,948536261 | 8,193682691 |
| 240592_at | LCORL | 8,188483441 | 9,654647057 |
| 204079_at | TPST2 | 7,412072055 | 8,73735773 |
| 232028_at | ZNF678 | 6,420255393 | 7,568078254 |
| 238178_at | NA | 5,544296764 | 6,53527421 |
| 229498_at | MBNL3 | 7,211511958 | 8,500231436 |
| 200670_at | XBP1 | 7,731871507 | 9,112601426 |
| 226321_at | LYSMD3 | 8,172772556 | 9,62942106 |
| 216047_x_at | SEZ6L | 6,753844953 | 7,954353656 |
| 235125_x_at | FAM73A | 7,373731482 | 8,68297462 |
| 211663_x_at | PTGDS | 6,96736217 | 8,203002829 |
| 227782_at | ZBTB7C | 5,818036036 | 6,849723209 |
| 229480_at | MAGI2-AS3 | 6,711282799 | 7,899218116 |
| 1559094_at | FBXO9 | 6,720154472 | 7,904829798 |
| 242100_at | CHSY3 | 7,548488997 | 8,877966653 |
| 218772_x_at | TMEM38B | 8,145568889 | 9,579163689 |
| 215351_at | RTCA | 4,269380793 | 5,019755283 |
| 226671_at | LAMP2 | 8,684713226 | 10,20977703 |
| 233728_at | NA | 4,948130166 | 5,816340224 |
| 227954_at | ITPRIPL2 | 7,990974261 | 9,392578182 |
| 213672_at | NA | 5,756488168 | 6,765615271 |
| 218559_s_at | MAFB | 10,44392496 | 12,27346719 |
| 1556654_at | CDK12 | 3,358596439 | 3,945999732 |
| 209081_s_at | COL18A1 | 4,867330075 | 5,718236646 |
| 205559_s_at | PCSK5 | 7,677900165 | 9,016761034 |
| 222564_at | POGK | 4,628514367 | 5,435420404 |
| 1558739_at | BORCS5 | 5,117070731 | 6,008305767 |

| | | | |
|---|---|---|---|
| 238879_at | DCUN1D1 | 6,795664605 | 7,978246726 |
| 203883_s_at | RAB11FIP2 | 7,522936749 | 8,831743321 |
| 203201_at | PMM2 | 6,65854276 | 7,816869806 |
| 224090_s_at | TNFRSF19 | 6,016182446 | 7,061101381 |
| 226709_at | ROBO2 | 6,189187333 | 7,26336366 |
| 212510_at | GPD1L | 8,553346935 | 10,0370304 |
| 232696_at | NA | 3,812030875 | 4,472700151 |
| 204121_at | GADD45G | 6,629494709 | 7,769571416 |
| 243050_at | NA | 5,810036717 | 6,804383786 |
| 1557430_at | SMIM17 | 5,786119255 | 6,77605762 |
| 210794_s_at | MEG3 | 8,228081724 | 9,634877428 |
| 218638_s_at | NA | 8,479885248 | 9,928792811 |
| 222762_x_at | LIMD1 | 8,724575472 | 10,21186142 |
| 228575_at | IL20RB | 4,261119833 | 4,987465118 |
| 214460_at | LSAMP | 8,464901418 | 9,906738424 |
| 235149_at | PGM2L1 | 5,853136607 | 6,847409751 |
| 226884_at | LRRN1 | 9,874973745 | 11,55184339 |
| 212841_s_at | PPFIBP2 | 7,515488862 | 8,791618304 |
| 222663_at | RIOK2 | 6,790302609 | 7,94291124 |
| 203548_s_at | LPL | 7,595947223 | 8,88500094 |
| 230174_at | LYPLAL1 | 7,705605569 | 9,012861599 |
| 227763_at | LYPD6 | 5,168227128 | 6,044600285 |
| 206775_at | CUBN | 5,023416525 | 5,874113918 |
| 1556656_at | NA | 4,541306797 | 5,309422587 |
| 206204_at | GRB14 | 6,640583257 | 7,761879453 |
| 222877_at | NRP2 | 7,404494702 | 8,653909893 |
| 238761_at | ELK4 | 7,501800809 | 8,767310457 |
| 203143_s_at | KIAA0040 | 4,725632146 | 5,522530051 |
| 202566_s_at | SVIL | 8,47700201 | 9,903019025 |
| 228043_at | UTP15 | 5,120172015 | 5,980186672 |
| 207060_at | EN2 | 6,410699647 | 7,487027632 |
| 227149_at | TNRC6C | 4,993040178 | 5,829638008 |
| 227390_at | MEG3 | 6,441852528 | 7,52085147 |
| 230444_at | PDE7A | 6,058109082 | 7,072133303 |
| 228141_at | GPX8 | 7,558528983 | 8,819443387 |
| 228732_at | GUCY1A2 | 5,643014615 | 6,583583612 |
| 242671_at | NA | 7,691611492 | 8,972373335 |
| 215126_at | LINC01314 | 7,625513885 | 8,895063535 |
| 211064_at | ZNF493 | 4,574343962 | 5,335764503 |
| 202828_s_at | MMP14 | 7,818609995 | 9,119335508 |
| 222316_at | NA | 6,150006689 | 7,172993439 |
| 227666_at | DCLK2 | 8,781307222 | 10,23958044 |
| 235061_at | PPM1K | 5,649348973 | 6,587095527 |
| 242986_at | NAV1 | 4,649308214 | 5,42060598 |
| 218839_at | HEY1 | 9,914892348 | 11,55953679 |
| 232405_at | NA | 5,163555769 | 6,019564942 |
| 207401_at | PROX1 | 7,320912563 | 8,533569515 |
| 219750_at | TMEM144 | 4,195363687 | 4,890134182 |
| 208442_s_at | ATM | 6,006247439 | 6,999323447 |
| 220773_s_at | GPHN | 7,73363811 | 9,010623678 |
| 232080_at | HECW2 | 6,456099778 | 7,519996906 |
| 212472_at | MICAL2 | 5,403412238 | 6,293771414 |
| 202842_s_at | DNAJB9 | 9,534887014 | 11,10564256 |
| 242982_x_at | ITGB8 | 5,900434035 | 6,872392088 |
| 205701_at | IPO8 | 6,263481301 | 7,294134442 |
| 1554449_at | MIER3 | 5,441945153 | 6,336081606 |

| | | | |
|---|---|---|---|
| 218806_s_at | VAV3 | 6,674960659 | 7,768192665 |
| 238441_at | PRKAA2 | 6,142085083 | 7,146812842 |
| 205139_s_at | UST | 8,020870222 | 9,330637416 |
| 231205_at | NA | 6,469873099 | 7,526095896 |
| 227514_at | ITPRIPL2 | 8,360927348 | 9,724669806 |
| 240642_at | ZMYM2 | 4,143264931 | 4,818867389 |
| 218880_at | FOSL2 | 6,392947712 | 7,433826677 |
| 231383_at | NA | 4,053336515 | 4,712008814 |
| 209626_s_at | OSBPL3 | 7,89282148 | 9,174625568 |
| 226217_at | SLC30A7 | 8,617531123 | 10,01547823 |
| 236166_at | LOC285147 | 5,573310659 | 6,476262905 |
| 225868_at | TRIM47 | 7,2191991 | 8,388293357 |
| 205057_s_at | IDUA | 4,330947719 | 5,032117935 |
| 227440_at | ANKS1B | 5,138432875 | 5,969738152 |
| 235494_at | LSAMP | 9,477331282 | 11,00908783 |
| 214874_at | PKP4 | 4,822308342 | 5,599732815 |
| 225354_s_at | SH3BGRL2 | 6,773729372 | 7,865302486 |
| 37547_at | BBS9 | 6,055237106 | 7,030582924 |
| 1563941_at | NA | 3,605851763 | 4,186203191 |
| 236153_at | NA | 6,701110355 | 7,77869942 |
| 235989_at | NA | 6,790971338 | 7,880930275 |
| 212239_at | PIK3R1 | 8,646753344 | 10,02656724 |
| 204964_s_at | SSPN | 7,253827979 | 8,408295901 |
| 239995_at | NA | 6,582831837 | 7,630097503 |
| 218940_at | VCPKMT | 8,179167208 | 9,478826093 |
| 212122_at | RHOQ | 6,826253799 | 7,910741045 |
| 205059_s_at | IDUA | 6,506722696 | 7,54036966 |
| 216869_at | PDE1C | 6,403866372 | 7,420859517 |
| 227812_at | TNFRSF19 | 9,590874825 | 11,11205991 |
| 219195_at | PPARGC1A | 7,201923814 | 8,343219953 |
| 229685_at | LOC100134937 | 5,295779935 | 6,134564361 |
| 205574_x_at | BMP1 | 6,228459507 | 7,213129237 |
| 1562848_at | IST1 | 5,515058074 | 6,384219701 |
| 202687_s_at | TNFSF10 | 4,233722287 | 4,900235632 |
| 202363_at | SPOCK1 | 9,984997288 | 11,55640319 |
| 1559096_x_at | FBXO9 | 7,470528317 | 8,646210393 |
| 218816_at | LRRC1 | 7,02860414 | 8,134727505 |
| 1558944_at | CACNA1A | 5,808480635 | 6,721177216 |
| 236016_at | SMARCE1 | 6,097830466 | 7,055346743 |
| 223568_s_at | PPAPDC1B | 7,590155759 | 8,780844947 |
| 210611_s_at | DTNA | 6,48240075 | 7,499288842 |
| 1553221_at | ZNF583 | 6,559870889 | 7,587177066 |
| 222736_s_at | TMEM38B | 7,879721626 | 9,111914685 |
| 219923_at | TRIM45 | 6,417562681 | 7,420485308 |
| 213683_at | ACSL6 | 4,523675957 | 5,230208529 |
| 227792_at | ITPRIPL2 | 10,0301523 | 11,59399688 |
| 229435_at | GLIS3 | 9,082109914 | 10,49546943 |
| 236344_at | PDE1C | 7,627195177 | 8,813020678 |
| 238519_at | NA | 6,996402464 | 8,083845016 |
| 229796_at | SIX4 | 6,615781897 | 7,64251457 |
| 160020_at | MMP14 | 8,624476114 | 9,962608182 |
| 219511_s_at | SNCAIP | 7,787471216 | 8,994525733 |
| 215921_at | NA | 5,75941814 | 6,651995911 |
| 232231_at | RUNX2 | 6,493492069 | 7,499067154 |
| 226641_at | ANKRD44 | 6,932923217 | 8,005941391 |
| 227282_at | PCDH19 | 9,023328245 | 10,41831483 |

| | | | |
|---|---|---|---|
| 228359_at | UBASH3B | 5,71624819 | 6,596624368 |
| 227892_at | PRKAA2 | 6,163759358 | 7,112643054 |
| 234111_at | ZNF81 | 7,367781409 | 8,501567399 |
| 213938_at | ERC2 | 3,776083014 | 4,355732318 |
| 204963_at | SSPN | 8,208174277 | 9,466559395 |
| 226931_at | TMTC1 | 6,777811766 | 7,815986205 |
| 241731_x_at | ZNF440 | 6,413654148 | 7,394951937 |
| 205138_s_at | UST | 4,778675779 | 5,508695573 |
| 228454_at | LCOR | 7,758171472 | 8,942498255 |
| 222687_s_at | ACER3 | 6,958680005 | 8,019757664 |
| 228879_at | NA | 6,874096061 | 7,92183276 |
| 226238_at | MCEE | 6,732544701 | 7,758505888 |
| 1555967_at | NA | 6,692323347 | 7,711261119 |
| 222552_at | GOLT1B | 9,024672591 | 10,39645024 |
| 242852_at | LOC285147 | 4,896560176 | 5,640539532 |
| 219617_at | CAMKMT | 7,487356655 | 8,62461614 |
| 228608_at | NALCN | 4,568227299 | 5,261800633 |
| 235756_at | NA | 6,552906563 | 7,547702464 |
| 237320_at | FAM71F2 | 4,598417362 | 5,296032331 |
| 203505_at | ABCA1 | 8,828891124 | 10,16826755 |
| 1555968_a_at | NA | 6,863819352 | 7,905071601 |
| 213273_at | TENM4 | 7,581713906 | 8,729079043 |
| 223319_at | GPHN | 8,889606479 | 10,23230232 |
| 228853_at | STYX | 7,704947969 | 8,868519144 |
| 226534_at | KITLG | 6,90289649 | 7,943706003 |
| 239951_at | NA | 6,905957991 | 7,944573603 |
| 227449_at | EPHA4 | 7,043047498 | 8,100381768 |
| 206073_at | COLQ | 4,80833574 | 5,529965503 |
| 207563_s_at | OGT | 7,395320105 | 8,5009134 |
| 226150_at | PPAPDC1B | 8,643048997 | 9,935016309 |
| 239161_at | FDX1 | 5,762252403 | 6,623119324 |
| 222656_at | UBE2W | 8,511219848 | 9,782166568 |
| 226802_s_at | BMS1P20 | 7,907006015 | 9,085859481 |
| 232612_s_at | ATG16L1 | 6,594471704 | 7,577613228 |
| 235610_at | ALKBH8 | 6,643402039 | 7,633136267 |
| 226932_at | SSPN | 7,809518224 | 8,970256485 |
| 204573_at | CROT | 8,728392321 | 10,02268429 |
| 212390_at | NA | 7,054499082 | 8,099190333 |
| 1554915_a_at | PDE12 | 6,244285119 | 7,168955138 |
| 234941_s_at | GPHN | 6,947145713 | 7,975891492 |
| 228074_at | ITPRIPL2 | 5,987456946 | 6,873965606 |
| 44783_s_at | HEY1 | 10,31657337 | 11,84403 |
| 205846_at | PTPRB | 3,632178701 | 4,169846763 |
| 241459_at | NA | 5,69971 | 6,543343611 |
| 225660_at | SEMA6A | 10,07784413 | 11,56182227 |
| 227103_s_at | ECE2 | 5,261299496 | 6,03593537 |
| 226520_at | LCOR | 7,148986761 | 8,200349592 |
| 228731_at | GUCY1A2 | 7,116105038 | 8,162389109 |
| 216711_s_at | TAF1 | 6,423944815 | 7,367987722 |
| 204686_at | IRS1 | 6,979631242 | 8,00491643 |
| 201124_at | ITGB5 | 5,546356382 | 6,360195555 |
| 232478_at | MIR181A2HG | 6,819277953 | 7,81890001 |
| 237680_at | NA | 4,453741711 | 5,105067902 |
| 219853_at | FKRP | 6,119822254 | 7,014560632 |
| 220334_at | RGS17 | 8,543392569 | 9,792262274 |
| 228471_at | ANKRD44 | 6,519591864 | 7,472055628 |

| | | | |
|---|---|---|---|
| 233587_s_at | SIPA1L2 | 8,767061306 | 10,04717495 |
| 210756_s_at | NOTCH2 | 7,863488709 | 9,010073427 |
| 207265_s_at | KDELR3 | 7,401574134 | 8,476119191 |
| 235655_at | NA | 5,975543682 | 6,840846163 |
| 239991_at | NA | 5,937537831 | 6,794922966 |
| 238466_at | NA | 7,11721614 | 8,142645763 |
| 235369_at | C14orf28 | 6,767999055 | 7,73977135 |
| 242405_at | NA | 6,244983291 | 7,140262057 |
| 236458_at | NA | 6,209339414 | 7,098745752 |
| 226754_at | ZNF251 | 6,887494383 | 7,873122737 |
| 216682_s_at | SUPT20H | 5,684438675 | 6,497858482 |
| 219632_s_at | NA | 5,389465281 | 6,157956873 |
| 228948_at | EPHA4 | 6,585561265 | 7,523338339 |
| 238647_at | C14orf28 | 5,80754295 | 6,634127415 |
| 209909_s_at | TGFB2 | 8,711896265 | 9,950608097 |
| 221986_s_at | KLHL24 | 7,243541845 | 8,272863616 |
| 242056_at | TRIM45 | 7,099996467 | 8,108189696 |
| 218113_at | TMEM2 | 9,828509025 | 11,2231942 |
| 219367_s_at | NRP2 | 6,201168741 | 7,080527794 |
| 226784_at | TWISTNB | 8,812553479 | 10,06152033 |
| 226109_at | C21orf91 | 8,948808966 | 10,21540536 |
| 219592_at | MCPH1 | 5,573882217 | 6,361619721 |
| 201367_s_at | ZFP36L2 | 5,942709875 | 6,782226415 |
| 236600_at | SPG20 | 6,036229268 | 6,888377677 |
| 214130_s_at | NA | 5,538539363 | 6,320315851 |
| 205841_at | JAK2 | 5,788973707 | 6,604791689 |
| 212400_at | FAM102A | 7,53925798 | 8,599559828 |
| 1552455_at | PRUNE2 | 5,996040258 | 6,838161872 |
| 243068_at | NA | 4,393676341 | 5,010331604 |
| 219540_at | ZNF267 | 6,843542029 | 7,803770965 |
| 201847_at | LIPA | 9,040704823 | 10,30821118 |
| 223063_at | C1orf198 | 8,728988856 | 9,952297516 |
| 213082_s_at | SLC35D2 | 6,811594474 | 7,76604165 |
| 217097_s_at | PHTF2 | 6,693865285 | 7,63179244 |
| 201939_at | PLK2 | 10,19773007 | 11,62248279 |
| 212488_at | COL5A1 | 7,868503902 | 8,966745684 |
| 220954_s_at | NA | 7,383366421 | 8,413707122 |
| 201108_s_at | THBS1 | 5,079588642 | 5,788436505 |
| 235664_at | NA | 5,63250333 | 6,418461938 |
| 230707_at | SORL1 | 5,069532268 | 5,776399061 |
| 205097_at | SLC26A2 | 7,786754158 | 8,872452287 |
| 225658_at | SPOPL | 8,078333931 | 9,2039771 |
| 223695_s_at | ARSD | 6,22306456 | 7,090099872 |
| 238568_s_at | NPC1 | 5,235277964 | 5,963974581 |
| 238617_at | KIF26B | 7,519506737 | 8,566059343 |
| 210510_s_at | NRP1 | 6,331160631 | 7,21095627 |
| 227409_at | PPP1R3E | 6,188482031 | 7,047853087 |
| 204017_at | KDELR3 | 7,977523113 | 9,085066197 |
| 212806_at | PRUNE2 | 6,611476113 | 7,529342816 |
| 231838_at | PABPC1L | 6,607321398 | 7,524249824 |
| 227816_at | NTN1 | 7,904711307 | 9,001322529 |
| 212307_s_at | OGT | 8,583413277 | 9,771619169 |
| 215920_s_at | NA | 5,589098356 | 6,36244642 |
| 226122_at | PLEKHG1 | 8,515699957 | 9,693283173 |
| 204624_at | ATP7B | 5,455296705 | 6,209514786 |
| 1567706_at | NA | 4,982076121 | 5,670775505 |

| | | | |
|---|---|---|---|
| 203974_at | PUDP | 8,449766498 | 9,616587294 |
| 205933_at | SETBP1 | 6,93479059 | 7,891468445 |
| 214841_at | CNIH3 | 9,632802979 | 10,96103264 |
| 242250_at | NA | 3,286592612 | 3,73896021 |
| 225159_s_at | ELK4 | 8,680897952 | 9,875472235 |
| 206022_at | NDP | 9,219351078 | 10,48784634 |
| 238918_at | NA | 5,172556965 | 5,884217104 |
| 221039_s_at | ASAP1 | 9,47301086 | 10,77615005 |
| 212812_at | SERINC5 | 8,43270339 | 9,592194493 |
| 240867_at | NA | 6,054672853 | 6,887152781 |
| 239431_at | NA | 6,545693395 | 7,445276738 |
| 228369_at | CNPY3 | 6,49832172 | 7,390372352 |
| 212703_at | TLN2 | 5,57383676 | 6,337751592 |
| 225780_at | NA | 8,185446231 | 9,305429704 |
| 236835_at | FUT8-AS1 | 3,127743756 | 3,555276526 |
| 219740_at | VASH2 | 6,057770464 | 6,885731799 |
| 226069_at | PRICKLE1 | 6,030579941 | 6,85475913 |
| 214913_at | ADAMTS3 | 8,309509648 | 9,443664998 |
| 202063_s_at | SEL1L | 4,285280351 | 4,869676036 |
| 226742_at | SAR1B | 9,642835366 | 10,95759889 |
| 214831_at | ELK4 | 6,048557718 | 6,872943862 |
| 232001_at | PRKCQ-AS1 | 5,830320779 | 6,624921549 |
| 1559691_at | NA | 4,163998143 | 4,731014058 |
| 235012_at | LRCH1 | 6,39670764 | 7,267737082 |
| 243023_at | NA | 5,871048231 | 6,669645229 |
| 236090_at | NA | 6,435422777 | 7,310297508 |
| 242722_at | LMO7 | 6,716418735 | 7,628925722 |
| 230152_at | CFAP44 | 6,831952211 | 7,759633117 |
| 238823_at | FMNL3 | 4,830427286 | 5,486307738 |
| 227973_at | C2orf69 | 8,559564235 | 9,720997393 |
| 238929_at | SRSF8 | 6,206075835 | 7,047954203 |
| 242751_at | NA | 5,889299869 | 6,6852874 |
| 1559134_a_at | NA | 3,939672529 | 4,472068908 |
| 206172_at | IL13RA2 | 9,471612922 | 10,75152148 |
| 213737_x_at | GOLGA8N | 8,448948219 | 9,58978228 |
| 226694_at | NA | 7,851050131 | 8,91074694 |
| 213930_at | ATG12 | 7,450415959 | 8,456023766 |
| 222094_at | NA | 5,17568519 | 5,87407236 |
| 204156_at | SIK3 | 7,251520422 | 8,228611817 |
| 238825_at | ACRC | 6,130201941 | 6,955232858 |
| 1559412_at | MIR99AHG | 6,458564449 | 7,326775956 |
| 206380_s_at | CFP | 3,982400989 | 4,517733692 |
| 218168_s_at | ADCK3 | 6,927140209 | 7,858221484 |
| 219042_at | LZTS1 | 8,448618432 | 9,583509841 |
| 205258_at | INHBB | 7,722789305 | 8,760126237 |
| 232235_at | DSEL | 9,782914764 | 11,09615941 |
| 202158_s_at | CELF2 | 8,966037499 | 10,16891271 |
| 228305_at | ZNF565 | 6,879155601 | 7,801405924 |
| 230719_at | ING3 | 5,751706197 | 6,522495379 |
| 213126_at | MED8 | 7,704467819 | 8,734982562 |
| 205399_at | DCLK1 | 9,692546363 | 10,98840539 |
| 1557521_a_at | NA | 5,674193369 | 6,431392117 |
| 205530_at | ETFDH | 7,282052455 | 8,253215868 |
| 209506_s_at | NA | 7,882300883 | 8,933277817 |
| 232967_at | NA | 4,12290416 | 4,672424752 |
| 227022_at | GNPDA2 | 7,700669429 | 8,726668665 |

| | | | |
|---|---|---|---|
| 211965_at | ZFP36L1 | 6,283071955 | 7,119923331 |
| 208733_at | RAB2A | 5,394828516 | 6,11310908 |
| 244533_at | PTPN14 | 6,641384294 | 7,52563138 |
| 204700_x_at | DIEXF | 6,911389209 | 7,830550752 |
| 225056_at | SIPA1L2 | 9,586795971 | 10,86044028 |
| 217279_x_at | MMP14 | 7,932103997 | 8,985896696 |
| 227351_at | NA | 8,119945799 | 9,198378462 |
| 242825_at | LPPR5 | 6,89702072 | 7,813013539 |
| 213435_at | SATB2 | 9,601535301 | 10,8766145 |
| 1568611_at | NA | 7,058589757 | 7,993976931 |
| 228661_s_at | LOC102606465 | 7,650784981 | 8,660174006 |
| 227688_at | LRCH2 | 7,474231263 | 8,460144279 |
| 213278_at | MTMR9 | 7,941529713 | 8,988104066 |
| 242738_s_at | ZFHX3 | 7,81103248 | 8,839203568 |
| 222802_at | EDN1 | 4,107939546 | 4,648459525 |
| 212829_at | PIP4K2A | 7,636982673 | 8,640241387 |
| 205020_s_at | ARL4A | 8,887229235 | 10,05351247 |
| 226322_at | TMTC1 | 7,85887113 | 8,888143076 |
| 236908_at | NA | 5,563585076 | 6,291025761 |
| 1555372_at | BCL2L11 | 6,806583977 | 7,696436159 |
| 202341_s_at | TRIM2 | 9,461391337 | 10,69787181 |
| 1560297_at | NA | 6,926963239 | 7,829923582 |
| 233490_at | DCTN4 | 4,014985811 | 4,538344841 |
| 219514_at | ANGPTL2 | 5,472199457 | 6,184052704 |
| 220301_at | CCDC102B | 6,601748529 | 7,459411037 |
| 205294_at | BAIAP2 | 7,070096512 | 7,98770573 |
| 224790_at | ASAP1 | 9,467735843 | 10,69214059 |
| 1569464_at | PPFIBP1 | 4,421327251 | 4,992988826 |
| 213247_at | SVEP1 | 5,152537282 | 5,816916597 |
| 33494_at | ETFDH | 8,022970252 | 9,057082591 |
| 226492_at | SEMA6D | 11,50813518 | 12,99111144 |
| 217875_s_at | PMEPA1 | 8,398666585 | 9,48073422 |
| 244786_at | NA | 6,030544736 | 6,806524868 |
| 210858_x_at | ATM | 7,108828411 | 8,02205735 |
| 209201_x_at | CXCR4 | 10,22646567 | 11,53997919 |
| 202375_at | SEC24D | 7,377007328 | 8,323613402 |
| 244687_at | DBT | 7,031454371 | 7,932988652 |
| 227080_at | ZNF697 | 7,787677865 | 8,785978093 |
| 236640_at | NA | 6,283829333 | 7,088651609 |
| 225942_at | NLN | 7,071243886 | 7,976096177 |
| 228482_at | NA | 5,681311497 | 6,4075184 |
| 242380_at | NA | 5,188670665 | 5,851691311 |
| 239038_at | C1orf52 | 6,076208271 | 6,852536377 |
| 240216_at | NA | 6,472468829 | 7,298985317 |
| 209147_s_at | PPAP2A | 8,602620707 | 9,695425938 |
| 228656_at | PROX1 | 8,739471239 | 9,848644489 |
| 218972_at | TTC17 | 7,345606339 | 8,275171562 |
| 243462_s_at | NA | 7,202010533 | 8,113311011 |
| 204157_s_at | SIK3 | 7,50705167 | 8,456792743 |
| 220941_s_at | C21orf91 | 6,167097502 | 6,947125541 |
| 207826_s_at | ID3 | 11,22331045 | 12,64239911 |
| 61734_at | RCN3 | 6,536855316 | 7,363255147 |
| 201929_s_at | PKP4 | 7,203606434 | 8,114273743 |
| 213197_at | ASTN1 | 7,647433537 | 8,61364299 |
| 232615_at | NA | 6,287949826 | 7,081657913 |
| 204360_s_at | NAGLU | 7,713313866 | 8,686704355 |

| | | | |
|---|---|---|---|
| 230496_at | AMER2 | 9,21301801 | 10,37450037 |
| 235328_at | PLXNC1 | 4,470059855 | 5,033269675 |
| 205000_at | DDX3Y | 9,75841126 | 10,98730082 |
| 237833_s_at | SNCAIP | 6,659587778 | 7,497290306 |
| 238760_at | YARS | 5,514731021 | 6,207851477 |
| 211919_s_at | CXCR4 | 10,33619432 | 11,63514922 |
| 221185_s_at | IQCG | 8,426338803 | 9,485173098 |
| 205001_s_at | DDX3Y | 9,437249808 | 10,62210516 |
| 230480_at | PIWIL4 | 5,42909549 | 6,110136722 |
| 204837_at | MTMR9 | 8,731343828 | 9,825560106 |
| 211488_s_at | ITGB8 | 7,400340195 | 8,325624944 |
| 230987_at | NA | 4,7884074 | 5,386128101 |
| 222688_at | ACER3 | 7,948862793 | 8,934898142 |
| 220407_s_at | TGFB2 | 8,161410353 | 9,173748835 |
| 216611_s_at | SLC6A2 | 5,879829885 | 6,609055734 |
| 201369_s_at | ZFP36L2 | 6,974459438 | 7,838800669 |
| 49485_at | PRDM4 | 7,749119088 | 8,70846728 |
| 243303_at | NA | 5,669506552 | 6,371353245 |
| 220319_s_at | MYLIP | 6,181006208 | 6,945641403 |
| 202565_s_at | SVIL | 9,662505044 | 10,85657716 |
| 207390_s_at | SMTN | 5,476894546 | 6,15235389 |
| 238002_at | GOLIM4 | 8,945427866 | 10,04661626 |
| 228218_at | LSAMP | 10,14356043 | 11,39165381 |
| 228284_at | TLE1 | 9,206140147 | 10,33801647 |
| 202946_s_at | BTBD3 | 10,69091711 | 12,0032914 |
| 230144_at | GRIA3 | 9,248126847 | 10,38098461 |
| 232825_s_at | DSEL | 6,951750394 | 7,80286159 |
| 1558569_at | LOC100131541 | 5,887742249 | 6,608456673 |
| 242119_at | PROX1 | 5,862532838 | 6,579775782 |
| 1570227_at | NA | 4,451354934 | 4,995479849 |
| 204094_s_at | TSC22D2 | 9,263367125 | 10,39560815 |
| 206320_s_at | SMAD9 | 5,248100019 | 5,889546014 |
| 212902_at | SEC24A | 6,066770328 | 6,807757822 |
| 216733_s_at | GATM | 9,290908301 | 10,42541812 |
| 229962_at | LRRC37A3 | 6,138717371 | 6,88826132 |
| 228718_at | ZNF44 | 6,810360517 | 7,64152438 |
| 226938_at | DCAF4 | 7,162782736 | 8,036772017 |
| 57516_at | ZNF764 | 7,440416772 | 8,347316938 |
| 227504_s_at | MED28 | 6,667211275 | 7,47983176 |
| 230885_at | NA | 7,201266129 | 8,078614632 |
| 225528_at | IPO8 | 10,12106063 | 11,35376607 |
| 1553720_a_at | AMER2 | 7,979592333 | 8,95034247 |
| 1563881_at | MAGI1 | 5,289721087 | 5,932110081 |
| 223506_at | ZC3H8 | 7,845326548 | 8,797644457 |
| 222449_at | PMEPA1 | 9,174125748 | 10,28769139 |
| 203184_at | FBN2 | 10,96907503 | 12,29993412 |
| 213341_at | FEM1C | 8,40440089 | 9,421569853 |
| 232274_at | CCNL2 | 6,214134634 | 6,966159136 |
| 229549_at | CALU | 8,620711229 | 9,66210881 |
| 242550_at | EIF3B | 6,573197453 | 7,366022161 |
| 219240_s_at | C10orf88 | 7,549326384 | 8,459315594 |
| 235250_at | FLCN | 5,813920261 | 6,513422441 |
| 226211_at | MEG3 | 8,216134686 | 9,203517934 |
| 228594_at | NADK2 | 8,838335721 | 9,900429655 |
| 226384_at | PPAPDC1B | 8,327580556 | 9,327049808 |
| 226773_at | PPM1K | 7,488684693 | 8,386756572 |

| | | | |
|---|---|---|---|
| 218590_at | C10orf2 | 7,162333764 | 8,019616228 |
| 239794_at | NA | 5,139123014 | 5,753190081 |
| 37079_at | NUS1P3 | 5,577144999 | 6,243392812 |
| 228904_at | HOXB3 | 8,891810937 | 9,953618936 |
| 222690_s_at | TMEM39A | 7,232881237 | 8,095904462 |
| 226354_at | LACTB | 7,530460037 | 8,427754084 |
| 230906_at | GALNT10 | 5,355398103 | 5,993458689 |
| 210946_at | PPAP2A | 8,559827918 | 9,577131042 |
| 226208_at | ZSWIM6 | 9,652610697 | 10,79953698 |
| 214952_at | NCAM1 | 5,629028189 | 6,297799785 |
| 205371_s_at | DBT | 6,45581867 | 7,222789995 |
| 233482_at | C15orf59 | 6,365703313 | 7,121488003 |
| 205283_at | FKTN | 7,76640064 | 8,686740432 |
| 241342_at | TMEM65 | 7,793005657 | 8,714293329 |
| 231940_at | ZNF529 | 8,21283477 | 9,18154588 |
| 218501_at | ARHGEF3 | 8,137900964 | 9,097093568 |
| 229228_at | NA | 8,617581043 | 9,630005004 |
| 214772_at | KIAA1549L | 8,20261373 | 9,16496059 |
| 229299_at | NADK2 | 8,11008621 | 9,061186298 |
| 219284_at | HSPBAP1 | 7,061651632 | 7,889625977 |
| 203178_at | GATM | 9,368131838 | 10,46633117 |
| 226345_at | ARL5B | 8,482277759 | 9,475779367 |
| 218740_s_at | CDK5RAP3 | 9,082645203 | 10,14399926 |
| 44790_s_at | KIAA0226L | 7,470527393 | 8,343445323 |
| 242753_x_at | AP1AR | 3,9792771 | 4,443896626 |
| 226795_at | LRCH1 | 7,944732082 | 8,869006037 |
| 209286_at | CDC42EP3 | 7,790678567 | 8,696493328 |
| 213127_s_at | MED8 | 8,237015729 | 9,194225055 |
| 227708_at | EEF1A1 | 8,113390454 | 9,055059826 |
| 228973_at | DLG2 | 4,643301742 | 5,181388082 |
| 226017_at | CMTM7 | 8,261641663 | 9,218825023 |
| 212693_at | MDN1 | 7,967568738 | 8,89062488 |
| 238642_at | ANKRD13D | 7,001128553 | 7,811925831 |
| 203365_s_at | MMP15 | 6,964502655 | 7,770663696 |
| 224015_s_at | MRPS25 | 6,612341841 | 7,376821203 |
| 244354_at | STRN | 7,286012076 | 8,128252305 |
| 204435_at | NUP58 | 8,097092905 | 9,032031112 |
| 204589_at | NUAK1 | 9,181798822 | 10,24050078 |
| 223482_at | TMEM120A | 8,089722615 | 9,019829096 |
| 221605_s_at | PIPOX | 8,468402422 | 9,441933993 |
| 225640_at | EBLN3 | 7,948011518 | 8,861522752 |
| 210357_s_at | SMOX | 8,3055579 | 9,259640351 |
| 227764_at | LYPD6 | 6,64470986 | 7,407974105 |
| 213116_at | NEK3 | 7,116470312 | 7,93196835 |
| 226065_at | PRICKLE1 | 7,247297961 | 8,077182068 |
| 214761_at | ZNF423 | 10,62225997 | 11,83784066 |
| 239834_at | NA | 5,806741343 | 6,470551344 |
| 228104_at | PLXNA4 | 8,657934061 | 9,646278877 |
| 219917_at | ZCCHC4 | 5,931275779 | 6,608254221 |
| 202723_s_at | FOXO1 | 7,652805076 | 8,526263185 |
| 1555680_a_at | SMOX | 6,117875438 | 6,815042375 |
| 230384_at | ANKRD23 | 5,689541725 | 6,337781206 |
| 225635_s_at | EBLN3 | 7,044821871 | 7,846978369 |
| 235127_at | PMP2 | 10,16608084 | 11,32246311 |
| 219102_at | RCN3 | 6,061856021 | 6,751038926 |
| 220735_s_at | SENP7 | 6,463007995 | 7,197482229 |

| | | | |
|---|---|---|---|
| 224692_at | PPP1R15B | 8,719837866 | 9,710243981 |
| 204518_s_at | PPIC | 9,014779927 | 10,03861777 |
| 225381_at | MIR100HG | 9,77694238 | 10,88691887 |
| 203220_s_at | TLE1 | 6,160296021 | 6,859614582 |
| 204807_at | TMEM5 | 7,514947698 | 8,367522098 |
| 225537_at | TRAPPC6B | 8,393352238 | 9,345360157 |
| 209184_s_at | IRS2 | 8,781245852 | 9,776385544 |
| 235320_at | ARL6 | 6,962523702 | 7,751511489 |
| 1553743_at | METTL21A | 7,971643673 | 8,874749178 |
| 232626_at | NA | 4,270584914 | 4,75351394 |
| 65588_at | SNHG17 | 8,040885423 | 8,949887106 |
| 203222_s_at | TLE1 | 7,914654731 | 8,809256613 |
| 225899_x_at | NA | 7,476684181 | 8,319927154 |
| 227036_at | RASAL2 | 8,254083984 | 9,184188472 |
| 226419_s_at | SRSF1 | 7,830843041 | 8,713029973 |
| 1555970_at | FBXO28 | 6,941996795 | 7,722132711 |
| 226352_at | JMY | 8,81741592 | 9,804550321 |
| 1556227_at | VCPIP1 | 5,22278284 | 5,807375425 |
| 206303_s_at | NA | 7,197452298 | 8,002873894 |
| 228950_s_at | WLS | 8,709277905 | 9,683330954 |
| 227776_at | ACER3 | 9,389242273 | 10,43592283 |
| 223325_at | TXNDC11 | 6,500479599 | 7,224548248 |
| 202897_at | SIRPA | 8,700931541 | 9,669917057 |
| 242506_at | NA | 4,837882388 | 5,375640578 |
| 1555938_x_at | VIM | 6,491018233 | 7,211813859 |
| 226137_at | ZFHX3 | 8,630047768 | 9,587836357 |
| 219182_at | NA | 7,383576243 | 8,202640194 |
| 236706_at | LYG1 | 6,13366228 | 6,813848201 |
| 219522_at | FJX1 | 9,233094658 | 10,2558027 |
| 227135_at | NAAA | 7,075438885 | 7,858721429 |
| 229319_at | NA | 7,730388294 | 8,586080003 |
| 210091_s_at | DTNA | 7,170026061 | 7,962829239 |
| 227520_at | TXLNG | 7,962028012 | 8,840365118 |
| 215364_s_at | SZT2 | 6,663321332 | 7,396912914 |
| 209457_at | DUSP5 | 7,201266902 | 7,994066931 |
| 206302_s_at | NA | 8,144901194 | 9,041356248 |
| 225752_at | NIPA1 | 7,658326342 | 8,500732083 |
| 227875_at | KLHL13 | 8,276568043 | 9,185876072 |
| 201344_at | UBE2D2 | 7,662715698 | 8,504175423 |
| 1554450_s_at | MIER3 | 8,220510242 | 9,12195476 |
| 218329_at | PRDM4 | 8,746989739 | 9,706029108 |
| 224796_at | ASAP1 | 10,56913121 | 11,72769331 |
| 214803_at | CDH6 | 7,256257692 | 8,051144243 |
| 213517_at | PCBP2 | 8,077122744 | 8,961868899 |
| 213459_at | RPL37A | 6,721883383 | 7,457658041 |
| 243365_s_at | AUTS2 | 4,693608095 | 5,20662258 |
| 226946_at | NADK2 | 8,493983043 | 9,422013447 |
| 227599_at | MB21D2 | 6,572820317 | 7,289738365 |
| 220943_s_at | NDUFAF7 | 7,133856433 | 7,909960798 |
| 1561749_at | NA | 6,133537981 | 6,800316318 |
| 216199_s_at | MAP3K4 | 8,87437375 | 9,838420279 |
| 217921_at | MAN1A2 | 6,050722654 | 6,707724702 |
| 205931_s_at | NA | 8,378871423 | 9,287830203 |
| 225366_at | PGM2 | 7,53640274 | 8,353579451 |
| 212327_at | LIMCH1 | 8,987423882 | 9,961611652 |
| 1553612_at | ZNF354B | 6,323656763 | 7,008673117 |

| | | | |
|---|---|---|---|
| 238948_at | TM9SF1 | 6,393212919 | 7,085362896 |
| 214696_at | NA | 7,852225905 | 8,701649653 |
| 227805_at | METAP1D | 7,566501006 | 8,384018225 |
| 219118_at | FKBP11 | 6,386209684 | 7,075297839 |
| 223569_at | PPAPDC1B | 7,601414694 | 8,421413934 |
| 226635_at | EBLN3 | 8,485781149 | 9,400286766 |
| 232910_at | BBIP1 | 3,764167779 | 4,169717301 |
| 202057_at | KPNA1 | 6,9444596 | 7,690931786 |
| 226463_at | ATP6V1C1 | 8,359892606 | 9,257894716 |
| 209383_at | DDIT3 | 8,322297275 | 9,216027056 |
| 228569_at | PAPOLA | 8,336947705 | 9,232053317 |
| 218193_s_at | GOLT1B | 8,615954399 | 9,540530341 |
| 231823_s_at | SH3PXD2B | 9,270300315 | 10,26497008 |
| 1554774_at | MINA | 6,555545474 | 7,25877055 |
| 228172_at | TTLL11 | 6,178170684 | 6,839889483 |
| 238172_at | NA | 5,55369789 | 6,148344258 |
| 234734_s_at | TNRC6A | 8,79310496 | 9,733635234 |
| 1556555_at | LOC100129461 | 5,441978097 | 6,02403679 |
| 223580_at | SPSB2 | 6,62741652 | 7,335900015 |
| 203123_s_at | SLC11A2 | 8,335202313 | 9,224526073 |
| 218678_at | NES | 10,48536614 | 11,60161705 |
| 202370_s_at | CBFB | 10,11551961 | 11,19222165 |
| 217028_at | CXCR4 | 11,26274162 | 12,46115877 |
| 239872_at | NA | 4,552104266 | 5,036468455 |
| 230209_at | ZXDC | 5,731647154 | 6,341236136 |
| 203124_s_at | SLC11A2 | 8,717211698 | 9,644153721 |
| 204089_x_at | MAP3K4 | 8,05464552 | 8,908291729 |
| 219397_at | COQ10B | 9,081814574 | 10,04418289 |
| 244414_at | NA | 6,851832011 | 7,577444494 |
| 213960_at | NTRK3 | 5,996447574 | 6,631407539 |
| 1569054_at | SLC1A3 | 6,64447628 | 7,347607059 |
| 227354_at | PAG1 | 7,92768253 | 8,766073837 |
| 222258_s_at | SH3BP4 | 10,64270479 | 11,76768812 |
| 227001_at | NIPAL2 | 5,987424343 | 6,61997992 |
| 218998_at | FAM206A | 8,088761229 | 8,943099257 |
| 233264_at | NA | 4,721586337 | 5,21936494 |
| 239544_at | NA | 5,162660351 | 5,706046972 |
| 243816_at | ZNF70 | 6,671492075 | 7,373443855 |
| 224932_at | CHCHD10 | 9,158593247 | 10,12208716 |
| 226542_at | RNF24 | 8,333508842 | 9,20879064 |
| 226410_at | CTU2 | 6,339328197 | 7,005109054 |
| 1558292_s_at | PIGW | 7,369131591 | 8,142428151 |
| 225869_s_at | UNC93B1 | 5,101342646 | 5,635972946 |
| 223594_at | TMEM117 | 7,678860713 | 8,482956501 |
| 223233_s_at | CGN | 5,914634253 | 6,533090658 |
| 203637_s_at | MID1 | 9,12503748 | 10,07901133 |
| 221427_s_at | CCNL2 | 9,142907489 | 10,09836922 |
| 214331_at | TSFM | 6,100647948 | 6,737145266 |
| 214722_at | NOTCH2NL | 9,117335498 | 10,06787033 |
| 226870_at | COMTD1 | 5,664045886 | 6,2527954 |
| 243256_at | MKNK1 | 6,348737435 | 7,007952049 |
| 229713_at | PIP4K2A | 6,960378031 | 7,682446667 |
| 226344_at | ZMAT1 | 7,463573095 | 8,23580993 |
| 206481_s_at | LDB2 | 9,334842434 | 10,29935639 |
| 213455_at | FAM114A1 | 8,800529089 | 9,709451681 |
| 200661_at | CTSA | 10,12196685 | 11,16731894 |

| | | | |
|---|---|---|---|
| 225857_s_at | SNHG17 | 8,396619505 | 9,263734068 |
| 1557954_at | TXLNG | 6,965064106 | 7,682522081 |
| 210123_s_at | NA | 6,203107383 | 6,841365292 |
| 226782_at | SLC25A30 | 8,820134675 | 9,727264676 |
| 1558458_at | LOC401320 | 6,174323231 | 6,809257505 |
| 214683_s_at | CLK1 | 9,845913402 | 10,85574374 |
| 211467_s_at | NFIB | 9,253054855 | 10,20082777 |
| 239283_at | TMED5 | 5,914644188 | 6,519375121 |
| 204307_at | TECPR2 | 6,465544379 | 7,126488858 |
| 228797_at | NLN | 8,186956765 | 9,023758787 |
| 203988_s_at | FUT8 | 9,247880391 | 10,19310566 |
| 212695_at | CRY2 | 7,022067903 | 7,739116195 |
| 230296_at | NA | 9,039520043 | 9,960981955 |
| 204568_at | ATG14 | 8,075764475 | 8,898961251 |
| 227037_at | NA | 7,561225092 | 8,331087276 |
| 244433_at | NA | 6,427006159 | 7,080694026 |
| 217226_s_at | SFXN3 | 9,040641319 | 9,958858951 |
| 209711_at | SLC35D1 | 8,30017426 | 9,141651318 |
| 206183_s_at | NA | 5,270227094 | 5,804507704 |
| 226210_s_at | MEG3 | 9,21506721 | 10,14924084 |
| 207564_x_at | OGT | 8,566114297 | 9,434331921 |
| 219351_at | TRAPPC2 | 8,470016849 | 9,328346671 |
| 212377_s_at | NOTCH2 | 9,971633375 | 10,98163281 |
| 224911_s_at | DCBLD2 | 10,20027883 | 11,23287156 |
| 201219_at | CTBP2 | 7,284778567 | 8,022164166 |
| 47550_at | LZTS1 | 9,374948559 | 10,32368413 |
| 1558027_s_at | PRKAB2 | 7,318528897 | 8,057267734 |
| 228611_s_at | NA | 7,160604885 | 7,882879964 |
| 214703_s_at | MAN2B2 | 7,958776026 | 8,7615026 |
| 232278_s_at | DEPDC1 | 7,999843061 | 8,806437642 |
| 203623_at | PLXNA3 | 6,518691411 | 7,175874322 |
| 225861_at | FAM195A | 7,387530815 | 8,132287665 |
| 241700_at | ZFHX4 | 8,265793009 | 9,098828889 |
| 206788_s_at | CBFB | 7,989555273 | 8,794058065 |
| 239313_at | LOC401320 | 6,661216093 | 7,33136578 |
| 204082_at | PBX3 | 9,538280681 | 10,49770768 |
| 238565_at | NA | 6,247145614 | 6,875064363 |
| 226203_at | MYO9A | 7,929372613 | 8,726293116 |
| 1554455_at | LINS1 | 6,764287015 | 7,443643549 |
| 208070_s_at | REV3L | 10,46497852 | 11,51577218 |
| 227594_at | ZMYM6 | 7,317221105 | 8,051445619 |
| 224221_s_at | VAV3 | 4,771672027 | 5,250221094 |
| 220500_s_at | NA | 5,909759384 | 6,501266899 |
| 231923_at | TMEM150C | 5,813327112 | 6,395156647 |
| 210469_at | DLG5 | 5,127739777 | 5,640521391 |
| 235414_at | ZNF383 | 6,215481536 | 6,836722253 |
| 212946_at | VWA8 | 8,205207388 | 9,024837321 |
| 238656_at | RAD50 | 6,725498894 | 7,396943109 |
| 228032_s_at | DENND1B | 6,169134185 | 6,784263402 |
| 235361_at | STAMBP | 6,205994645 | 6,82421743 |
| 203199_s_at | MTRR | 7,248214763 | 7,968934003 |
| 201075_s_at | SMARCC1 | 8,329099638 | 9,156206321 |
| 235926_at | ANAPC5 | 6,553333924 | 7,20365092 |
| 212356_at | KHNYN | 7,975837775 | 8,765583779 |
| 235692_at | SH3KBP1 | 7,313790699 | 8,036904008 |
| 228476_at | KIAA1407 | 7,016055386 | 7,709631235 |

| | | | |
|---|---|---|---|
| 219801_at | ZNF34 | 6,377240845 | 7,007559503 |
| 222450_at | PMEPA1 | 10,04212542 | 11,03307698 |
| 226766_at | ROBO2 | 8,661018832 | 9,515473854 |
| 224791_at | ASAP1 | 11,17415025 | 12,27549615 |
| 212328_at | LIMCH1 | 9,145288195 | 10,04647435 |
| 232852_at | NA | 5,902043731 | 6,483628574 |
| 238540_at | LOC401320 | 6,678486914 | 7,335706787 |
| 227517_s_at | NA | 9,104061609 | 9,999857672 |
| 235486_at | KIAA1549L | 8,828814141 | 9,69634867 |
| 220750_s_at | P3H1 | 8,338778124 | 9,157733265 |
| 219218_at | BAHCC1 | 6,71552125 | 7,374315205 |
| 234993_at | ABHD13 | 6,291936966 | 6,909160888 |
| 227129_x_at | LINC01000 | 7,510866869 | 8,247547114 |
| 227126_at | PTPRG | 10,59288779 | 11,63151779 |
| 220974_x_at | SFXN3 | 9,078677939 | 9,968180612 |
| 227889_at | LPCAT2 | 7,911916911 | 8,686195542 |
| 200766_at | CTSD | 7,25944066 | 7,969255619 |
| 229001_at | PPP1R3E | 7,241544581 | 7,949541614 |
| 1552287_s_at | AFG3L1P | 8,388029862 | 9,207824681 |
| 240452_at | GSPT1 | 6,370822514 | 6,991840816 |
| 229366_at | NA | 7,407868398 | 8,129688032 |
| 209501_at | NA | 8,156615089 | 8,951340259 |
| 230492_s_at | GPCPD1 | 7,91460076 | 8,685179804 |
| 228716_at | THRB | 6,489675017 | 7,121197564 |
| 221974_at | NA | 8,962059811 | 9,834039292 |
| 228216_at | ZBTB37 | 6,937931297 | 7,61236507 |
| 212325_at | LIMCH1 | 7,746969819 | 8,49983893 |
| 225704_at | FBRSL1 | 6,956080701 | 7,63173122 |
| 207373_at | HOXD10 | 7,453306422 | 8,176849465 |
| 232489_at | TRMT13 | 7,671992693 | 8,416420421 |
| 209712_at | SLC35D1 | 8,657731285 | 9,495385507 |
| 244007_at | ZNF462 | 8,42632103 | 9,241423558 |
| 204493_at | BID | 9,68100724 | 10,61622484 |
| 222453_at | CYBRD1 | 9,000041682 | 9,869278838 |
| 216264_s_at | LAMB2 | 7,735237628 | 8,482129472 |
| 213624_at | SMPDL3A | 9,088777446 | 9,963715948 |
| 212194_s_at | TM9SF4 | 8,316517682 | 9,1169516 |
| 214895_s_at | ADAM10 | 7,903205495 | 8,662683454 |
| 212593_s_at | NA | 7,650167842 | 8,384903549 |
| 218204_s_at | FYCO1 | 7,947695729 | 8,710901965 |
| 235410_at | NPHP3 | 8,108366033 | 8,885593731 |
| 234317_s_at | STOX2 | 7,073431918 | 7,751260318 |
| 227143_s_at | BID | 10,30787663 | 11,29529797 |
| 229164_s_at | ABTB1 | 5,883830551 | 6,447313598 |
| 220476_s_at | NA | 7,849158596 | 8,600343705 |
| 238974_at | C2orf69 | 10,12390318 | 11,09192732 |
| 237449_at | SP8 | 10,50111919 | 11,50462632 |
| 235713_at | ALKBH8 | 6,524628058 | 7,147975381 |
| 212192_at | KCTD12 | 9,547221447 | 10,45898204 |
| 240616_at | NA | 7,139891576 | 7,821447833 |
| 214668_at | SPRYD7 | 6,213933125 | 6,80696131 |
| 229253_at | THEM4 | 7,315176287 | 8,012787731 |
| 231975_s_at | MIER3 | 8,322525275 | 9,116185295 |
| 211725_s_at | BID | 9,95159046 | 10,89798157 |
| 201928_at | PKP4 | 8,515275657 | 9,323394614 |
| 231969_at | STOX2 | 7,490293509 | 8,200979364 |

| | | | |
|---|---|---|---|
| 227109_at | CYP2R1 | 7,472365669 | 8,181167592 |
| 1554479_a_at | CARD8 | 8,49693678 | 9,301353057 |
| 227264_at | TRAF6 | 7,289913707 | 7,979799711 |
| 211219_s_at | LHX2 | 8,506026755 | 9,310862416 |
| 202443_x_at | NOTCH2 | 10,60496491 | 11,60817647 |
| 202156_s_at | CELF2 | 8,57664119 | 9,387962276 |
| 230097_at | GART | 6,624411353 | 7,250694696 |
| 212805_at | PRUNE2 | 9,962619001 | 10,90417754 |
| 219837_s_at | CYTL1 | 8,814859957 | 9,647695995 |
| 203224_at | RFK | 9,39674056 | 10,28372016 |
| 1554863_s_at | DOK5 | 9,902272965 | 10,83647176 |
| 228961_at | MIER3 | 9,2094288 | 10,07762979 |
| 222653_at | PNPO | 7,571622194 | 8,284048374 |
| 204027_s_at | METTL1 | 6,945874424 | 7,597597856 |
| 222696_at | AXIN2 | 7,057426021 | 7,719259455 |
| 226975_at | RNPC3 | 7,617570592 | 8,331033042 |
| 222235_s_at | CSGALNACT2 | 7,852024149 | 8,586628177 |
| 224414_s_at | CARD6 | 6,251940735 | 6,835754108 |
| 222720_x_at | C1orf27 | 5,197229088 | 5,682422072 |
| 242919_at | NA | 7,831089849 | 8,562096593 |
| 226104_at | RNF170 | 8,709724507 | 9,522536059 |
| 209196_at | WDR46 | 7,740011929 | 8,462035066 |
| 233082_at | ZNF630 | 7,453090599 | 8,148192225 |
| 1554341_a_at | HELQ | 6,55611455 | 7,166736504 |
| 1553113_s_at | CDK8 | 7,869564845 | 8,601729094 |
| 214933_at | CACNA1A | 9,562885454 | 10,4511205 |
| 201797_s_at | VARS | 7,520754115 | 8,218881268 |
| 231837_at | USP28 | 6,850508685 | 7,486316461 |
| 204699_s_at | DIEXF | 7,005888768 | 7,655694496 |
| 222999_s_at | CCNL2 | 10,62328564 | 11,60496391 |
| 232212_at | PLEKHA8 | 5,944092315 | 6,493346935 |
| 213124_at | ZNF473 | 7,344844847 | 8,022967803 |
| 202087_s_at | CTSL | 8,611512127 | 9,406519352 |
| 202782_s_at | INPP5K | 7,816600411 | 8,537856456 |
| 231087_at | NA | 5,667950045 | 6,19033174 |
| 222518_at | ARFGEF2 | 7,945377184 | 8,677330472 |
| 219401_at | XYLT2 | 7,1935086 | 7,855833408 |
| 238847_at | HOXD10 | 9,003001536 | 9,831889433 |
| 219249_s_at | FKBP10 | 8,061847203 | 8,803895271 |
| 224233_s_at | MSTO1 | 6,897553842 | 7,530795922 |
| 213189_at | MINA | 8,408809172 | 9,179321707 |
| 221867_at | N4BP1 | 7,454069342 | 8,136174643 |
| 228751_at | CLK4 | 8,538338145 | 9,318684508 |
| 1553725_s_at | ZNF644 | 7,167315707 | 7,821494124 |
| 235429_at | EIF3E | 7,142236957 | 7,793989828 |
| 236436_at | SLC25A45 | 6,898489191 | 7,527811638 |
| 230294_at | RALY-AS1 | 5,777014604 | 6,304014163 |
| 222156_x_at | NA | 7,36868395 | 8,040687234 |
| 203245_s_at | LINC00094 | 8,515054667 | 9,291477435 |
| 207417_s_at | NA | 8,391064798 | 9,156133114 |
| 225321_s_at | NA | 9,2563666 | 10,09953098 |
| 203119_at | CCDC86 | 7,958791822 | 8,681423379 |
| 244321_at | PGAP1 | 6,338972276 | 6,91429751 |
| 209294_x_at | TNFRSF10B | 7,611575994 | 8,301115144 |
| 228029_at | ZNF721 | 8,801106394 | 9,597615853 |
| 213152_s_at | SRSF8 | 8,651204115 | 9,433509692 |

| | | | |
|---|---|---|---|
| 224162_s_at | FBXO31 | 7,748774243 | 8,445078833 |
| 202177_at | GAS6 | 7,034724105 | 7,666818037 |
| 201409_s_at | PPP1CB | 10,8392831 | 11,81252428 |
| 1555562_a_at | ZCCHC7 | 6,048410792 | 6,590796571 |
| 228433_at | NFYA | 7,555765111 | 8,232028742 |
| 217721_at | SEPT7 | 8,173624645 | 8,904980416 |
| 218456_at | CAPRIN2 | 9,758935697 | 10,63046656 |
| 229981_at | SNX5 | 6,562204591 | 7,148099346 |
| 227332_at | PXN-AS1 | 7,03384065 | 7,661513322 |
| 215207_x_at | NA | 6,566494008 | 7,150760395 |
| 232406_at | NA | 7,197491658 | 7,837606385 |
| 226261_at | ZNRF2 | 6,480003054 | 7,054757699 |
| 212915_at | PDZRN3 | 8,830675594 | 9,613638181 |
| 224826_at | GPCPD1 | 9,687426566 | 10,54574602 |
| 211475_s_at | BAG1 | 8,02051452 | 8,730770423 |
| 235413_at | GGCX | 7,276812851 | 7,919854018 |
| 212672_at | ATM | 8,643849743 | 9,407689515 |
| 227917_at | LOC100506990 | 8,246911662 | 8,974528279 |
| 213418_at | HSPA6 | 5,957948751 | 6,482369579 |
| 227055_at | METTL7B | 7,71403748 | 8,391825472 |
| 225765_at | TNPO1 | 9,403939638 | 10,2283211 |
| 1553112_s_at | CDK8 | 7,026779514 | 7,642717672 |
| 228760_at | SRSF8 | 7,887817985 | 8,576384683 |
| 239377_at | EIF1AD | 8,060557611 | 8,763168418 |
| 221958_s_at | WLS | 10,32339094 | 11,22313655 |
| 1554456_a_at | LINS1 | 7,037333681 | 7,650382821 |
| 226885_at | RNF217 | 7,122258714 | 7,741430158 |
| 213188_s_at | MINA | 8,718268414 | 9,475146587 |
| 201967_at | RBM6 | 8,962887436 | 9,740977152 |
| 239043_at | ZNF404 | 7,916057622 | 8,60240212 |
| 230637_at | SFXN4 | 6,298267824 | 6,844120578 |
| 226575_at | ZNF462 | 9,84061948 | 10,69216023 |
| 208999_at | SEPT8 | 9,547293585 | 10,37317027 |
| 211596_s_at | LRIG1 | 10,3253005 | 11,21798684 |
| 227882_at | FKRP | 8,112871024 | 8,813735552 |
| 229373_at | NA | 5,941858358 | 6,454906654 |
| 201393_s_at | IGF2R | 10,47022085 | 11,37355572 |
| 212342_at | YIPF6 | 7,315772061 | 7,946876421 |
| 213034_at | SIK3 | 8,811608823 | 9,57174841 |
| 202781_s_at | INPP5K | 7,445324731 | 8,086970373 |
| 219415_at | TTYH1 | 8,511285212 | 9,244379791 |
| 233487_s_at | LRRC8A | 9,031282387 | 9,808907026 |
| 201408_at | PPP1CB | 10,73525707 | 11,65854111 |
| 228013_at | PPP2R2A | 7,983726435 | 8,669723324 |
| 200931_s_at | VCL | 9,130830106 | 9,915355052 |
| 218587_s_at | POGLUT1 | 9,119648804 | 9,90310993 |
| 227191_at | ITFG1 | 8,194249206 | 8,897622333 |
| 226058_at | B3GNT9 | 7,478391735 | 8,119975054 |
| 235352_at | MR1 | 7,278194557 | 7,902336285 |
| 232113_at | NA | 9,955437122 | 10,80795032 |
| 226628_at | THOC2 | 8,430412535 | 9,151773104 |
| 229654_at | NA | 7,977034742 | 8,658905686 |
| 225766_s_at | TNPO1 | 9,718284113 | 10,54890833 |
| 225162_at | SH3D19 | 9,534878467 | 10,3493977 |
| 222681_at | POGLUT1 | 8,79771122 | 9,547749264 |
| 218706_s_at | GRAMD3 | 8,177008431 | 8,873649041 |

| | | | |
|---|---|---|---|
| 227465_at | MAU2 | 9,075850779 | 9,848442684 |
| 201041_s_at | DUSP1 | 8,26521669 | 8,968664451 |
| 222149_x_at | NA | 6,991423339 | 7,585689459 |
| 208782_at | FSTL1 | 11,78955155 | 12,79140711 |
| 1563549_a_at | ANO8 | 7,49888526 | 8,135844167 |
| 212422_at | PDCD11 | 6,826135953 | 7,404581575 |
| 202368_s_at | TRAM2 | 9,334338633 | 10,12486375 |
| 239482_x_at | ZNF708 | 7,154502225 | 7,759426181 |
| 212732_at | MEG3 | 9,676077579 | 10,49364511 |
| 203221_at | TLE1 | 10,18781959 | 11,04750376 |
| 203878_s_at | MMP11 | 7,205772564 | 7,813397512 |
| 224615_x_at | HM13 | 8,656052149 | 9,385965951 |
| 1554547_at | FAM13C | 7,299369676 | 7,914675669 |
| 234343_s_at | RASAL2 | 6,740829662 | 7,307464882 |
| 206826_at | PMP2 | 11,83542221 | 12,82870275 |
| 219779_at | ZFHX4 | 8,935181971 | 9,683970921 |
| 226615_at | XPR1 | 7,596306125 | 8,232496301 |
| 209704_at | MTF2 | 7,462980266 | 8,087801599 |
| 212341_at | YIPF6 | 10,05130874 | 10,89260629 |
| 201392_s_at | IGF2R | 9,955701189 | 10,78842718 |
| 203286_at | RNF44 | 8,428720285 | 9,133297649 |
| 203502_at | BPGM | 9,307344089 | 10,08427037 |
| 229608_at | NA | 7,561847669 | 8,192758718 |
| 202724_s_at | FOXO1 | 8,051624163 | 8,723134485 |
| 235436_at | DDX31 | 6,00534071 | 6,505756914 |
| 204085_s_at | CLN5 | 9,125688557 | 9,884398652 |
| 221992_at | NPIPB15 | 5,612628265 | 6,079113908 |
| 203944_x_at | BTN2A1 | 9,134719801 | 9,893914495 |
| 219802_at | PYROXD1 | 7,830162641 | 8,480869184 |
| 209815_at | PTCH1 | 8,647552035 | 9,365853957 |
| 202536_at | CHMP2B | 8,234480765 | 8,917665626 |
| 223740_at | AGPAT4-IT1 | 6,841475827 | 7,408975479 |
| 209781_s_at | KHDRBS3 | 8,825466064 | 9,55710918 |
| 220235_s_at | LRIF1 | 8,703215539 | 9,42439867 |
| 226653_at | MARK1 | 8,051355359 | 8,718430883 |
| 225071_at | NUS1 | 9,134212343 | 9,890068969 |
| 210139_s_at | PMP22 | 11,48553437 | 12,43489568 |
| 219188_s_at | MACROD1 | 6,997087958 | 7,574766366 |
| 219027_s_at | MYO9A | 7,852732628 | 8,501029438 |
| 212599_at | AUTS2 | 10,87512598 | 11,77271651 |
| 217627_at | ZNF573 | 8,613486592 | 9,32419011 |
| 243790_at | ZNF585A | 7,069734016 | 7,652324669 |
| 225278_at | PRKAB2 | 8,466965363 | 9,163783097 |
| 204950_at | CARD8 | 6,845030022 | 7,406024976 |
| 233364_s_at | NA | 9,543525809 | 10,3248492 |
| 209705_at | MTF2 | 7,59961434 | 8,220933462 |
| 212257_s_at | SMARCA2 | 7,934371297 | 8,582205215 |
| 204517_at | PPIC | 10,51593416 | 11,37356749 |
| 219248_at | THUMPD2 | 7,160065292 | 7,743269768 |
| 239289_x_at | FAN1 | 8,412039833 | 9,097179145 |
| 211038_s_at | CROCCP2 | 9,35249512 | 10,11371043 |
| 235195_at | FBXW2 | 7,925348042 | 8,569826018 |
| 230151_at | SPRYD7 | 6,943897112 | 7,50850089 |
| 36566_at | CTNS | 7,215899142 | 7,802358265 |
| 1552508_at | KCNE4 | 8,913003891 | 9,636202058 |
| 227984_at | LMF1 | 8,360173521 | 9,037254482 |

| | | | |
|---|---|---|---|
| 214070_s_at | ATP10B | 7,733536226 | 8,358476774 |
| 230012_at | LINC00324 | 6,061983711 | 6,551808481 |
| 227855_at | NA | 5,28640227 | 5,712838691 |
| 223560_s_at | NDUFAF7 | 8,403281588 | 9,080869593 |
| 241825_at | TYW5 | 6,573741584 | 7,103590307 |
| 225286_at | ARSD | 7,891686318 | 8,526510343 |
| 235233_s_at | GMEB1 | 6,81773087 | 7,365859681 |
| 202584_at | NFX1 | 6,891833418 | 7,444883808 |
| 217850_at | NA | 9,643828711 | 10,41488396 |
| 218294_s_at | NUP50 | 8,983990296 | 9,701812471 |
| 202148_s_at | PYCR1 | 7,485880364 | 8,083823037 |
| 218826_at | SLC35F2 | 6,913338144 | 7,465434426 |
| 203280_at | SAFB2 | 6,401663879 | 6,912707764 |
| 213510_x_at | USP32P2 | 9,261778498 | 10,00072148 |
| 203231_s_at | ATXN1 | 8,2155092 | 8,8690516 |
| 228543_at | PET117 | 8,577457767 | 9,258929557 |
| 230741_at | P2RX7 | 7,171120798 | 7,739989961 |
| 204937_s_at | ZNF274 | 7,732070019 | 8,345400804 |
| 209185_s_at | IRS2 | 10,71320553 | 11,56243205 |
| 227401_at | IL17D | 7,718044618 | 8,329737411 |
| 228960_at | ICE2 | 7,711949035 | 8,322613846 |
| 236989_at | NA | 6,937347153 | 7,485903203 |
| 239225_at | NA | 6,79358034 | 7,330417717 |
| 221194_s_at | NA | 7,424722126 | 8,010682771 |
| 206544_x_at | SMARCA2 | 9,198725836 | 9,923428311 |
| 209105_at | NCOA1 | 7,584252168 | 8,181756747 |
| 222942_s_at | NA | 9,280355828 | 10,01090357 |
| 224634_at | GPATCH4 | 8,184212156 | 8,827482132 |
| 213262_at | SACS | 9,649853327 | 10,40804854 |
| 228571_at | RBAK | 9,543398699 | 10,29320775 |
| 238087_at | RTCA | 7,219193329 | 7,785687525 |
| 219247_s_at | ZDHHC14 | 7,079919482 | 7,634870969 |
| 225247_at | TMEM259 | 7,952361465 | 8,575382271 |
| 236194_at | NA | 7,544369926 | 8,134819679 |
| 202278_s_at | SPTLC1 | 8,528275957 | 9,195526155 |
| 235077_at | MEG3 | 9,962310172 | 10,74141087 |
| 230176_at | UEVLD | 8,624529104 | 9,298956029 |
| 218282_at | EDEM2 | 7,92655749 | 8,545392925 |
| 222550_at | ARMC1 | 10,21395719 | 11,00962328 |
| 229400_at | HOXD10 | 10,18087789 | 10,97337951 |
| 201074_at | SMARCC1 | 9,609579855 | 10,35720236 |
| 229303_at | SF3B1 | 8,001073796 | 8,62300191 |
| 226713_at | CCDC50 | 8,796094197 | 9,479612671 |
| 201944_at | HEXB | 11,58061366 | 12,4794779 |
| 225997_at | MOB1B | 9,527926156 | 10,26742409 |
| 223547_at | JKAMP | 9,16898684 | 9,87976619 |
| 213785_at | IPO9 | 7,709051317 | 8,306571159 |
| 230185_at | THAP9 | 7,133102093 | 7,685900928 |
| 227122_at | ZNF791 | 7,627701749 | 8,218250224 |
| 229623_at | TMEM150C | 7,233063776 | 7,79297869 |
| 227719_at | SMAD9 | 8,549799569 | 9,21088531 |
| 205613_at | SYT17 | 8,998348434 | 9,694055518 |
| 204472_at | GEM | 9,265569853 | 9,981096457 |
| 235956_at | CEP126 | 7,58434925 | 8,169807579 |
| 212635_at | TNPO1 | 10,12321248 | 10,90452839 |
| 231779_at | IRAK2 | 7,522891821 | 8,10311471 |

| | | | |
|---|---|---|---|
| 204137_at | GPR137B | 9,334856675 | 10,05368826 |
| 212181_s_at | NA | 9,91610633 | 10,67869942 |
| 212333_at | FAM98A | 9,564883057 | 10,29948662 |
| 209295_at | TNFRSF10B | 11,2783408 | 12,14446327 |
| 1554234_at | KATNAL2 | 6,7642013 | 7,282880149 |
| 209585_s_at | MINPP1 | 8,699959604 | 9,366711071 |
| 236814_at | MDM4 | 8,871633684 | 9,549986268 |
| 225957_at | CREBRF | 7,694183741 | 8,281550257 |
| 229210_at | RNASEH2B | 6,101892289 | 6,567634089 |
| 211962_s_at | ZFP36L1 | 9,200216102 | 9,901768552 |
| 212920_at | REST | 8,648176356 | 9,307598321 |
| 222136_x_at | NA | 8,683166023 | 9,344969876 |
| 201069_at | MMP2 | 11,74737729 | 12,6427142 |
| 211212_s_at | ORC5 | 8,141762943 | 8,76067021 |
| 1553118_at | THEM4 | 7,84672784 | 8,442512733 |
| 222444_at | ARMCX3 | 9,966380362 | 10,72229475 |
| 202387_at | BAG1 | 8,260261995 | 8,886664753 |
| 221511_x_at | NA | 8,139304644 | 8,755944302 |
| 206900_x_at | ZNF253 | 7,762347023 | 8,350114048 |
| 205437_at | ZNF211 | 8,529972687 | 9,175308508 |
| 209336_at | PWP2 | 7,95682203 | 8,55585295 |
| 202202_s_at | LAMA4 | 8,431793132 | 9,065462638 |
| 215399_s_at | OS9 | 9,422010681 | 10,12982294 |
| 205991_s_at | PRRX1 | 9,032455404 | 9,709966592 |
| 232333_at | NA | 6,399443067 | 6,87925719 |
| 237864_at | NA | 5,387139892 | 5,790619628 |
| 225191_at | CIRBP | 7,908479007 | 8,499546746 |
| 213046_at | PABPN1 | 8,16280834 | 8,772764459 |
| 204862_s_at | NME3 | 8,867481662 | 9,529633514 |
| 1563331_at | NA | 5,752315685 | 6,181174755 |
| 211084_x_at | PRKD3 | 7,662698985 | 8,233975958 |
| 225251_at | RAB24 | 9,017136155 | 9,687395394 |
| 212299_at | NEK9 | 9,665232367 | 10,38354827 |
| 1553704_x_at | ZNF791 | 8,677971136 | 9,322494044 |
| 224881_at | VKORC1L1 | 8,700601736 | 9,345348279 |
| 218453_s_at | TMEM242 | 7,237205444 | 7,772564425 |
| 203232_s_at | ATXN1 | 9,169576372 | 9,846380266 |
| 222565_s_at | PRKD3 | 8,808990314 | 9,457511097 |
| 219125_s_at | SLC50A1 | 7,260303853 | 7,794315794 |
| 201175_at | TMX2 | 10,67642851 | 11,46146232 |
| 213743_at | CCNT2 | 8,471258871 | 9,093983724 |
| 204831_at | CDK8 | 8,620119059 | 9,253761671 |
| 209537_at | EXTL2 | 9,938559234 | 10,66803451 |
| 222710_at | NA | 6,192621524 | 6,646766894 |
| 229574_at | TRA2A | 8,829595675 | 9,474529011 |
| 204925_at | CTNS | 7,582045151 | 8,134520437 |
| 233919_s_at | HABP4 | 6,99002088 | 7,499352984 |
| 204669_s_at | RNF24 | 9,117165482 | 9,780737935 |
| 1557302_at | ZNF585B | 8,942996444 | 9,593351284 |
| 208706_s_at | EIF5 | 10,53867173 | 11,30444127 |
| 224858_at | ZDHHC5 | 8,758347166 | 9,394712358 |
| 230056_at | BPTF | 6,760782995 | 7,250418965 |
| 221016_s_at | TCF7L1 | 7,680735372 | 8,236167177 |
| 234341_x_at | LOC91548 | 8,284933231 | 8,88373269 |
| 212345_s_at | CREB3L2 | 8,994521841 | 9,642332547 |
| 227255_at | PDIK1L | 8,836193744 | 9,471984499 |

| | | | |
|---|---|---|---|
| 221727_at | SUB1 | 10,66398607 | 11,43121387 |
| 223124_s_at | PITHD1 | 9,884133676 | 10,59519656 |
| 222478_at | VPS36 | 9,308123086 | 9,977314059 |
| 208937_s_at | ID1 | 11,42659838 | 12,24678561 |
| 202923_s_at | GCLC | 7,981317706 | 8,554191829 |
| 219882_at | TTLL7 | 7,659957682 | 8,2095386 |
| 213004_at | ANGPTL2 | 7,680590253 | 8,23085681 |
| 203594_at | RTCA | 9,7537592 | 10,45051602 |
| 207876_s_at | FLNC | 8,694870407 | 9,315830358 |
| 208290_s_at | EIF5 | 10,0546137 | 10,77167714 |
| 219132_at | PELI2 | 8,686631935 | 9,304794229 |
| 227823_at | RGAG4 | 6,972682569 | 7,468732811 |
| 203423_at | RBP1 | 9,244392398 | 9,902026762 |
| 227268_at | RNFT1 | 8,388750345 | 8,985196538 |
| 226409_at | TBC1D20 | 9,502206551 | 10,17667701 |
| 235647_at | AP4S1 | 7,637649977 | 8,179630049 |
| 226508_at | PHC3 | 9,71088014 | 10,39976858 |
| 231964_at | BICD1 | 9,403292029 | 10,07005252 |
| 227301_at | NA | 8,548528283 | 9,154509709 |
| 226399_at | DNAJB14 | 9,015466646 | 9,65429528 |
| 213001_at | ANGPTL2 | 8,366826568 | 8,959202501 |
| 217989_at | HSD17B11 | 8,240971879 | 8,824115729 |
| 218818_at | FHL3 | 7,177967376 | 7,68572288 |
| 238477_at | KIF1C | 7,442441483 | 7,968418751 |
| 229053_at | SYT17 | 9,291866221 | 9,948366616 |
| 206542_s_at | SMARCA2 | 9,33550256 | 9,993578815 |
| 227853_at | PLBD2 | 8,682463546 | 9,294067874 |
| 202919_at | MOB4 | 9,761119294 | 10,44862393 |
| 222120_at | ZNF764 | 6,561067694 | 7,02223909 |
| 229742_at | C15orf61 | 9,11874337 | 9,759586902 |
| 227335_at | DIDO1 | 7,703875359 | 8,244539107 |
| 214252_s_at | CLN5 | 9,016883415 | 9,64950235 |
| 206700_s_at | KDM5D | 8,953072457 | 9,581088567 |
| 224632_at | GPATCH4 | 8,508775972 | 9,105039644 |
| 202922_at | GCLC | 7,822956416 | 8,370963723 |
| 224714_at | NIFK | 9,509127675 | 10,17439475 |
| 210425_x_at | NA | 9,360254862 | 10,01255021 |
| 203519_s_at | UPF2 | 8,084257519 | 8,647438351 |
| 208798_x_at | GOLGA8A | 8,982922222 | 9,608643438 |
| 205646_s_at | PAX6 | 8,677434466 | 9,280710677 |
| 218100_s_at | IFT57 | 8,744028242 | 9,351671441 |
| 201368_at | ZFP36L2 | 9,606207098 | 10,27341713 |
| 203253_s_at | PPIP5K2 | 9,498774891 | 10,15730204 |
| 224934_at | YIPF5 | 10,11643231 | 10,81745941 |
| 214496_x_at | KAT6B | 7,387624424 | 7,899012467 |
| 222754_at | TRNT1 | 9,025639565 | 9,650354652 |
| 221899_at | N4BP2L2 | 9,749800507 | 10,423926 |
| 224953_at | YIPF5 | 9,171192042 | 9,804463782 |
| 210346_s_at | CLK4 | 9,480305492 | 10,13440988 |
| 1552625_a_at | TRNT1 | 7,852200255 | 8,39389587 |
| 235408_x_at | ZNF117 | 8,253141604 | 8,822425635 |
| 225740_x_at | MDM4 | 9,096979302 | 9,724388076 |
| 203569_s_at | OFD1 | 9,061713344 | 9,686561996 |
| 221645_s_at | ZNF83 | 9,249395682 | 9,886800583 |
| 217707_x_at | SMARCA2 | 9,427820505 | 10,07690123 |
| 217937_s_at | HDAC7 | 6,920127876 | 7,395200278 |

| | | | |
|---|---|---|---|
| 226189_at | ITGB8 | 12,15415907 | 12,98825202 |
| 227991_x_at | ZBTB43 | 7,331466693 | 7,834517288 |
| 209717_at | EVI5 | 9,020149441 | 9,638759944 |
| 238465_at | SETD9 | 9,008568057 | 9,626300522 |
| 224741_x_at | NA | 10,61957604 | 11,34702998 |
| 235088_at | C4orf46 | 7,405534462 | 7,911984612 |
| 212486_s_at | FYN | 9,246561981 | 9,878772396 |
| 227628_at | GPX8 | 9,493270454 | 10,14104821 |
| 203635_at | DSCR3 | 8,405841712 | 8,978741675 |
| 225760_at | MYSM1 | 8,845462874 | 9,447740761 |
| 224841_x_at | NA | 10,60856864 | 11,33085064 |
| 209902_at | ATR | 8,048040194 | 8,595413905 |
| 201263_at | TARS | 10,39443235 | 11,10050457 |
| 218135_at | ERGIC2 | 10,12263614 | 10,80927395 |
| 1553703_at | ZNF791 | 9,254369454 | 9,881682124 |
| 226005_at | UBE2G1 | 8,906140078 | 9,509783264 |
| 206707_x_at | FAM65B | 7,350862244 | 7,849065114 |
| 203359_s_at | NA | 8,124640625 | 8,675231464 |
| 221011_s_at | LBH | 8,67858704 | 9,264950348 |
| 235716_at | NA | 9,615098339 | 10,26457657 |
| 226294_x_at | FAM91A1 | 8,925360682 | 9,527923489 |
| 216033_s_at | FYN | 9,569103769 | 10,21488528 |
| 213029_at | NFIB | 11,32165937 | 12,08136968 |
| 226893_at | ABL2 | 7,89289093 | 8,421405292 |
| 218532_s_at | FAM134B | 8,064718713 | 8,604273046 |
| 229958_at | CLN8 | 6,864179567 | 7,322991636 |
| 242455_at | POU3F2 | 11,02930372 | 11,76481345 |
| 236635_at | ZNF667 | 8,46471112 | 9,028743701 |
| 223148_at | PIGS | 8,623808602 | 9,196651436 |
| 202414_at | ERCC5 | 8,208326741 | 8,753008088 |
| 235405_at | GSTA4 | 8,694906762 | 9,270946874 |
| 1553959_a_at | B3GALT6 | 10,02474836 | 10,68844472 |
| 208174_x_at | ZRSR2 | 7,368686287 | 7,855673139 |
| 204706_at | INPP5E | 7,928876374 | 8,452728119 |
| 209649_at | STAM2 | 8,838172874 | 9,421406519 |
| 218721_s_at | C1orf27 | 8,820254859 | 9,399092619 |
| 201067_at | PSMC2 | 9,405990364 | 10,02293715 |
| 221825_at | ANGEL2 | 9,338239687 | 9,95015618 |
| 210706_s_at | RNF24 | 8,837244887 | 9,416017626 |
| 214870_x_at | NA | 9,979963878 | 10,63143619 |
| 235388_at | CHD9 | 7,794653693 | 8,302015656 |
| 221829_s_at | TNPO1 | 11,3706541 | 12,11032804 |
| 1553530_a_at | ITGB1 | 10,79233221 | 11,49331923 |
| 228835_at | NA | 8,526957771 | 9,080331082 |
| 213686_at | VPS13A | 7,812731607 | 8,315279762 |
| 214430_at | GLA | 9,066584228 | 9,649669712 |
| 221689_s_at | PIGP | 9,879124346 | 10,5138547 |
| 203651_at | ZFYVE16 | 8,876569926 | 9,44685389 |
| 211536_x_at | MAP3K7 | 8,36720396 | 8,904281441 |
| 213478_at | KAZN | 8,590658907 | 9,141953999 |
| 209903_s_at | ATR | 9,047525211 | 9,628092675 |
| 208705_s_at | EIF5 | 11,2160483 | 11,93454745 |
| 230588_s_at | NA | 7,658399771 | 8,147947822 |
| 212615_at | CHD9 | 9,312158025 | 9,907398981 |
| 229710_at | ERCC6L2 | 8,140683725 | 8,660681691 |
| 230178_s_at | ELP2 | 7,842090184 | 8,342493578 |

| | | | |
|---|---|---|---|
| 214151_s_at | NA | 7,809243232 | 8,3070192 |
| 206695_x_at | ZNF43 | 9,063835984 | 9,640447242 |
| 212119_at | RHOQ | 9,936495533 | 10,56790045 |
| 203707_at | NA | 8,373088163 | 8,90504733 |
| 223071_at | IER3IP1 | 10,40358913 | 11,064158 |
| 213500_at | NA | 8,933148319 | 9,499232377 |
| 1553678_a_at | ITGB1 | 10,66763785 | 11,34235809 |
| 213878_at | PYROXD1 | 8,780122907 | 9,33503143 |
| 212766_s_at | ISG20L2 | 8,837929877 | 9,395585969 |
| 214844_s_at | DOK5 | 11,66876755 | 12,40394323 |
| 203092_at | TIMM44 | 7,368990585 | 7,832915297 |
| 209149_s_at | TM9SF1 | 8,752773984 | 9,302990563 |
| 214741_at | NA | 9,173778506 | 9,749645801 |
| 218890_x_at | MRPL35 | 8,904501271 | 9,460354326 |
| 201576_s_at | NA | 9,766349542 | 10,37592379 |
| 218296_x_at | NA | 8,041828715 | 8,54371327 |
| 225916_at | NA | 7,388176483 | 7,849227149 |
| 229557_at | MEG3 | 7,413440581 | 7,875208024 |
| 213033_s_at | NFIB | 10,35908349 | 11,00407299 |
| 224774_s_at | NAV1 | 7,93239667 | 8,42623518 |
| 213480_at | VAMP4 | 8,800380626 | 9,346772793 |
| 213626_at | CBR4 | 9,576254242 | 10,17062918 |
| 225943_at | NLN | 8,25411058 | 8,76542333 |
| 211996_s_at | NA | 9,609782366 | 10,20233055 |
| 208708_x_at | EIF5 | 10,18378758 | 10,81068089 |
| 207809_s_at | ATP6AP1 | 10,71496896 | 11,37338037 |
| 230712_at | NA | 8,166028092 | 8,667810654 |
| 225445_at | UBN2 | 7,963791522 | 8,451349359 |
| 232347_x_at | NA | 6,854513292 | 7,273973426 |
| 222212_s_at | CERS2 | 10,36823111 | 11,00258469 |
| 218093_s_at | ANKRD10 | 10,00223411 | 10,61412321 |
| 223268_at | C11orf54 | 9,223640367 | 9,786273032 |
| 224509_s_at | RTN4IP1 | 7,217428798 | 7,657353067 |
| 227374_at | EARS2 | 8,370297852 | 8,880480724 |
| 225593_at | LSM10 | 9,540263161 | 10,12135368 |
| 210312_s_at | IFT20 | 9,652036154 | 10,23988682 |
| 229828_at | CDC73 | 7,896167584 | 8,375593034 |
| 224713_at | NIFK | 9,222092871 | 9,781568866 |
| 229532_at | ZNF502 | 8,02811399 | 8,515036351 |
| 218497_s_at | RNASEH1 | 9,263138928 | 9,824446392 |
| 202451_at | GTF2H1 | 9,644744624 | 10,22916692 |
| 233952_s_at | ZBTB21 | 9,129454831 | 9,682627607 |
| 204284_at | PPP1R3C | 8,185916942 | 8,681433406 |
| 203840_at | BLZF1 | 7,417683693 | 7,866536146 |
| 224624_at | LRRC8A | 11,58472921 | 12,28303311 |
| 208114_s_at | ISG20L2 | 8,392201612 | 8,89801549 |
| 218379_at | RBM7 | 9,024135098 | 9,567782783 |
| 1569872_a_at | LMF1 | 9,570099687 | 10,14519721 |
| 214152_at | NA | 7,82738213 | 8,296410499 |
| 225698_at | EPB41L4A-AS1 | 8,926890939 | 9,460942058 |
| 202360_at | MAML1 | 9,455484263 | 10,02045421 |
| 235196_at | CDC73 | 8,247950879 | 8,740014726 |
| 202603_at | ADAM10 | 10,95676448 | 11,61030224 |
| 225963_at | KLHL42 | 7,432897153 | 7,876108151 |
| 223186_at | NA | 8,769495641 | 9,292375314 |
| 205895_s_at | NOLC1 | 8,01554511 | 8,491836055 |

| | | | |
|---|---|---|---|
| 244411_at | MINCR | 6,666238718 | 7,061596798 |
| 202838_at | FUCA1 | 8,083524917 | 8,562859482 |
| 204065_at | CHST10 | 9,121161303 | 9,661698793 |
| 218684_at | LRRC8D | 9,837452872 | 10,42025521 |
| 204283_at | FARS2 | 8,332466469 | 8,825743309 |
| 231899_at | ZC3H12C | 8,167100859 | 8,650404977 |
| 202157_s_at | CELF2 | 10,8913463 | 11,53511136 |
| 204426_at | TMED2 | 9,739682098 | 10,31533411 |
| 221842_s_at | NA | 8,920895869 | 9,4480172 |
| 206140_at | LHX2 | 10,82471797 | 11,46426365 |
| 202453_s_at | GTF2H1 | 8,136274429 | 8,616569538 |
| 226605_at | DGKQ | 7,69876741 | 8,152687001 |
| 1556629_a_at | SNAP25 | 6,941554861 | 7,350380217 |
| 217820_s_at | ENAH | 11,31439099 | 11,97989485 |
| 31799_at | NA | 8,182413896 | 8,662012573 |
| 204529_s_at | TOX | 11,07623521 | 11,72431399 |
| 223176_at | KCTD20 | 9,582617049 | 10,14214435 |
| 1557303_at | NT5C | 7,332038783 | 7,75804588 |
| 202373_s_at | NA | 9,897518003 | 10,47213606 |
| 224206_x_at | MYNN | 8,139321337 | 8,610391832 |
| 209824_s_at | ARNTL | 8,779945911 | 9,287558972 |
| 224413_s_at | TM2D2 | 10,59518652 | 11,20755695 |
| 224601_at | NA | 9,402417597 | 9,944927248 |
| 212124_at | ZMIZ1 | 10,25672692 | 10,84823636 |
| 228519_x_at | CIRBP | 7,679098734 | 8,121300568 |
| 225505_s_at | PCED1A | 9,470342327 | 10,01412148 |
| 221895_at | MOSPD2 | 8,577119449 | 9,069601252 |
| 202800_at | SLC1A3 | 12,83807378 | 13,57280683 |
| 202196_s_at | DKK3 | 11,23528946 | 11,87797802 |
| 225644_at | CCDC117 | 8,970702311 | 9,483632332 |
| 222616_s_at | USP16 | 9,186214445 | 9,711262232 |
| 201878_at | ARIH1 | 8,031985591 | 8,490953549 |
| 238850_at | NA | 11,4113041 | 12,06296845 |
| 220980_s_at | ADPGK | 9,426582988 | 9,964454836 |
| 230229_at | DLG1 | 7,971802993 | 8,426163269 |
| 230272_at | NA | 11,50055312 | 12,15587362 |
| 220985_s_at | RNF170 | 8,222571095 | 8,690935466 |
| 228299_at | KCTD20 | 10,48757457 | 11,08445251 |
| 217168_s_at | HERPUD1 | 9,796628946 | 10,35358968 |
| 200899_s_at | MGEA5 | 10,41027137 | 11,00166069 |
| 228822_s_at | USP16 | 9,727481717 | 10,27871718 |
| 214035_x_at | NA | 9,834079253 | 10,39126073 |
| 225732_at | KLHL42 | 9,571098104 | 10,11223701 |
| 212399_s_at | VGLL4 | 10,79376964 | 11,40271439 |
| 201960_s_at | MYCBP2 | 9,570831672 | 10,10982157 |
| 201050_at | PLD3 | 9,136450942 | 9,650683773 |
| 201959_s_at | MYCBP2 | 8,608566029 | 9,091370498 |
| 213128_s_at | UBE3A | 9,41680046 | 9,944791214 |
| 202372_at | NA | 9,439897168 | 9,969065402 |
| 202069_s_at | IDH3A | 8,588326964 | 9,06852901 |
| 226695_at | PRRX1 | 11,64761479 | 12,29790233 |
| 208985_s_at | EIF3J | 9,810089957 | 10,35715195 |
| 200761_s_at | ARL6IP5 | 11,5228548 | 12,16521405 |
| 216268_s_at | JAG1 | 11,07472435 | 11,69059719 |
| 202277_at | SPTLC1 | 10,78219854 | 11,38033096 |
| 238877_at | EYA4 | 9,430062885 | 9,952534899 |

| | | | |
|---|---|---|---|
| 204847_at | ZBTB11 | 9,119484995 | 9,622217328 |
| 32099_at | SAFB2 | 9,637884896 | 10,16834917 |
| 209737_at | MAGI2 | 10,19987019 | 10,7606697 |
| 212120_at | RHOQ | 10,25113961 | 10,81201537 |
| 215030_at | GRSF1 | 7,620235173 | 8,036032974 |
| 209297_at | ITSN1 | 8,708879512 | 9,183971669 |
| 211009_s_at | ZNF271P | 9,238292883 | 9,741293425 |
| 203427_at | ASF1A | 9,881311988 | 10,41874841 |
| 214016_s_at | SFPQ | 10,59219078 | 11,1680391 |
| 204538_x_at | NPIPA1 | 10,37212025 | 10,93179455 |
| 209290_s_at | NFIB | 11,84386354 | 12,48184083 |
| 203044_at | CHSY1 | 10,14468859 | 10,68969106 |
| 204744_s_at | IARS | 10,72755115 | 11,29699928 |
| 218333_at | DERL2 | 9,5733408 | 10,07923695 |
| 225220_at | NA | 9,418449677 | 9,916047766 |
| 223287_s_at | FOXP1 | 9,211414469 | 9,696999758 |
| 209567_at | RRS1 | 8,555611532 | 9,006369928 |
| 208907_s_at | MRPS18B | 9,153479075 | 9,635736185 |
| 227052_at | SMIM14 | 9,779296732 | 10,29173653 |
| 217317_s_at | NA | 10,43191182 | 10,97808526 |
| 212721_at | SREK1 | 10,70323135 | 11,26296785 |
| 214280_x_at | HNRNPA1 | 10,7056807 | 11,26423998 |
| 203355_s_at | PSD3 | 10,77076327 | 11,32918657 |
| 201197_at | AMD1 | 9,565134042 | 10,0610057 |
| 229523_at | TMEM200C | 8,726994213 | 9,179162556 |
| 204879_at | PDPN | 9,735374393 | 10,23978862 |
| 202491_s_at | IKBKAP | 9,530664759 | 10,02434844 |
| 235812_at | CNEP1R1 | 9,146347721 | 9,618568859 |
| 204808_s_at | TMEM5 | 8,910047672 | 9,369882493 |
| 214789_x_at | SRSF8 | 10,16586926 | 10,68954439 |
| 200945_s_at | SEC31A | 10,73097299 | 11,28337042 |
| 203632_s_at | GPRC5B | 10,58274039 | 11,1270887 |
| 222416_at | ALDH18A1 | 9,002091038 | 9,464634546 |
| 218545_at | CCDC91 | 8,945433338 | 9,404542177 |
| 221656_s_at | ARHGEF10L | 7,873642186 | 8,277640175 |
| 213212_x_at | NA | 8,993964769 | 9,454571408 |
| 224694_at | ANTXR1 | 10,56752534 | 11,10760898 |
| 226235_at | LINC00667 | 8,432382555 | 8,862519413 |
| 200760_s_at | ARL6IP5 | 11,76410968 | 12,36376834 |
| 205348_s_at | DYNC1I1 | 9,691278778 | 10,18471215 |
| 203586_s_at | ARL4D | 8,509736674 | 8,941669843 |
| 211537_x_at | MAP3K7 | 9,05930925 | 9,516110979 |
| 223213_s_at | ZHX1 | 9,89342675 | 10,38855721 |
| 201722_s_at | GALNT1 | 10,34953653 | 10,8673797 |
| 202418_at | YIF1A | 9,150019224 | 9,606811976 |
| 219002_at | FASTKD1 | 9,158026029 | 9,614119244 |
| 209289_at | NFIB | 11,97915452 | 12,57449065 |
| 225917_at | ATF7IP | 9,613765482 | 10,09094368 |
| 226298_at | RUNDC1 | 8,113330348 | 8,515914097 |
| 1552575_a_at | C6orf141 | 10,09421286 | 10,59351364 |
| 202537_s_at | CHMP2B | 7,99908665 | 8,392646929 |
| 218386_x_at | USP16 | 9,914681181 | 10,40196965 |
| 224838_at | FOXP1 | 9,649409712 | 10,12350531 |
| 37549_g_at | BBS9 | 8,051200557 | 8,446547222 |
| 201572_x_at | DCTD | 9,636416413 | 10,10897929 |
| 1569607_s_at | NA | 8,718107888 | 9,144476195 |

| | | | |
|---|---|---|---|
| 210835_s_at | CTBP2 | 9,920263782 | 10,40541233 |
| 225163_at | FRMD4A | 9,313164476 | 9,768052762 |
| 211951_at | NOLC1 | 10,65981655 | 11,18040933 |
| 225313_at | FAM217B | 9,279172107 | 9,731935604 |
| 203320_at | SH2B3 | 8,921759937 | 9,3565017 |
| 223214_s_at | ZHX1 | 10,24341667 | 10,74240028 |
| 204944_at | PTPRG | 10,01813989 | 10,50507105 |
| 1555226_s_at | C1orf43 | 10,79620953 | 11,31939922 |
| 221501_x_at | NA | 10,95346745 | 11,48281393 |
| 212685_s_at | TBL2 | 10,36291473 | 10,8634212 |
| 218236_s_at | PRKD3 | 10,56425135 | 11,07173459 |
| 201095_at | DAP | 9,461602646 | 9,913609397 |
| 222433_at | ENAH | 11,596502 | 12,14762873 |
| 218088_s_at | RRAGC | 9,76827128 | 10,23147609 |
| 225197_at | NA | 9,231930645 | 9,66935583 |
| 204427_s_at | TMED2 | 10,59284228 | 11,09306978 |
| 210830_s_at | PON2 | 11,19654134 | 11,72443536 |
| 225062_at | NA | 10,1175953 | 10,591938 |
| 201630_s_at | ACP1 | 9,351355883 | 9,78863801 |
| 226505_x_at | USP32 | 9,814790758 | 10,27185487 |
| 211945_s_at | ITGB1 | 12,47239425 | 13,0511363 |
| 227116_at | MON1B | 9,366263176 | 9,798410056 |
| 226594_at | ENTPD5 | 8,40958993 | 8,797046495 |
| 226677_at | ZNF521 | 9,271064692 | 9,695602317 |
| 223081_at | PHF23 | 9,73455414 | 10,18030895 |
| 222140_s_at | NA | 9,042850886 | 9,454040925 |
| 220755_s_at | C6orf48 | 11,36563979 | 11,88023914 |
| 216713_at | KRIT1 | 9,229501186 | 9,645667568 |
| 225046_at | NA | 10,68442455 | 11,16472164 |
| 213682_at | NUP50 | 9,991851965 | 10,43885229 |
| 218056_at | BFAR | 9,475690999 | 9,897028902 |
| 201096_s_at | ARF4 | 11,21919038 | 11,71615685 |
| 221933_at | NLGN4X | 11,09193962 | 11,57769113 |
| 211980_at | COL4A1 | 9,903833876 | 10,3371923 |
| 226740_x_at | NA | 11,44039938 | 11,93580796 |
| 202718_at | IGFBP2 | 13,13942 | 13,70560598 |
| 202522_at | PITPNB | 10,8844374 | 11,35106967 |
| 208905_at | CYCS | 12,41096954 | 12,94276639 |
| 222423_at | NDFIP1 | 10,3669314 | 10,80952782 |
| 210105_s_at | FYN | 11,54643254 | 12,03864423 |
| 222108_at | AMIGO2 | 11,35868149 | 11,8419094 |
| 205358_at | GRIA2 | 11,20460204 | 11,68080543 |
| 1568618_a_at | GALNT1 | 10,71066383 | 11,16556703 |
| 201765_s_at | HEXA | 9,970595827 | 10,39338132 |
| 223892_s_at | TMBIM4 | 11,23322247 | 11,70698862 |
| 209796_s_at | CNPY2 | 10,50522487 | 10,94628138 |
| 211423_s_at | SC5D | 10,23817684 | 10,6673586 |
| 222495_at | TMEM167B | 10,42861844 | 10,8512193 |
| 209377_s_at | HMGN3 | 12,2423403 | 12,7378173 |
| 203956_at | MORC2 | 9,429252086 | 9,809274831 |
| 201519_at | TOMM70A | 9,803498575 | 10,19225424 |
| 225221_at | ZKSCAN1 | 11,01217764 | 11,448344 |
| 225945_at | ZNF655 | 10,66624565 | 11,08091982 |
| 217776_at | RDH11 | 11,58519615 | 12,02233942 |
| 201084_s_at | BCLAF1 | 11,6541115 | 12,08776669 |
| 204159_at | CDKN2C | 11,64412766 | 12,06690622 |

| | | | |
|---|---|---|---|
| 226529_at | TMEM106B | 11,36665204 | 11,77887913 |
| 202857_at | CNPY2 | 11,44671 | 11,84828042 |
| 221482_s_at | ARPP19 | 10,61490417 | 10,98668062 |
| 213086_s_at | CSNK1A1 | 11,52433971 | 11,90735905 |
| 221729_at | COL5A2 | 11,9510695 | 12,34377709 |
| 227394_at | NCAM1 | 11,44085729 | 11,8008105 |
| 211072_x_at | TUBA1B | 14,22195016 | 13,83539582 |
| 201090_x_at | TUBA1B | 14,17992302 | 13,77187509 |
| 212372_at | MYH10 | 11,4060013 | 11,02784753 |
| 217733_s_at | TMSB10 | 14,13049403 | 13,65570323 |
| 225053_at | CNOT7 | 11,31358211 | 10,91878039 |
| 218146_at | GLT8D1 | 10,81225454 | 10,42972038 |
| 200043_at | ERH | 12,56478832 | 12,11384891 |
| 208847_s_at | ADH5 | 11,24680167 | 10,84173997 |
| 213699_s_at | YWHAQ | 13,42130128 | 12,93316361 |
| 200792_at | XRCC6 | 11,98710596 | 11,55084126 |
| 216526_x_at | HLA-C | 12,56637696 | 12,10797027 |
| 200026_at | RPL34 | 12,63271698 | 12,16050884 |
| 200773_x_at | PTMA | 12,81546231 | 12,33411483 |
| 210211_s_at | HSP90AA1 | 13,42295076 | 12,91544135 |
| 217963_s_at | NGFRAP1 | 13,12727176 | 12,62849211 |
| 230264_s_at | AP1S2 | 12,07691605 | 11,61338953 |
| 209043_at | PAPSS1 | 11,79023715 | 11,33610871 |
| 201540_at | FHL1 | 11,62732501 | 11,15992353 |
| 228155_at | FAM213A | 10,83053159 | 10,39473739 |
| 200772_x_at | NA | 12,75973015 | 12,24014417 |
| 213508_at | SPTSSA | 9,125798684 | 8,752524308 |
| 234863_x_at | FBXO5 | 9,678385156 | 9,282325993 |
| 217845_x_at | HIGD1A | 12,08295298 | 11,58739623 |
| 222602_at | UBA6 | 9,546922762 | 9,15537546 |
| 214328_s_at | HSP90AA1 | 13,47037537 | 12,90956194 |
| 203581_at | NA | 9,942142042 | 9,526805031 |
| 202088_at | SLC39A6 | 12,25304975 | 11,74068389 |
| 202299_s_at | LAMTOR5 | 11,24358573 | 10,7698672 |
| 211954_s_at | IPO5 | 10,46528571 | 10,02335986 |
| 202386_s_at | KIAA0430 | 9,573839688 | 9,168150431 |
| 218323_at | RHOT1 | 10,71878714 | 10,26445044 |
| 226627_at | SEPT8 | 9,107598613 | 8,720300842 |
| 223191_at | COX16 | 11,03914541 | 10,56968716 |
| 212426_s_at | YWHAQ | 12,45178413 | 11,91892682 |
| 200603_at | PRKAR1A | 12,23345904 | 11,70991877 |
| 202615_at | GNAQ | 11,01015375 | 10,5386428 |
| 211921_x_at | NA | 12,58709623 | 12,04773541 |
| 201272_at | AKR1B1 | 11,79290363 | 11,28275961 |
| 204031_s_at | PCBP2 | 11,73523029 | 11,22704193 |
| 212154_at | SDC2 | 12,04520155 | 11,52348405 |
| 217720_at | CHCHD2 | 13,00291014 | 12,43611712 |
| 210559_s_at | CDK1 | 9,780146276 | 9,352873473 |
| 209329_x_at | HIGD2A | 10,59991069 | 10,13621013 |
| 234000_s_at | HACD3 | 11,59399128 | 11,08509994 |
| 218009_s_at | PRC1 | 10,96648396 | 10,48316099 |
| 225350_s_at | ZYG11B | 9,76073389 | 9,330064295 |
| 221676_s_at | CORO1C | 10,80068782 | 10,32169413 |
| 204496_at | STRN3 | 9,607224435 | 9,179924342 |
| 209522_s_at | CRAT | 9,115952086 | 8,709340707 |
| 216384_x_at | NA | 10,42718283 | 9,961470839 |

| | | | |
|---|---|---|---|
| 211318_s_at | RAE1 | 10,03723521 | 9,587468529 |
| 204028_s_at | RABGAP1 | 10,25884121 | 9,798840381 |
| 221523_s_at | RRAGD | 9,409969923 | 8,987982076 |
| 230435_at | FAM228B | 8,68689283 | 8,295322172 |
| 211969_at | HSP90AA1 | 13,65584225 | 13,0399579 |
| 212199_at | MRFAP1L1 | 10,63956069 | 10,15449177 |
| 226482_s_at | TSTD1 | 9,342901916 | 8,91578422 |
| 206102_at | GINS1 | 10,38041308 | 9,903137998 |
| 224729_s_at | ATPAF1 | 10,41934421 | 9,937528186 |
| 222404_x_at | HACD3 | 11,52888962 | 10,9956266 |
| 200640_at | YWHAZ | 11,87293177 | 11,3204485 |
| 204173_at | MYL6B | 11,44671882 | 10,91121491 |
| 202749_at | WRB | 11,57780749 | 11,0338668 |
| 201477_s_at | RRM1 | 11,56458567 | 11,01926533 |
| 215568_x_at | LYPLA2 | 8,164301715 | 7,77927613 |
| 212646_at | RFTN1 | 10,44107775 | 9,948286798 |
| 225771_at | AP1G1 | 9,516850599 | 9,067610499 |
| 219649_at | ALG6 | 9,582532377 | 9,12930201 |
| 200639_s_at | YWHAZ | 11,90587247 | 11,34097021 |
| 37384_at | PPM1F | 9,138211056 | 8,702827596 |
| 226563_at | SMAD2 | 8,714850743 | 8,299419692 |
| 226581_at | RBSN | 9,772607273 | 9,305797833 |
| 212628_at | PKN2 | 9,385465194 | 8,932620684 |
| 220607_x_at | NELFCD | 11,30056835 | 10,7543663 |
| 213313_at | RABGAP1 | 10,91902538 | 10,39041521 |
| 201541_s_at | ZNHIT1 | 10,64562449 | 10,12930313 |
| 200978_at | MDH1 | 11,55894619 | 10,99669127 |
| 222405_at | HACD3 | 11,89628215 | 11,31627986 |
| 202300_at | LAMTOR5 | 11,29109789 | 10,73843541 |
| 203790_s_at | HRSP12 | 9,483443761 | 9,017378445 |
| 203076_s_at | SMAD2 | 10,05912419 | 9,564310916 |
| 232676_x_at | MYEF2 | 10,48027839 | 9,963066268 |
| 208839_s_at | CAND1 | 9,961634671 | 9,469794599 |
| 208647_at | FDFT1 | 11,64024489 | 11,06540753 |
| 227407_at | TAPT1 | 10,68189821 | 10,15378265 |
| 225083_at | GTF3C6 | 11,57634802 | 11,00321692 |
| 218788_s_at | SMYD3 | 9,074248575 | 8,623239478 |
| 200604_s_at | PRKAR1A | 10,51672663 | 9,993439612 |
| 219013_at | GALNT11 | 10,50366826 | 9,979888607 |
| 212038_s_at | VDAC1 | 11,68443564 | 11,10147682 |
| 200832_s_at | SCD | 12,10117924 | 11,49611075 |
| 201306_s_at | ANP32B | 12,07854366 | 11,47453052 |
| 208095_s_at | NA | 10,86406082 | 10,32066421 |
| 203077_s_at | SMAD2 | 9,340339481 | 8,872667618 |
| 217874_at | SUCLG1 | 11,02500806 | 10,47170672 |
| 203606_at | NDUFS6 | 11,48488561 | 10,90709543 |
| 203875_at | SMARCA1 | 10,80399788 | 10,2595402 |
| 223675_s_at | VEZT | 9,551840932 | 9,070283943 |
| 202529_at | PRPSAP1 | 10,15903599 | 9,646768781 |
| 205201_at | GLI3 | 8,614564867 | 8,177942389 |
| 213088_s_at | DNAJC9 | 9,633228468 | 9,143297607 |
| 200605_s_at | PRKAR1A | 11,93095154 | 11,32285904 |
| 212155_at | RNF187 | 10,66181684 | 10,1183627 |
| 205956_x_at | PSMC3IP | 8,207255359 | 7,787460806 |
| 213971_s_at | NA | 10,12345264 | 9,604621764 |
| 224862_at | GNAQ | 9,868708639 | 9,362873728 |

| | | | |
|---|---|---|---|
| 219485_s_at | PSMD10 | 10,97349543 | 10,40968329 |
| 200982_s_at | ANXA6 | 9,945064866 | 9,433917795 |
| 218592_s_at | CECR5 | 10,06450711 | 9,543868216 |
| 202218_s_at | FADS2 | 8,666656109 | 8,217646833 |
| 208977_x_at | TUBB4B | 12,47723731 | 11,82980337 |
| 229860_x_at | C4orf48 | 9,921772953 | 9,404087752 |
| 222457_s_at | LIMA1 | 11,40505553 | 10,80989866 |
| 225261_x_at | NELFCD | 11,04436727 | 10,46797569 |
| 226343_at | DPP8 | 9,520512926 | 9,022991069 |
| 223100_s_at | NUDT5 | 9,061003019 | 8,587287208 |
| 212546_s_at | FRYL | 9,8818767 | 9,364797213 |
| 225865_x_at | NELFCD | 10,96502056 | 10,39078857 |
| 202089_s_at | SLC39A6 | 11,01485813 | 10,43649199 |
| 201193_at | IDH1 | 12,08938128 | 11,45455347 |
| 216515_x_at | MIR1244-3 | 11,11414043 | 10,53040081 |
| 221896_s_at | HIGD1A | 11,86906123 | 11,24530045 |
| 221007_s_at | FIP1L1 | 9,964801385 | 9,44065239 |
| 202478_at | TRIB2 | 13,01736127 | 12,3318999 |
| 200638_s_at | YWHAZ | 12,36265288 | 11,71155833 |
| 203970_s_at | PEX3 | 8,166726178 | 7,735252039 |
| 201574_at | ETF1 | 10,56160605 | 10,00301932 |
| 1555037_a_at | IDH1 | 11,85073538 | 11,22148515 |
| 208091_s_at | VOPP1 | 11,62533754 | 11,00594165 |
| 221685_s_at | SPDL1 | 9,423515472 | 8,920894972 |
| 200932_s_at | DCTN2 | 10,90176526 | 10,31959125 |
| 227003_at | RAB28 | 9,883903804 | 9,355869546 |
| 203130_s_at | KIF5C | 12,30526868 | 11,64691917 |
| 202460_s_at | LPIN2 | 8,827878085 | 8,355362733 |
| 201403_s_at | MGST3 | 10,87127522 | 10,28744876 |
| 225029_at | LINC01420 | 9,849204329 | 9,320250982 |
| 222036_s_at | MCM4 | 9,443761074 | 8,93268936 |
| 212548_s_at | FRYL | 10,01517215 | 9,472256927 |
| 234672_s_at | NDC1 | 9,869760823 | 9,331121961 |
| 200905_x_at | HLA-E | 10,03368248 | 9,485679946 |
| 234978_at | SLC36A4 | 7,808368492 | 7,38155578 |
| 217968_at | TSSC1 | 8,977064732 | 8,483315836 |
| 221873_at | ZNF143 | 8,852897876 | 8,365694829 |
| 200956_s_at | SSRP1 | 10,39832083 | 9,825862754 |
| 201227_s_at | NDUFB8 | 10,53231606 | 9,950656528 |
| 224919_at | MRPS6 | 11,33308444 | 10,70378214 |
| 221743_at | CELF1 | 11,57378405 | 10,93108362 |
| 217456_x_at | HLA-E | 9,92932974 | 9,377653831 |
| 217892_s_at | LIMA1 | 11,48232475 | 10,84392734 |
| 217140_s_at | VDAC1 | 11,18648319 | 10,56282375 |
| 208549_x_at | PTMA | 10,48177989 | 9,897392075 |
| 1556283_s_at | FGFR1OP2 | 8,367721043 | 7,901095793 |
| 202767_at | ACP2 | 8,450136854 | 7,978628564 |
| 213726_x_at | TUBB4B | 12,52895784 | 11,82946202 |
| 213504_at | COPS6 | 9,71907522 | 9,175801327 |
| 226003_at | KIF21A | 10,73426806 | 10,13409864 |
| 212930_at | ATP2B1 | 8,38074418 | 7,909605837 |
| 217955_at | BCL2L13 | 8,999771642 | 8,49223991 |
| 209191_at | TUBB6 | 10,69521338 | 10,09022287 |
| 226236_at | LINC00493 | 11,04473376 | 10,41981576 |
| 227630_at | PPP2R5E | 8,784675778 | 8,287530982 |
| 223993_s_at | CNIH4 | 11,44648998 | 10,79658003 |

| | | | |
|---|---|---|---|
| 205079_s_at | MPDZ | 9,903442559 | 9,340992479 |
| 201128_s_at | ACLY | 11,31128288 | 10,66814321 |
| 200693_at | YWHAQ | 12,76156789 | 12,0350351 |
| 202154_x_at | TUBB3 | 12,72799248 | 12,0032902 |
| 204332_s_at | AGA | 8,758111286 | 8,258476678 |
| 217819_at | GOLGA7 | 11,42468046 | 10,77167079 |
| 209258_s_at | SMC3 | 9,094511686 | 8,57427853 |
| 1053_at | RFC2 | 8,902139612 | 8,392630522 |
| 1554577_a_at | PSMD10 | 10,55947519 | 9,954415445 |
| 227249_at | NDE1 | 10,46989122 | 9,868748395 |
| 228762_at | LFNG | 9,651279972 | 9,096390951 |
| 222575_at | SETD5 | 8,339813016 | 7,86013724 |
| 203350_at | AP1G1 | 8,831511171 | 8,323201573 |
| 202573_at | CSNK1G2 | 9,755034813 | 9,191871703 |
| 59697_at | RAB15 | 8,694651838 | 8,192654772 |
| 225006_x_at | NELFCD | 10,99431797 | 10,35877104 |
| 205347_s_at | NA | 10,39073847 | 9,789920925 |
| 218461_at | GPN3 | 9,231787834 | 8,69776785 |
| 213735_s_at | COX5B | 11,5697241 | 10,89707448 |
| 220770_s_at | ZBED8 | 8,752892933 | 8,24260385 |
| 223378_at | GLIS2 | 8,981194487 | 8,456798198 |
| 200645_at | GABARAP | 12,20383066 | 11,4905472 |
| 239525_at | CTTNBP2NL | 7,238760783 | 6,814665463 |
| 201816_s_at | GBAS | 11,93339218 | 11,23330765 |
| 564_at | GNA11 | 9,879531511 | 9,297716695 |
| 202427_s_at | MPC2 | 9,948025694 | 9,361559383 |
| 217957_at | CFAP20 | 10,69201218 | 10,06153741 |
| 210495_x_at | FN1 | 10,51757853 | 9,897108291 |
| 203299_s_at | AP1S2 | 9,80636163 | 9,22771797 |
| 213070_at | PIK3C2A | 11,0243031 | 10,37268985 |
| 208002_s_at | ACOT7 | 10,23849783 | 9,632579055 |
| 214075_at | NENF | 8,533819841 | 8,027530705 |
| 201375_s_at | PPP2CB | 12,46511681 | 11,72519718 |
| 209139_s_at | PRKRA | 10,05019872 | 9,453429615 |
| 213306_at | MPDZ | 10,30168069 | 9,689678859 |
| 227099_s_at | C11orf96 | 9,458692715 | 8,896680804 |
| 201554_x_at | GYG1 | 9,914597339 | 9,325350581 |
| 200641_s_at | YWHAZ | 11,83002599 | 11,12683336 |
| 201555_at | MCM3 | 10,07494865 | 9,473012128 |
| 204386_s_at | MRPL57 | 10,90936403 | 10,25742287 |
| 239047_at | FAM122C | 6,850766039 | 6,440369293 |
| 201476_s_at | RRM1 | 9,989993758 | 9,389966732 |
| 227696_at | EXOSC6 | 10,05324459 | 9,446265884 |
| 212774_at | ZBTB18 | 11,69393286 | 10,98651845 |
| 204336_s_at | RGS19 | 8,936287028 | 8,39430037 |
| 213616_at | TPGS2 | 8,254054448 | 7,753399105 |
| 203620_s_at | FCHSD2 | 8,541617561 | 8,023258918 |
| 201768_s_at | CLINT1 | 8,809630537 | 8,272409785 |
| 226293_at | MED19 | 8,924764264 | 8,38030196 |
| 224878_at | UBFD1 | 10,09353253 | 9,477110172 |
| 212094_at | PEG10 | 13,45269073 | 12,63096129 |
| 209628_at | NXT2 | 8,622865926 | 8,095550134 |
| 204979_s_at | SH3BGR | 8,183045001 | 7,68225806 |
| 204387_x_at | MRPL57 | 8,866484117 | 8,322841971 |
| 1555460_a_at | SLC39A6 | 9,452908611 | 8,872020203 |
| 210950_s_at | FDFT1 | 11,0618595 | 10,38197358 |

| | | | |
|---|---|---|---|
| 224948_at | NA | 11,17295565 | 10,48445158 |
| 202503_s_at | KIAA0101 | 12,09184838 | 11,34585975 |
| 228831_s_at | GNG7 | 9,205348604 | 8,637217724 |
| 201612_at | ALDH9A1 | 11,49085237 | 10,77930368 |
| 228170_at | OLIG1 | 10,20415431 | 9,571905415 |
| 209300_s_at | NECAP1 | 9,174473604 | 8,604184783 |
| 215499_at | NA | 8,432788682 | 7,908421757 |
| 223626_x_at | IFI27L2 | 8,538333005 | 8,00665341 |
| 223475_at | CRISPLD1 | 9,639210576 | 9,038368924 |
| 226151_x_at | CRYZL1 | 9,242334079 | 8,665493829 |
| 223302_s_at | ZNF655 | 7,391605728 | 6,930205272 |
| 225637_at | DEF8 | 8,618997593 | 8,080587824 |
| 238936_at | TMEM178B | 8,060506262 | 7,55675779 |
| 226300_at | MED19 | 9,196777889 | 8,621424166 |
| 203447_at | PSMD5 | 9,083326324 | 8,514913244 |
| 226013_at | TRAK1 | 6,920917601 | 6,487271605 |
| 202074_s_at | OPTN | 7,678551738 | 7,197178598 |
| 226024_at | COMMD1 | 9,448450009 | 8,854546487 |
| 228899_at | NA | 8,451853333 | 7,919950214 |
| 214259_s_at | AKR7A2 | 9,895437048 | 9,272598505 |
| 218809_at | PANK2 | 10,33038256 | 9,680001888 |
| 206363_at | MAF | 7,362174422 | 6,898536632 |
| 222978_at | SURF4 | 10,298462 | 9,648981373 |
| 224863_at | GNAQ | 9,395757403 | 8,802618215 |
| 203656_at | FIG4 | 8,875589792 | 8,315064179 |
| 230305_at | DNAJC15 | 7,920554248 | 7,42001425 |
| 225338_at | ZYG11B | 9,987977541 | 9,356034174 |
| 202343_x_at | COX5B | 11,19429287 | 10,48556339 |
| 225689_at | POMGNT2 | 9,417846982 | 8,821382639 |
| 233571_x_at | PPDPF | 10,32711918 | 9,673050244 |
| 206949_s_at | RUSC1 | 9,151869384 | 8,571721418 |
| 222581_at | XPR1 | 9,456510552 | 8,856572323 |
| 203094_at | MAD2L1BP | 9,280710914 | 8,691847567 |
| 221810_at | RAB15 | 7,69922684 | 7,206419001 |
| 213766_x_at | GNA11 | 10,19722122 | 9,543808717 |
| 213283_s_at | SALL2 | 9,27771882 | 8,682966743 |
| 224914_s_at | SARNP | 10,31661643 | 9,653689307 |
| 211025_x_at | COX5B | 11,14701817 | 10,43058159 |
| 202596_at | ENSA | 10,71423644 | 10,02468285 |
| 205543_at | HSPA4L | 8,548269555 | 7,997900115 |
| 224415_s_at | HINT2 | 9,308053064 | 8,708486723 |
| 1556551_s_at | SLC39A6 | 9,570906255 | 8,954228841 |
| 225031_at | CHD6 | 8,911524725 | 8,335528828 |
| 200824_at | GSTP1 | 11,45580862 | 10,71235895 |
| 217419_x_at | AGRN | 7,523436458 | 7,033809634 |
| 227722_at | RPS23 | 8,263533757 | 7,725452125 |
| 202986_at | ARNT2 | 9,553983744 | 8,931714707 |
| 225723_at | CCDC167 | 9,926606098 | 9,279814016 |
| 203275_at | IRF2 | 8,711612645 | 8,143042046 |
| 224896_s_at | TTL | 9,650333278 | 9,020165078 |
| 203764_at | DLGAP5 | 10,16718961 | 9,502317396 |
| 216064_s_at | AGA | 7,827011183 | 7,314740344 |
| 202316_x_at | UBE4B | 7,23093904 | 6,75541684 |
| 223248_at | HSDL1 | 8,846302653 | 8,263980767 |
| 225352_at | SEC62 | 9,261728247 | 8,650930586 |
| 207268_x_at | ABI2 | 8,970462562 | 8,378081304 |

| | | | |
|---|---|---|---|
| 211065_x_at | PFKL | 8,836406569 | 8,250402935 |
| 235550_at | MAP9 | 6,991549501 | 6,527835864 |
| 212727_at | DLG3 | 7,34197166 | 6,854912153 |
| 225436_at | ABHD17C | 9,580371681 | 8,943392388 |
| 203445_s_at | CTDSP2 | 10,52266673 | 9,822482874 |
| 208881_x_at | IDI1 | 10,0341716 | 9,366280321 |
| 222785_x_at | C11orf1 | 7,936202305 | 7,40670011 |
| 218883_s_at | CENPU | 10,261512 | 9,57648639 |
| 235792_x_at | PIK3C2A | 8,606915239 | 8,032057485 |
| 219066_at | PPCDC | 7,448555591 | 6,950653794 |
| 230326_s_at | C11orf73 | 10,63058736 | 9,919259495 |
| 203874_s_at | SMARCA1 | 10,21568748 | 9,531839512 |
| 226319_s_at | ALYREF | 10,83780827 | 10,11138202 |
| 200746_s_at | GNB1 | 11,78370289 | 10,99384249 |
| 235507_at | PCMTD1 | 7,613329115 | 7,101582737 |
| 235177_at | METTL21A | 8,263142519 | 7,707389944 |
| 201215_at | PLS3 | 11,29630812 | 10,53580191 |
| 205053_at | PRIM1 | 8,646039803 | 8,063613992 |
| 201002_s_at | NA | 11,23665292 | 10,47893072 |
| 201841_s_at | HSPB1 | 10,90264034 | 10,1660895 |
| 226826_at | LSM11 | 7,082480089 | 6,602996144 |
| 203300_x_at | AP1S2 | 11,57121884 | 10,78760402 |
| 225515_s_at | NA | 9,955266186 | 9,280651635 |
| 208832_at | ATXN10 | 8,721872203 | 8,129506626 |
| 211047_x_at | AP2S1 | 10,6916024 | 9,965364098 |
| 200662_s_at | TOMM20 | 11,83605108 | 11,03096343 |
| 225850_at | SFT2D1 | 9,209555631 | 8,580851948 |
| 231772_x_at | CENPH | 8,934786932 | 8,324018672 |
| 225068_at | KLHL12 | 10,55105081 | 9,829303501 |
| 200799_at | NA | 10,26472097 | 9,559594149 |
| 209517_s_at | ASH2L | 9,411826603 | 8,765271751 |
| 239891_x_at | RAB12 | 8,285100325 | 7,7159303 |
| 221516_s_at | MIEF1 | 8,718047638 | 8,118396798 |
| 236321_at | FAM200B | 7,635098535 | 7,109835258 |
| 202260_s_at | STXBP1 | 9,909641035 | 9,227592734 |
| 225490_at | ARID2 | 8,443518638 | 7,861188621 |
| 212288_at | FNBP1 | 9,183709127 | 8,549713814 |
| 223144_s_at | AKIRIN2 | 9,959691693 | 9,272001415 |
| 200655_s_at | NA | 12,63502121 | 11,76120904 |
| 210337_s_at | ACLY | 9,722532025 | 9,049285222 |
| 208092_s_at | FAM49A | 7,628601319 | 7,099191768 |
| 220975_s_at | C1QTNF1 | 7,393704827 | 6,879829689 |
| 225331_at | CCDC50 | 9,971973017 | 9,278627785 |
| 209563_x_at | NA | 12,49468164 | 11,62581223 |
| 201303_at | EIF4A3 | 9,947428673 | 9,255404425 |
| 226094_at | PIK3C2A | 9,154657209 | 8,517044973 |
| 200738_s_at | PGK1 | 13,16962021 | 12,24827654 |
| 226320_at | ALYREF | 10,53440913 | 9,797277874 |
| 218728_s_at | CNIH4 | 9,821167935 | 9,131611443 |
| 204252_at | CDK2 | 9,654463229 | 8,976294365 |
| 211708_s_at | SCD | 7,640075387 | 7,103322611 |
| 213706_at | GPD1 | 11,41857815 | 10,61577356 |
| 228214_at | SOX6 | 8,86664738 | 8,241717401 |
| 211968_s_at | HSP90AA1 | 13,18459225 | 12,25504911 |
| 203859_s_at | PALM | 6,870522978 | 6,385920979 |
| 225923_at | VAPB | 9,870970636 | 9,173967757 |

| | | | |
|---|---|---|---|
| 204105_s_at | NRCAM | 12,09477082 | 11,23816371 |
| 211275_s_at | GYG1 | 10,20328076 | 9,480072418 |
| 203733_at | DEXI | 8,614019817 | 8,002582194 |
| 225440_at | AGPAT3 | 9,19130814 | 8,536682174 |
| 221742_at | CELF1 | 8,376930911 | 7,780188383 |
| 227497_at | SOX6 | 8,920762224 | 8,285275604 |
| 217729_s_at | AES | 9,730478232 | 9,036496375 |
| 224682_at | ANKIB1 | 10,77066325 | 10,00202019 |
| 211162_x_at | SCD | 7,424190921 | 6,894322427 |
| 229741_at | MAVS | 7,748354563 | 7,194677631 |
| 238695_s_at | RAB39B | 7,424105574 | 6,893329073 |
| 208776_at | PSMD11 | 8,289860589 | 7,6966321 |
| 200653_s_at | NA | 12,46624784 | 11,5735259 |
| 234915_s_at | DENR | 8,2296526 | 7,64004281 |
| 209507_at | RPA3 | 10,42304173 | 9,67595814 |
| 242560_at | FANCD2 | 8,956523778 | 8,31280738 |
| 222627_at | VPS54 | 8,585492033 | 7,967669697 |
| 228264_at | ACCS | 6,832748506 | 6,340887726 |
| 204615_x_at | IDI1 | 10,17912949 | 9,445728922 |
| 225105_at | C12orf75 | 10,27699321 | 9,536503593 |
| 219596_at | THAP10 | 8,48243849 | 7,870849848 |
| 206584_at | LY96 | 9,407587111 | 8,728587901 |
| 206258_at | ST8SIA5 | 10,47140118 | 9,714506803 |
| 227164_at | SRSF1 | 8,309054952 | 7,708378349 |
| 222589_at | NLK | 8,997539629 | 8,346999592 |
| 1560477_a_at | SAMD11 | 6,225619738 | 5,774569467 |
| 202825_at | SLC25A4 | 9,502834249 | 8,814192239 |
| 223065_s_at | STARD3NL | 11,87468081 | 11,01382149 |
| 203925_at | GCLM | 8,488685085 | 7,87263555 |
| 226696_at | RBBP9 | 9,504618361 | 8,814492424 |
| 211160_x_at | ACTN1 | 8,922747386 | 8,274758926 |
| 211985_s_at | NA | 11,77679356 | 10,9213353 |
| 208620_at | PCBP1 | 11,07574744 | 10,27116768 |
| 220099_s_at | NA | 10,37886774 | 9,62375368 |
| 202949_s_at | FHL2 | 7,778166925 | 7,210709858 |
| 239307_at | MYH11 | 8,004832109 | 7,420570003 |
| 215716_s_at | ATP2B1 | 8,595812138 | 7,967027784 |
| 221677_s_at | DONSON | 8,990817088 | 8,333056233 |
| 201850_at | CAPG | 9,067920683 | 8,404365907 |
| 218208_at | PQLC1 | 8,470029858 | 7,849403171 |
| 214083_at | PPP2R5C | 6,612416008 | 6,127050809 |
| 212492_s_at | KDM4B | 9,643751771 | 8,934570939 |
| 209015_s_at | DNAJB6 | 8,857732965 | 8,205912865 |
| 223808_s_at | NA | 8,979133127 | 8,318023283 |
| 208074_s_at | AP2S1 | 10,91005312 | 10,10638829 |
| 202043_s_at | SMS | 10,71103279 | 9,921891013 |
| 219321_at | MPP5 | 8,131031527 | 7,531683977 |
| 227456_s_at | C6orf136 | 8,487554757 | 7,861914196 |
| 209044_x_at | SF3B4 | 8,775894372 | 8,128983489 |
| 224861_at | GNAQ | 9,968247042 | 9,231350646 |
| 212312_at | BCL2L1 | 8,962556184 | 8,299905673 |
| 203540_at | GFAP | 11,68029679 | 10,81640758 |
| 222553_x_at | OXR1 | 10,1893095 | 9,434867839 |
| 206500_s_at | MIS18BP1 | 8,830938552 | 8,176457477 |
| 210933_s_at | FSCN1 | 9,465759478 | 8,764007679 |
| 211984_at | NA | 11,74139484 | 10,87055642 |

| | | | |
|---|---|---|---|
| 224689_at | MANBAL | 10,21154066 | 9,453838895 |
| 218020_s_at | ZFAND3 | 9,059149875 | 8,386741893 |
| 225569_at | NA | 9,019065887 | 8,348509941 |
| 224945_at | BTBD7 | 8,787988445 | 8,134096963 |
| 1554977_at | LKAAEAR1 | 6,609121434 | 6,115901598 |
| 215206_at | NA | 5,765608332 | 5,335255187 |
| 212136_at | ATP2B4 | 8,499895837 | 7,864243009 |
| 226510_at | HEATR5A | 8,182241983 | 7,570040686 |
| 221142_s_at | PECR | 7,32566204 | 6,777053425 |
| 209629_s_at | NXT2 | 6,953405501 | 6,431966791 |
| 204127_at | RFC3 | 9,278073334 | 8,581948067 |
| 213104_at | TSR3 | 8,731565165 | 8,0761375 |
| 216941_s_at | TAF1B | 8,051070405 | 7,446103236 |
| 212287_at | SUZ12 | 10,63710212 | 9,836680538 |
| 225089_at | USP40 | 8,233281737 | 7,61277409 |
| 212993_at | NACC2 | 10,16450813 | 9,398381065 |
| 203189_s_at | NA | 9,314880739 | 8,61168772 |
| 207761_s_at | METTL7A | 10,71488709 | 9,905620427 |
| 201794_s_at | SMG7 | 8,996538407 | 8,316526837 |
| 209487_at | RBPMS | 8,588013963 | 7,937869199 |
| 212197_x_at | MPRIP | 10,43274946 | 9,642203123 |
| 222844_s_at | SRR | 8,696712385 | 8,036705033 |
| 220526_s_at | MRPL20 | 11,21194363 | 10,36011044 |
| 227772_at | LATS1 | 8,783791367 | 8,115973355 |
| 218802_at | CCDC109B | 10,1355625 | 9,364740945 |
| 225754_at | AP1G1 | 7,581827534 | 7,005129758 |
| 217367_s_at | ZHX3 | 8,463716872 | 7,81976046 |
| 225915_at | CAB39L | 7,805879458 | 7,211903743 |
| 231720_s_at | JAM3 | 8,084759229 | 7,468833363 |
| 224844_at | SLAIN2 | 9,308409123 | 8,599163395 |
| 225433_at | GTF2A1 | 9,580963683 | 8,848334355 |
| 211042_x_at | NA | 9,988616898 | 9,224621204 |
| 217946_s_at | SAE1 | 9,410325427 | 8,689710193 |
| 209947_at | UBAP2L | 7,938538477 | 7,329813797 |
| 201706_s_at | PEX19 | 8,728817609 | 8,05850055 |
| 220150_s_at | FAM184A | 7,763902017 | 7,167393076 |
| 202673_at | DPM1 | 11,17147941 | 10,31313162 |
| 218318_s_at | NLK | 8,027222375 | 7,410267798 |
| 223299_at | SEC11C | 10,50120612 | 9,692886915 |
| 217842_at | NA | 9,498523655 | 8,766854461 |
| 217780_at | WDR83OS | 10,68340591 | 9,859252527 |
| 204200_s_at | PDGFB | 8,717861147 | 8,04493924 |
| 214771_x_at | MPRIP | 10,53513331 | 9,721902169 |
| 218050_at | UFM1 | 10,68991416 | 9,864613493 |
| 225108_at | AGPS | 8,114015693 | 7,487057076 |
| 218662_s_at | NCAPG | 9,679707945 | 8,931292186 |
| 226188_at | LGALSL | 9,174750452 | 8,465047046 |
| 209980_s_at | NA | 6,964309067 | 6,425351817 |
| 224462_s_at | CHCHD6 | 7,978560565 | 7,360812517 |
| 213110_s_at | COL4A5 | 10,13003572 | 9,345556267 |
| 223155_at | HDHD2 | 11,06936681 | 10,21198479 |
| 208789_at | PTRF | 9,10453257 | 8,399023413 |
| 202120_x_at | AP2S1 | 9,281502141 | 8,560717093 |
| 218152_at | HMG20A | 9,535440327 | 8,793894732 |
| 228889_at | ARHGAP5-AS1 | 6,836531516 | 6,304102862 |
| 218127_at | NFYB | 9,70993925 | 8,95367273 |

| | | | |
|---|---|---|---|
| 201849_at | BNIP3 | 12,28752185 | 11,33010892 |
| 203545_at | ALG8 | 9,54655661 | 8,802617261 |
| 222443_s_at | RBM8A | 10,05395148 | 9,270243219 |
| 223274_at | TCF19 | 8,718178435 | 8,037737968 |
| 217645_at | NA | 8,117602188 | 7,483996941 |
| 218973_at | EFTUD1 | 8,712063036 | 8,031603797 |
| 213008_at | FANCI | 9,233003765 | 8,511835271 |
| 227376_at | GLI3 | 9,938649587 | 9,161957771 |
| 201845_s_at | RYBP | 10,27559608 | 9,47199441 |
| 238612_at | BRD4 | 8,847728998 | 8,155657492 |
| 204997_at | GPD1 | 9,691724984 | 8,933155915 |
| 219204_s_at | SRR | 9,423996731 | 8,685564558 |
| 200774_at | FAM120A | 11,2694282 | 10,38630474 |
| 211729_x_at | BLVRA | 10,39864412 | 9,583031606 |
| 208158_s_at | OSBPL1A | 9,163444195 | 8,443979519 |
| 209306_s_at | SWAP70 | 8,575243157 | 7,90083117 |
| 210685_s_at | UBE4B | 7,792808422 | 7,179375344 |
| 218480_at | AGBL5 | 8,123822956 | 7,48318271 |
| 204836_at | GLDC | 9,860392839 | 9,082636008 |
| 206397_x_at | NA | 9,261432456 | 8,527164471 |
| 222777_s_at | WHSC1 | 7,833937015 | 7,212029995 |
| 212331_at | RBL2 | 9,865065788 | 9,081769847 |
| 202500_at | DNAJB2 | 8,48105948 | 7,807164417 |
| 213666_at | SEPT6 | 6,944157646 | 6,392014079 |
| 200678_x_at | GRN | 9,467595341 | 8,714779666 |
| 201953_at | CIB1 | 8,747086504 | 8,050848607 |
| 37966_at | PARVB | 7,271221338 | 6,691814774 |
| 239153_at | HOTAIR | 7,56036914 | 6,95759925 |
| 203190_at | NA | 9,89659914 | 9,107388701 |
| 203755_at | BUB1B | 10,34035378 | 9,515707471 |
| 219979_s_at | C11orf73 | 8,992207728 | 8,274676033 |
| 221311_x_at | LYRM2 | 9,943048862 | 9,149342106 |
| 204916_at | RAMP1 | 8,956937671 | 8,241837336 |
| 201931_at | ETFA | 10,87803165 | 10,00825797 |
| 202207_at | ARL4C | 10,80847568 | 9,944082303 |
| 1555514_a_at | PIAS2 | 8,386487211 | 7,711863717 |
| 205210_at | TGFBRAP1 | 7,497464255 | 6,894303151 |
| 201102_s_at | PFKL | 8,101499282 | 7,449602048 |
| 226744_at | NA | 9,288697193 | 8,53991283 |
| 208921_s_at | SRI | 11,98373581 | 11,01719935 |
| 203162_s_at | KATNB1 | 8,073504617 | 7,422314025 |
| 50400_at | PAOX | 5,554528607 | 5,106064004 |
| 203526_s_at | APC | 7,953197217 | 7,310891493 |
| 205245_at | PARD6A | 7,211953879 | 6,629418411 |
| 202483_s_at | RANBP1 | 11,65058136 | 10,70854344 |
| 225901_at | PTPMT1 | 8,257834015 | 7,590058006 |
| 222039_at | KIF18B | 9,208122537 | 8,46335866 |
| 204603_at | EXO1 | 7,473076781 | 6,868461722 |
| 202530_at | MAPK14 | 9,171130449 | 8,425223055 |
| 231897_at | PTGR1 | 8,848896443 | 8,127513684 |
| 209856_x_at | ABI2 | 7,757678198 | 7,124601502 |
| 210621_s_at | RASA1 | 9,450038671 | 8,678770464 |
| 227641_at | FBXL16 | 10,30986437 | 9,467806425 |
| 203209_at | RFC5 | 8,752830018 | 8,037645596 |
| 216041_x_at | GRN | 9,288389927 | 8,528418046 |
| 225125_at | MMGT1 | 9,522801822 | 8,742085126 |

| | | | |
|---|---|---|---|
| 218094_s_at | NA | 9,06132273 | 8,318435146 |
| 212277_at | MTMR4 | 9,006012611 | 8,266841138 |
| 204424_s_at | LMO3 | 8,862046544 | 8,134434891 |
| 227908_at | TBC1D24 | 9,160493723 | 8,407051921 |
| 221235_s_at | TGFBRAP1 | 7,650692252 | 7,021323665 |
| 219205_at | SRR | 9,650269677 | 8,855436393 |
| 212412_at | PDLIM5 | 11,42607848 | 10,48472976 |
| 228190_at | ATG4C | 8,37020527 | 7,68034937 |
| 215566_x_at | LYPLA2 | 8,492616838 | 7,792649476 |
| 212692_s_at | LRBA | 9,560715394 | 8,772713782 |
| 203773_x_at | BLVRA | 10,49829999 | 9,63251725 |
| 203742_s_at | TDG | 7,753110899 | 7,112670558 |
| 203525_s_at | APC | 10,11370485 | 9,278258477 |
| 203743_s_at | TDG | 10,2196044 | 9,374939003 |
| 209529_at | PPAP2C | 7,437784391 | 6,821027059 |
| 1554348_s_at | CDKN2AIPNL | 5,346684777 | 4,902596181 |
| 1558706_a_at | ATOH8 | 7,061211848 | 6,474532196 |
| 231034_s_at | NHSL1 | 8,171194291 | 7,491762857 |
| 224583_at | COTL1 | 10,44347533 | 9,574920476 |
| 203310_at | STXBP3 | 9,890568136 | 9,067908888 |
| 218047_at | OSBPL9 | 10,08608002 | 9,247055112 |
| 223879_s_at | OXR1 | 9,094699277 | 8,337889053 |
| 32837_at | AGPAT2 | 7,939512508 | 7,278818272 |
| 205413_at | MPPED2 | 10,3193643 | 9,459677592 |
| 226406_at | C18orf25 | 9,379834823 | 8,598310402 |
| 220964_s_at | RAB1B | 9,536017405 | 8,741332492 |
| 219526_at | C14orf169 | 7,76903117 | 7,120693143 |
| 226082_s_at | SCAF4 | 9,046168618 | 8,291096646 |
| 203210_s_at | RFC5 | 7,700357042 | 7,057593361 |
| 213630_at | NACAD | 8,184922291 | 7,501572366 |
| 225643_at | MAPK1IP1L | 9,94785309 | 9,117071514 |
| 225087_at | FOPNL | 10,05622884 | 9,21402081 |
| 221693_s_at | MRPS18A | 9,533057075 | 8,733222799 |
| 218197_s_at | OXR1 | 10,26561363 | 9,402797155 |
| 213940_s_at | FNBP1 | 8,603807577 | 7,880418532 |
| 201769_at | CLINT1 | 10,16100477 | 9,306522902 |
| 213772_s_at | GGA2 | 7,77614152 | 7,122133133 |
| 227617_at | TMEM201 | 8,675943523 | 7,945745189 |
| 239407_at | PAXBP1-AS1 | 6,296900882 | 5,766777742 |
| 212450_at | SECISBP2L | 9,264243207 | 8,483659227 |
| 44040_at | FBXO41 | 7,104799675 | 6,505127163 |
| 212862_at | CDS2 | 9,014631117 | 8,252029541 |
| 203379_at | RPS6KA1 | 5,775658889 | 5,286759798 |
| 227124_at | SMIM13 | 9,998077128 | 9,150858827 |
| 221507_at | TNPO2 | 9,192871629 | 8,411561716 |
| 214268_s_at | MTMR4 | 9,44336539 | 8,640179084 |
| 219787_s_at | ECT2 | 10,33495999 | 9,450458609 |
| 201710_at | MYBL2 | 8,342994383 | 7,628971455 |
| 1553991_s_at | NA | 6,887696249 | 6,298100773 |
| 222863_at | ZBTB10 | 5,840384997 | 5,340111459 |
| 226428_at | TNPO2 | 8,540553422 | 7,808575181 |
| 234465_at | EME1 | 7,445050624 | 6,806752996 |
| 219003_s_at | MANEA | 7,141985807 | 6,529449163 |
| 224822_at | DLC1 | 7,106296937 | 6,496465013 |
| 203344_s_at | RBBP8 | 9,871956807 | 9,024710893 |
| 201704_at | ENTPD6 | 8,776671871 | 8,022810555 |

| | | | |
|---|---|---|---|
| 1553694_a_at | PIK3C2A | 7,683786723 | 7,02352476 |
| 204735_at | PDE4A | 6,913897 | 6,31969848 |
| 235588_at | ESCO2 | 8,489781995 | 7,759615011 |
| 235131_at | RHOJ | 9,427507705 | 8,615829853 |
| 226582_at | LOC400043 | 9,193627272 | 8,401792011 |
| 219931_s_at | KLHL12 | 8,433018438 | 7,706595634 |
| 203185_at | RASSF2 | 11,75436832 | 10,74168027 |
| 1555500_s_at | SLC2A4RG | 7,983683784 | 7,294857364 |
| 218355_at | KIF4A | 9,297382941 | 8,495128504 |
| 205077_s_at | PIGF | 10,06161239 | 9,193407011 |
| 200745_s_at | GNB1 | 11,63260204 | 10,62819607 |
| 223184_s_at | AGPAT3 | 8,503339709 | 7,768472654 |
| 225170_at | WDR5 | 8,255067861 | 7,540180995 |
| 203771_s_at | BLVRA | 8,619128582 | 7,872649019 |
| 226152_at | TTC7B | 8,394426059 | 7,667288357 |
| 204205_at | APOBEC3G | 7,608689666 | 6,949463357 |
| 207559_s_at | ZMYM3 | 7,878160205 | 7,195529105 |
| 1555618_s_at | SAE1 | 8,94223051 | 8,167379934 |
| 227013_at | LATS2 | 9,131414813 | 8,339719279 |
| 218776_s_at | TMEM62 | 6,863727634 | 6,268499914 |
| 204653_at | TFAP2A | 8,945475961 | 8,169162012 |
| 221059_s_at | NA | 10,9223399 | 9,974378664 |
| 204268_at | S100A2 | 6,436261223 | 5,876971463 |
| 202518_at | BCL7B | 8,453166447 | 7,71851368 |
| 214051_at | NA | 10,05251492 | 9,178611363 |
| 226651_at | HOMER1 | 9,227749295 | 8,424792837 |
| 215084_s_at | LRRC42 | 9,07513363 | 8,285256465 |
| 235399_at | ERCC2 | 6,886107024 | 6,286654314 |
| 209030_s_at | CADM1 | 11,82309443 | 10,79373104 |
| 227498_at | SOX6 | 9,383697754 | 8,566391379 |
| 204887_s_at | PLK4 | 8,322708507 | 7,59748732 |
| 227580_s_at | TECPR1 | 9,280350232 | 8,470404694 |
| 205148_s_at | CLCN4 | 6,412842254 | 5,853042986 |
| 227625_s_at | STUB1 | 11,89848431 | 10,85956715 |
| 209608_s_at | ACAT2 | 9,950668404 | 9,081146121 |
| 200904_at | HLA-E | 8,243617958 | 7,523085946 |
| 226048_at | MAPK8 | 7,932079541 | 7,238726646 |
| 226271_at | GDAP1 | 9,484134224 | 8,653352522 |
| 227370_at | FAM171B | 10,93627726 | 9,978148571 |
| 221521_s_at | GINS2 | 9,246369204 | 8,435723207 |
| 203919_at | TCEA2 | 10,1281491 | 9,239818326 |
| 218979_at | RMI1 | 9,340530023 | 8,520886145 |
| 229289_at | FAM71E1 | 6,301556301 | 5,748558973 |
| 202533_s_at | DHFR | 8,050088539 | 7,343509831 |
| 241505_at | NA | 8,203194763 | 7,482979867 |
| 1557315_a_at | NA | 7,161325968 | 6,531851256 |
| 208632_at | RNF10 | 7,971716411 | 7,270403005 |
| 210380_s_at | CACNA1G | 6,229544863 | 5,680981266 |
| 220147_s_at | FAM60A | 9,962599081 | 9,084828404 |
| 37590_g_at | NA | 7,197919793 | 6,562583782 |
| 213587_s_at | ATP6V0E2 | 11,2573837 | 10,2634916 |
| 231809_x_at | PDCD7 | 9,509834793 | 8,669787387 |
| 226224_at | FOXK2 | 8,551114966 | 7,795147677 |
| 213186_at | DZIP3 | 9,170700784 | 8,359945911 |
| 232751_at | RBBP9 | 7,330658538 | 6,681749596 |
| 217356_s_at | PGK1 | 12,67091571 | 11,54926009 |

| | | | |
|---|---|---|---|
| 226710_at | C8orf82 | 9,283305912 | 8,461523691 |
| 231918_s_at | GFM2 | 8,664359257 | 7,897199232 |
| 210963_s_at | GYG2 | 6,250300828 | 5,696418348 |
| 201342_at | SNRPC | 10,51313357 | 9,58114732 |
| 203968_s_at | CDC6 | 8,302590435 | 7,566307097 |
| 203527_s_at | APC | 7,771138115 | 7,081424029 |
| 209224_s_at | NDUFA2 | 11,24815392 | 10,24794197 |
| 200788_s_at | PEA15 | 12,23258152 | 11,14374457 |
| 1555948_s_at | FAM120A | 8,792896829 | 8,010074135 |
| 226177_at | GLTP | 11,36292939 | 10,35028697 |
| 202677_at | RASA1 | 10,49759347 | 9,561570211 |
| 226008_at | NDNL2 | 8,694432393 | 7,918622276 |
| 229305_at | CENPU | 6,658181997 | 6,063528827 |
| 210115_at | RPL39L | 7,202564825 | 6,558757777 |
| 218663_at | NCAPG | 9,440622966 | 8,596683827 |
| 204126_s_at | CDC45 | 8,035709176 | 7,317282834 |
| 218385_at | MRPS18A | 8,539330226 | 7,775568062 |
| 231399_at | RAB3IP | 6,674202462 | 6,077136122 |
| 1557119_a_at | ZNF575 | 6,455244306 | 5,877633468 |
| 239034_at | LINC01560 | 7,166956282 | 6,524509155 |
| 214442_s_at | PIAS2 | 8,461370681 | 7,702875529 |
| 241727_x_at | DHFRL1 | 7,955844186 | 7,24170858 |
| 219865_at | LINC00339 | 8,600468068 | 7,828401549 |
| 221506_s_at | TNPO2 | 10,79363858 | 9,824229944 |
| 203531_at | CUL5 | 10,24631108 | 9,325984345 |
| 205733_at | BLM | 8,493005272 | 7,72998606 |
| 223022_s_at | VTA1 | 9,604112878 | 8,741256221 |
| 204340_at | TMEM187 | 7,437292898 | 6,768709069 |
| 210144_at | TBC1D22A | 6,384048679 | 5,809203757 |
| 219269_at | HMBOX1 | 8,975447742 | 8,166996726 |
| 226016_at | CD47 | 10,37629451 | 9,441346493 |
| 212856_at | GRAMD4 | 9,003415342 | 8,189550896 |
| 206381_at | SCN2A | 6,486743638 | 5,899975466 |
| 204542_at | ST6GALNAC2 | 5,722985256 | 5,204785839 |
| 201387_s_at | UCHL1 | 11,87226098 | 10,79709042 |
| 201003_x_at | NA | 9,031512847 | 8,213313347 |
| 225024_at | RPRD1B | 8,631198586 | 7,848367504 |
| 236110_at | ST8SIA5 | 10,8184511 | 9,837074315 |
| 202479_s_at | TRIB2 | 11,3375979 | 10,30887727 |
| 229864_at | ELP6 | 6,87164874 | 6,247718286 |
| 244166_at | APLN | 5,638914424 | 5,126561854 |
| 209514_s_at | RAB27A | 5,09134999 | 4,628234195 |
| 218383_at | NA | 8,260395587 | 7,508278455 |
| 223153_x_at | TMUB1 | 7,428572276 | 6,75132817 |
| 227607_at | STAMBPL1 | 7,39593347 | 6,720643931 |
| 223729_at | CECR2 | 6,178121389 | 5,613437868 |
| 223228_at | LDOC1L | 10,44423743 | 9,488738248 |
| 218573_at | MAGEH1 | 9,441400256 | 8,577131779 |
| 202047_s_at | CBX6 | 9,390681704 | 8,530878278 |
| 206039_at | RAB33A | 7,765504174 | 7,054446248 |
| 1555281_x_at | ARMC8 | 6,711078725 | 6,096015013 |
| 224698_at | ESYT2 | 10,11221614 | 9,184837398 |
| 47560_at | ADGRL1 | 8,823608197 | 8,014369202 |
| 223367_at | DNAJC30 | 9,167694803 | 8,326270266 |
| 204908_s_at | NA | 6,684026805 | 6,070331631 |
| 227712_at | LYRM2 | 9,637231719 | 8,750784297 |

| | | | |
|---|---|---|---|
| 201793_x_at | SMG7 | 6,976157619 | 6,334059995 |
| 228257_at | ANKRD52 | 8,516631886 | 7,732006133 |
| 218272_at | TTC38 | 7,645301426 | 6,94041188 |
| 226277_at | COL4A3BP | 9,872347042 | 8,961448205 |
| 203928_x_at | MAPT | 8,023670507 | 7,282947287 |
| 203843_at | RPS6KA3 | 7,957269779 | 7,221720362 |
| 213201_s_at | TNNT1 | 4,716567881 | 4,280486109 |
| 224715_at | WDR34 | 8,876278401 | 8,055569708 |
| 243603_at | NA | 6,141223655 | 5,573251644 |
| 208838_at | CAND1 | 10,18076379 | 9,238912032 |
| 209234_at | KIF1B | 10,28543303 | 9,332839652 |
| 227453_at | UNC13A | 5,902505718 | 5,355702058 |
| 1555234_a_at | RHOJ | 8,458336417 | 7,674245366 |
| 207232_s_at | DZIP3 | 7,580150697 | 6,877245567 |
| 221908_at | RNFT2 | 8,723475401 | 7,913723773 |
| 227943_at | NA | 7,10639504 | 6,446001205 |
| 1554411_at | CTNNB1 | 8,843738183 | 8,019688041 |
| 208796_s_at | CCNG1 | 11,40809815 | 10,34455074 |
| 229181_s_at | HAUS2 | 8,458084282 | 7,669501481 |
| 218010_x_at | PPDPF | 6,868366416 | 6,227294877 |
| 214043_at | PTPRD | 8,957703212 | 8,120969482 |
| 226272_at | RCAN3 | 10,20863862 | 9,253817522 |
| 236701_at | NA | 7,248307086 | 6,570324389 |
| 225902_at | PPIG | 8,41881604 | 7,631060223 |
| 213007_at | FANCI | 9,926389489 | 8,995727532 |
| 201573_s_at | ETF1 | 8,979057804 | 8,137024796 |
| 203729_at | EMP3 | 10,22696101 | 9,267743968 |
| 202777_at | SHOC2 | 8,741113467 | 7,920669048 |
| 228415_at | AP1S2 | 8,681565642 | 7,86628103 |
| 228922_at | SHF | 6,410845197 | 5,807257215 |
| 204763_s_at | GNAO1 | 6,063961352 | 5,49239353 |
| 235542_at | TET3 | 9,113288911 | 8,253101494 |
| 214695_at | UBAP2L | 7,30552906 | 6,615614998 |
| 222778_s_at | WHSC1 | 8,736256513 | 7,910541198 |
| 231875_at | KIF21A | 8,943505185 | 8,097757589 |
| 212264_s_at | WAPL | 7,770664068 | 7,035316973 |
| 212157_at | SDC2 | 10,21592714 | 9,248786187 |
| 211561_x_at | MAPK14 | 7,341794493 | 6,646110461 |
| 205034_at | CCNE2 | 9,690485852 | 8,772092931 |
| 222412_s_at | SSR3 | 8,74530351 | 7,916138842 |
| 209276_s_at | GLRX | 8,072135162 | 7,305970945 |
| 219785_s_at | NA | 7,618241459 | 6,894679172 |
| 229504_at | RAB23 | 8,069990915 | 7,30227871 |
| 218820_at | C14orf132 | 9,745960776 | 8,8172607 |
| 213175_s_at | SNRPB | 11,16299902 | 10,09720452 |
| 229649_at | NRXN3 | 7,703322223 | 6,966671996 |
| 208270_s_at | RNPEP | 9,522300617 | 8,611576177 |
| 225458_at | PP7080 | 7,879259704 | 7,125240778 |
| 239413_at | CEP152 | 8,426290008 | 7,618886958 |
| 203786_s_at | TPD52L1 | 8,30861963 | 7,512365122 |
| 201848_s_at | BNIP3 | 10,90666973 | 9,860115873 |
| 226001_at | KLHL5 | 9,801708226 | 8,860954107 |
| 211953_s_at | IPO5 | 10,09073341 | 9,122181835 |
| 227197_at | ARHGEF26 | 9,53845545 | 8,622707921 |
| 225344_at | NCOA7 | 8,469794105 | 7,656332361 |
| 217960_s_at | TOMM22 | 9,893663932 | 8,940882404 |

| | | | |
|---|---|---|---|
| 229064_s_at | RCAN3 | 5,994691909 | 5,417218043 |
| 205379_at | CBR3 | 8,454440511 | 7,639732925 |
| 218117_at | RBX1 | 11,40625571 | 10,30524022 |
| 204767_s_at | FEN1 | 10,45696486 | 9,446937447 |
| 213105_s_at | TSR3 | 8,360896355 | 7,553169854 |
| 200739_s_at | SUMO3 | 7,993658456 | 7,221348018 |
| 218585_s_at | DTL | 9,997638361 | 9,031527866 |
| 203131_at | PDGFRA | 12,7050181 | 11,47482368 |
| 206176_at | BMP6 | 4,406425018 | 3,979413296 |
| 203642_s_at | COBLL1 | 7,141107764 | 6,448624106 |
| 213551_x_at | NA | 8,092915808 | 7,307768584 |
| 231721_at | JAM3 | 7,935648244 | 7,164954486 |
| 239128_at | TMEM221 | 6,43757589 | 5,811988366 |
| 207458_at | RHPN1-AS1 | 6,579510956 | 5,940014097 |
| 239466_at | DUBR | 7,613296496 | 6,87222612 |
| 205691_at | SYNGR3 | 8,942906369 | 8,072059352 |
| 224761_at | GNA13 | 10,93387296 | 9,869074625 |
| 209054_s_at | WHSC1 | 9,623847396 | 8,686496895 |
| 205024_s_at | RAD51 | 8,065629466 | 7,279416531 |
| 221843_s_at | TLDC1 | 7,468993768 | 6,740794362 |
| 209686_at | S100B | 12,1507471 | 10,96550891 |
| 204128_s_at | RFC3 | 8,114494768 | 7,321917682 |
| 209764_at | MGAT3 | 6,06577028 | 5,472979356 |
| 201208_s_at | TNFAIP1 | 6,921347919 | 6,244814769 |
| 204766_s_at | NUDT1 | 8,266775519 | 7,458096321 |
| 224656_s_at | NA | 12,24206101 | 11,04109507 |
| 202306_at | POLR2G | 11,42848251 | 10,30677777 |
| 242082_at | MMAB | 6,837397392 | 6,166224609 |
| 229889_at | LRRC75A | 7,804525823 | 7,038358557 |
| 225552_x_at | AURKAIP1 | 9,993846037 | 9,011616147 |
| 228606_at | TCTEX1D2 | 8,985489561 | 8,101754704 |
| 208637_x_at | ACTN1 | 9,172099617 | 8,269520265 |
| 218477_at | TMEM14A | 10,61505649 | 9,570460584 |
| 201243_s_at | ATP1B1 | 11,27088601 | 10,16152213 |
| 231877_at | TRMT10A | 4,752117117 | 4,2843651 |
| 219267_at | GLTP | 9,740220327 | 8,781131369 |
| 1555233_at | RHOJ | 8,885569663 | 8,010563342 |
| 238700_at | PIAS2 | 8,345595213 | 7,523541356 |
| 202549_at | VAPB | 8,236234409 | 7,424587444 |
| 228843_at | ARL10 | 10,44500185 | 9,413686431 |
| 225623_at | CIPC | 9,388714075 | 8,461670815 |
| 215557_at | NA | 4,985080681 | 4,492592368 |
| 1556195_a_at | LOC105376796 | 6,963591283 | 6,273933456 |
| 222474_s_at | TOMM22 | 10,35010956 | 9,3250284 |
| 203455_s_at | SAT1 | 10,63464597 | 9,580086494 |
| 224660_at | NA | 11,42523144 | 10,29129108 |
| 226712_at | SSR1 | 8,869765893 | 7,986862135 |
| 226644_at | MIB2 | 8,139416889 | 7,32873032 |
| 204768_s_at | FEN1 | 9,95795994 | 8,965903307 |
| 217934_x_at | STUB1 | 10,17661013 | 9,161726036 |
| 223466_x_at | COL4A3BP | 9,34204249 | 8,409154666 |
| 1316_at | THRA | 7,386831745 | 6,64895387 |
| 226741_at | SLC12A6 | 8,921419498 | 8,02983 |
| 234998_at | RAB11A | 8,065523664 | 7,259262668 |
| 40020_at | CELSR3 | 8,32636119 | 7,493809356 |
| 210592_s_at | SAT1 | 11,00058698 | 9,900570035 |

| | | | |
|---|---|---|---|
| 209058_at | EDF1 | 10,68118556 | 9,612875033 |
| 1555279_at | ARMC8 | 7,013426813 | 6,311667609 |
| 208821_at | SNRPB | 10,63762418 | 9,572013147 |
| 225466_at | PATL1 | 8,50573748 | 7,653003184 |
| 44696_at | TBC1D13 | 8,49595819 | 7,642906635 |
| 214097_at | RPS21 | 9,207470356 | 8,281583537 |
| 203880_at | NA | 10,33997907 | 9,299798019 |
| 1556301_at | LOC100287015 | 5,09406793 | 4,581115888 |
| 218625_at | NRN1 | 10,87430991 | 9,77929244 |
| 223413_s_at | LYAR | 8,579155471 | 7,713992622 |
| 202440_s_at | ST5 | 8,539815267 | 7,678251462 |
| 227479_at | NA | 8,253690125 | 7,420622717 |
| 225914_s_at | CAB39L | 6,583428333 | 5,918917047 |
| 1562012_at | LOC100506730 | 5,976091075 | 5,372794133 |
| 216804_s_at | PDLIM5 | 9,471258701 | 8,514920515 |
| 219706_at | AP5S1 | 7,548858732 | 6,786440665 |
| 1555370_a_at | CAMTA1 | 8,832877374 | 7,940698662 |
| 207030_s_at | CSRP2 | 12,74168403 | 11,45353592 |
| 238762_at | MTHFD2L | 8,539003386 | 7,675515766 |
| 203851_at | IGFBP6 | 6,945411171 | 6,242750099 |
| 209479_at | CCDC28A | 8,161703472 | 7,335968747 |
| 238646_at | NA | 7,019134223 | 6,308385733 |
| 228802_at | RBPMS2 | 7,885506192 | 7,08499823 |
| 218005_at | ZNF22 | 9,183592246 | 8,251208333 |
| 213793_s_at | HOMER1 | 9,903955023 | 8,89797405 |
| 223803_s_at | ZCCHC10 | 7,746331229 | 6,9581012 |
| 233049_x_at | STUB1 | 10,42162628 | 9,360533694 |
| 209420_s_at | SMPD1 | 8,802056761 | 7,905364099 |
| 221923_s_at | NPM1 | 9,838033155 | 8,835059447 |
| 35846_at | THRA | 8,282102719 | 7,437741304 |
| 213223_at | NA | 8,195827503 | 7,359799598 |
| 213245_at | ADCY1 | 7,680063504 | 6,89526634 |
| 242317_at | HIGD1A | 8,087112343 | 7,260224993 |
| 200744_s_at | GNB1 | 10,47938811 | 9,40755016 |
| 227165_at | SKA3 | 8,004702884 | 7,185416735 |
| 232183_at | SERAC1 | 7,350488047 | 6,596208714 |
| 219077_s_at | WWOX | 7,151263137 | 6,417327783 |
| 225499_at | RALGAPA2 | 8,437935126 | 7,571753597 |
| 242358_at | RASSF8-AS1 | 8,344304982 | 7,487725778 |
| 226092_at | MPP5 | 9,787384116 | 8,781114128 |
| 208636_at | ACTN1 | 11,06513857 | 9,92723279 |
| 217942_at | MRPS35 | 9,678921585 | 8,682878697 |
| 200903_s_at | AHCY | 10,54723443 | 9,461004244 |
| 204510_at | CDC7 | 8,913429553 | 7,995396192 |
| 235709_at | GAS2L3 | 8,045432988 | 7,216636234 |
| 225259_at | RAB6B | 7,758621911 | 6,958705349 |
| 209163_at | CYB561 | 7,559407028 | 6,779811511 |
| 229872_s_at | LOC100996740 | 9,318084375 | 8,356917028 |
| 235740_at | MCTP1 | 7,909693452 | 7,093523829 |
| 203128_at | SPTLC2 | 7,295856834 | 6,542736221 |
| 1562013_a_at | LOC100506730 | 7,727562561 | 6,929849615 |
| 219354_at | KLHL26 | 6,924266289 | 6,208653456 |
| 236359_at | SCN4B | 8,495339059 | 7,616623432 |
| 207668_x_at | PDIA6 | 11,78596338 | 10,56514672 |

| | | | |
|---|---|---|---|
| 218128_at | NFYB | 8,579559223 | 7,690656658 |
| 243840_at | CLSPN | 5,962657114 | 5,344288495 |
| 225693_s_at | CAMTA1 | 10,44071543 | 9,357640958 |
| 205078_at | PIGF | 9,776590689 | 8,762180814 |
| 209031_at | CADM1 | 11,82175088 | 10,59431853 |
| 229838_at | NUCB2 | 7,74191867 | 6,935676294 |
| 226030_at | ACADSB | 7,911764759 | 7,087344251 |
| 203967_at | CDC6 | 7,837478225 | 7,020567302 |
| 223021_x_at | VTA1 | 9,571658793 | 8,573665322 |
| 235609_at | BRIP1 | 7,864805595 | 7,044331239 |
| 228562_at | ZBTB10 | 8,761336557 | 7,847221001 |
| 213988_s_at | SAT1 | 10,16220676 | 9,101154005 |
| 207801_s_at | RNF10 | 9,724124184 | 8,708559869 |
| 203879_at | PIK3CD | 6,810894876 | 6,099423252 |
| 239624_at | LOC102724689 | 7,83886608 | 7,019727537 |
| 205489_at | CRYM | 7,925032918 | 7,095946134 |
| 235672_at | MAP6 | 7,864793241 | 7,039611603 |
| 234331_s_at | FAM84A | 9,182940532 | 8,218579503 |
| 1553978_at | BORCS8 | 7,525185334 | 6,734531896 |
| 226278_at | SVIP | 7,382529755 | 6,60670515 |
| 202073_at | OPTN | 7,593802637 | 6,795645492 |
| 228457_at | PPM1L | 5,542286145 | 4,959323735 |
| 230508_at | DKK3 | 8,4549414 | 7,564932362 |
| 223409_at | FOXK2 | 5,624486432 | 5,032377576 |
| 210449_x_at | MAPK14 | 7,310962226 | 6,54091777 |
| 212332_at | RBL2 | 8,015902028 | 7,170592516 |
| 239752_at | CECR2 | 8,044164096 | 7,195325265 |
| 212985_at | APBB2 | 9,232456629 | 8,257978 |
| 222392_x_at | PERP | 10,56657633 | 9,451222906 |
| 226987_at | RBM15B | 8,013701397 | 7,16585449 |
| 219723_x_at | AGPAT3 | 6,348165317 | 5,675933422 |
| 209059_s_at | EDF1 | 10,97465325 | 9,812238619 |
| 200787_s_at | PEA15 | 10,30168375 | 9,210339847 |
| 217930_s_at | TOLLIP | 7,98845951 | 7,141576435 |
| 218845_at | DUSP22 | 9,023364125 | 8,066430619 |
| 228448_at | MAP6 | 7,347821455 | 6,568090163 |
| 242723_at | NA | 6,174518362 | 5,518790498 |
| 206789_s_at | POU2F1 | 7,787847759 | 6,960608381 |
| 219288_at | C3orf14 | 9,929186775 | 8,873621686 |
| 224564_s_at | RTN3 | 11,06981319 | 9,891980292 |
| 218580_x_at | AURKAIP1 | 9,876128103 | 8,824230443 |
| 214801_at | TOR1AIP2 | 8,441200546 | 7,541685606 |
| 208639_x_at | PDIA6 | 11,77468996 | 10,51764446 |
| 213279_at | DHRS1 | 8,086206534 | 7,222515375 |
| 213242_x_at | CEP170B | 8,992067754 | 8,031541966 |
| 225574_at | RWDD4 | 9,65065282 | 8,61933168 |
| 205417_s_at | DAG1 | 10,53105268 | 9,405407836 |
| 230706_s_at | CAMK2N2 | 8,30997434 | 7,421082925 |
| 241471_at | NA | 4,750776464 | 4,242560158 |
| 218163_at | MCTS1 | 9,78410696 | 8,737251733 |
| 202234_s_at | SLC16A1 | 9,411694246 | 8,404510357 |
| 207124_s_at | GNB5 | 8,004584502 | 7,147466267 |
| 226993_at | TRIP12 | 9,190115902 | 8,206032881 |
| 1553974_at | C22orf39 | 7,778628279 | 6,94438912 |
| 223303_at | FERMT3 | 5,735037366 | 5,119736554 |
| 219215_s_at | SLC39A4 | 7,12663231 | 6,361158094 |

| | | | |
|---|---|---|---|
| 235037_at | TMEM41A | 7,487578804 | 6,682846614 |
| 223173_at | SPNS1 | 8,094142628 | 7,223977641 |
| 212128_s_at | DAG1 | 7,487051369 | 6,681997869 |
| 214239_x_at | NA | 8,989075344 | 8,021753405 |
| 216069_at | PRMT2 | 6,792285226 | 6,06035661 |
| 206743_s_at | ASGR1 | 5,811151475 | 5,184839564 |
| 227176_at | SLC2A13 | 8,658498995 | 7,724585258 |
| 202484_s_at | MBD2 | 9,713467548 | 8,664499649 |
| 226918_at | NA | 8,08944669 | 7,215144844 |
| 201135_at | ECHS1 | 9,902575449 | 8,831895701 |
| 218988_at | SLC35E3 | 8,757660483 | 7,810697925 |
| 213710_s_at | CALM1 | 8,839070437 | 7,882753759 |
| 217894_at | KCTD3 | 9,445473863 | 8,421163987 |
| 221524_s_at | RRAGD | 10,045792 | 8,955554646 |
| 227761_at | MYO5A | 9,288757481 | 8,280323042 |
| 224522_s_at | DCAKD | 8,320959509 | 7,416299495 |
| 213657_s_at | NA | 7,668340361 | 6,834609421 |
| 210201_x_at | BIN1 | 8,184660872 | 7,292221838 |
| 223038_s_at | FAM60A | 8,588272161 | 7,650478389 |
| 214441_at | STX6 | 7,169826518 | 6,3857187 |
| 201860_s_at | PLAT | 9,700665351 | 8,637744766 |
| 222680_s_at | DTL | 7,905410469 | 7,038069741 |
| 219034_at | PARP16 | 7,379346236 | 6,56954911 |
| 238520_at | TRERF1 | 7,379051833 | 6,568199441 |
| 203566_s_at | AGL | 8,935876395 | 7,953697529 |
| 224954_at | NA | 8,823938088 | 7,853967019 |
| 219625_s_at | COL4A3BP | 9,499743098 | 8,45547643 |
| 202204_s_at | AMFR | 8,687160533 | 7,731285566 |
| 234992_x_at | ECT2 | 7,687058479 | 6,841196151 |
| 226871_s_at | ATG4D | 6,96596244 | 6,199142203 |
| 231599_x_at | DPF1 | 7,085570523 | 6,303768472 |
| 230497_at | CELF5 | 7,948792167 | 7,071134632 |
| 221593_s_at | RPL31 | 8,141209834 | 7,24223059 |
| 1558626_at | NA | 6,720288829 | 5,977901077 |
| 218176_at | MAGEF1 | 8,633534348 | 7,679464218 |
| 232224_at | MASP1 | 6,680013935 | 5,941106036 |
| 223320_s_at | ABCB10 | 8,824615904 | 7,848191733 |
| 219703_at | MNS1 | 8,469018142 | 7,531739481 |
| 219006_at | NDUFAF4 | 9,243853561 | 8,220820391 |
| 218725_at | SLC25A22 | 6,957066939 | 6,187111775 |
| 231912_s_at | TECPR1 | 7,960849577 | 7,079582989 |
| 204022_at | WWP2 | 7,358996568 | 6,543845251 |
| 214365_at | TPM3 | 6,615107303 | 5,882146889 |
| 204040_at | RNF144A | 8,023184142 | 7,134091109 |
| 218032_at | SNN | 11,00989383 | 9,789589812 |
| 204823_at | NAV3 | 9,161978276 | 8,145216776 |
| 218006_s_at | ZNF22 | 8,485880378 | 7,541681786 |
| 205893_at | NLGN1 | 9,253707653 | 8,22317377 |
| 218483_s_at | IFT46 | 8,466015276 | 7,522208224 |
| 220466_at | CCDC15 | 7,624746251 | 6,77443077 |
| 201207_at | TNFAIP1 | 9,134950047 | 8,116096163 |
| 244080_at | NA | 4,799938625 | 4,264290479 |
| 203550_s_at | FAM189B | 9,140576781 | 8,119442477 |
| 216640_s_at | PDIA6 | 11,27226704 | 10,01267168 |
| 1555945_s_at | FAM120A | 9,581591853 | 8,508542947 |
| 209621_s_at | PDLIM3 | 7,60842006 | 6,755817063 |

| | | | |
|---|---|---|---|
| 210102_at | VWA5A | 7,867788477 | 6,985672268 |
| 202846_s_at | PIGC | 9,489930122 | 8,423937776 |
| 225679_at | NAA30 | 9,171578492 | 8,140654102 |
| 1556047_s_at | MAGEE1 | 8,013610488 | 7,112394806 |
| 233401_at | NA | 7,682604253 | 6,817597506 |
| 225214_at | LOC100129034 | 8,855803637 | 7,858481318 |
| 1567222_x_at | ELOVL5 | 5,247554788 | 4,656447132 |
| 203927_at | NFKBIE | 6,907250872 | 6,129102606 |
| 229057_at | SCN2A | 7,471448789 | 6,627781462 |
| 209794_at | SRGAP3 | 8,250403721 | 7,317944904 |
| 223465_at | COL4A3BP | 9,282159122 | 8,232993066 |
| 202223_at | STT3A | 9,96865444 | 8,841552071 |
| 226146_at | HEIH | 9,280269064 | 8,229620644 |
| 219545_at | NA | 8,362655081 | 7,415772844 |
| 211088_s_at | PLK4 | 5,026289433 | 4,457095385 |
| 209146_at | MSMO1 | 11,38845454 | 10,09736416 |
| 203081_at | CTNNBIP1 | 9,555860995 | 8,472054397 |
| 227259_at | CD47 | 7,883544884 | 6,988908243 |
| 203532_x_at | CUL5 | 7,845523518 | 6,953431408 |
| 242486_at | NA | 6,01623046 | 5,330531384 |
| 228003_at | RAB30 | 6,416887818 | 5,685478194 |
| 219236_at | PAQR6 | 8,708421736 | 7,71493746 |
| 207847_s_at | MUC1 | 4,919560317 | 4,357455276 |
| 239913_at | SLC10A4 | 9,216276937 | 8,160798427 |
| 58916_at | NA | 8,124147375 | 7,192853895 |
| 1556043_a_at | TTN-AS1 | 5,342915952 | 4,729329963 |
| 201247_at | SREBF2 | 8,361199471 | 7,400609228 |
| 209643_s_at | PLD2 | 7,031944576 | 6,223258203 |
| 230871_at | DHX30 | 8,767028133 | 7,758723307 |
| 227572_at | USP30 | 8,86016399 | 7,841125735 |
| 224707_at | CYSTM1 | 9,492132681 | 8,39977659 |
| 235219_at | EXOC3-AS1 | 6,908820001 | 6,113693903 |
| 205888_s_at | JAKMIP2 | 8,511333953 | 7,530587782 |
| 223652_at | AS3MT | 8,024884306 | 7,099350044 |
| 217220_at | LOC100287387 | 4,193207997 | 3,709448099 |
| 218283_at | SS18L2 | 9,612958729 | 8,501527368 |
| 240407_at | LOC100126784 | 6,067844034 | 5,365904223 |
| 228880_at | NAT8L | 6,613815404 | 5,848643519 |
| 227424_x_at | URB1-AS1 | 7,295821573 | 6,451728513 |
| 209334_s_at | PSMD9 | 6,175545386 | 5,461058271 |
| 207010_at | GABRB1 | 7,779283274 | 6,877700869 |
| 241360_at | CCDC15 | 7,148496958 | 6,319613782 |
| 203242_s_at | PDLIM5 | 8,780136762 | 7,761649936 |
| 65630_at | TMEM80 | 7,472704539 | 6,604774437 |
| 213847_at | PRPH | 8,107721089 | 7,165992109 |
| 218741_at | CENPM | 8,627481464 | 7,624964642 |
| 1557070_at | TFAP2A-AS1 | 6,60700217 | 5,839219062 |
| 231952_at | NA | 7,94458167 | 7,02117941 |
| 211499_s_at | MAPK11 | 7,540351766 | 6,663614185 |
| 222976_s_at | TPM3 | 11,78762623 | 10,41552112 |
| 1561485_at | IQCA1 | 4,457110091 | 3,938218853 |
| 202048_s_at | CBX6 | 9,345529816 | 8,256981277 |
| 225095_at | SPTLC2 | 8,062132649 | 7,120960557 |
| 224888_at | EPT1 | 7,893974925 | 6,970301365 |

| | | | |
|---|---|---|---|
| 204886_at | PLK4 | 7,974429718 | 7,039906048 |
| 216593_s_at | PIGC | 8,349946279 | 7,371099903 |
| 211126_s_at | CSRP2 | 12,20381889 | 10,77138959 |
| 227658_s_at | PLEKHA3 | 7,559860116 | 6,670628312 |
| 230118_at | GEMIN6 | 6,630084839 | 5,849727809 |
| 217744_s_at | PERP | 9,411214065 | 8,303378351 |
| 227838_at | UNC5C | 7,78582969 | 6,868544383 |
| 203349_s_at | ETV5 | 11,5260641 | 10,16744245 |
| 223182_s_at | AGPAT3 | 9,011245992 | 7,947548948 |
| 202403_s_at | COL1A2 | 7,452881073 | 6,57277099 |
| 223471_at | RAB3IP | 9,330519998 | 8,228436755 |
| 210416_s_at | CHEK2 | 7,360242418 | 6,490682455 |
| 218170_at | ISOC1 | 9,204510306 | 8,11663167 |
| 204279_at | PSMB9 | 9,802709421 | 8,643856095 |
| 203147_s_at | TRIM14 | 8,315300658 | 7,330852469 |
| 227539_at | GNA13 | 8,605733371 | 7,583355133 |
| 230314_at | NA | 6,485327433 | 5,714056072 |
| 225447_at | GPD2 | 9,206803501 | 8,111420047 |
| 239295_at | SRSF12 | 6,904556552 | 6,08149545 |
| 201897_s_at | CKS1B | 10,66044942 | 9,387622243 |
| 206401_s_at | MAPT | 7,714493133 | 6,792821684 |
| 242762_s_at | FAM171B | 8,015058243 | 7,056308402 |
| 224653_at | EIF4EBP2 | 9,624148342 | 8,470898169 |
| 227283_at | EFR3B | 8,327759834 | 7,329851747 |
| 208206_s_at | RASGRP2 | 5,305219722 | 4,669211701 |
| 205475_at | SCRG1 | 12,4603398 | 10,96546679 |
| 1563687_a_at | FRYL | 6,188949889 | 5,444985417 |
| 224661_at | NA | 9,194415738 | 8,088910696 |
| 208669_s_at | EID1 | 11,01931733 | 9,693056891 |
| 214036_at | EFNA5 | 7,463502284 | 6,565193364 |
| 218055_s_at | WDR41 | 9,825903909 | 8,641370957 |
| 213172_at | TTC9 | 5,96360001 | 5,244294636 |
| 241710_at | C1GALT1C1L | 6,539275919 | 5,750518315 |
| 205452_at | PIGB | 7,751318289 | 6,815657309 |
| 227603_at | NA | 8,398582351 | 7,384453996 |
| 222986_s_at | SHISA5 | 9,676310933 | 8,507799626 |
| 210585_s_at | TNPO2 | 5,988679506 | 5,265194396 |
| 231420_at | GGN | 5,288139853 | 4,649021929 |
| 214436_at | FBXL2 | 7,304734131 | 6,421500716 |
| 1555565_s_at | TAPBP | 6,6735224 | 5,866175599 |
| 201010_s_at | TXNIP | 12,29489201 | 10,80743357 |
| 223046_at | EGLN1 | 11,30729792 | 9,936283779 |
| 242447_at | C3orf70 | 9,39038788 | 8,251493559 |
| 224608_s_at | VPS25 | 9,951908413 | 8,744232638 |
| 202205_at | VASP | 7,613234313 | 6,689305074 |
| 201526_at | ARF5 | 10,33144281 | 9,076705607 |
| 239730_at | NA | 4,951836576 | 4,350249677 |
| 201886_at | DCAF11 | 7,642505403 | 6,71359061 |
| 215481_s_at | PEX5 | 5,55162119 | 4,876793298 |
| 225536_at | TMEM54 | 8,347698643 | 7,332890678 |
| 211495_x_at | NA | 5,914807492 | 5,195447262 |
| 222301_at | C1orf61 | 8,89791226 | 7,815603061 |
| 1554017_at | NA | 6,4790477 | 5,690333839 |
| 209137_s_at | USP10 | 9,306415712 | 8,173314755 |
| 229274_at | GNAS | 7,990107438 | 7,016876212 |
| 217080_s_at | HOMER2 | 6,836012956 | 6,002612992 |

| | | | |
|---|---|---|---|
| 206601_s_at | NA | 5,99233536 | 5,261072287 |
| 240528_s_at | EXOC4 | 6,757040759 | 5,9308108 |
| 242655_at | BARD1 | 7,601530875 | 6,671313159 |
| 201242_s_at | ATP1B1 | 11,40631221 | 10,00843442 |
| 205011_at | VWA5A | 7,039228161 | 6,17558809 |
| 218101_s_at | NA | 11,56652618 | 10,1457963 |
| 219294_at | CENPQ | 7,520587771 | 6,596328977 |
| 1560339_s_at | NAP1L4 | 9,811786146 | 8,605639423 |
| 231097_at | NA | 5,80893181 | 5,094749951 |
| 214439_x_at | BIN1 | 7,959544228 | 6,979386498 |
| 217765_at | NRBP1 | 8,59118854 | 7,533053012 |
| 207738_s_at | NCKAP1 | 11,25180527 | 9,864787688 |
| 242774_at | SYNE2 | 7,215809076 | 6,325124741 |
| 228725_x_at | PRMT2 | 9,955752819 | 8,726432927 |
| 1556190_s_at | LOC100507516 | 3,389887445 | 2,971232846 |
| 226925_at | PXYLP1 | 10,97057136 | 9,613326637 |
| 211935_at | ARL6IP1 | 12,95882888 | 11,35441445 |
| 213375_s_at | N4BP2L1 | 6,785232959 | 5,944985776 |
| 223785_at | FANCI | 6,602980773 | 5,785276547 |
| 214157_at | GNAS | 8,618168583 | 7,550395695 |
| 208692_at | RPS3 | 12,71865117 | 11,14018666 |
| 209308_s_at | BNIP2 | 9,432465929 | 8,261655244 |
| 224962_at | C9orf69 | 8,761865489 | 7,674091474 |
| 205162_at | ERCC8 | 8,161039231 | 7,147760664 |
| 217938_s_at | KCMF1 | 10,16191558 | 8,899998101 |
| 201079_at | SYNGR2 | 7,880288783 | 6,901380263 |
| 209143_s_at | CLNS1A | 10,59399478 | 9,27772794 |
| 209136_s_at | USP10 | 8,52781142 | 7,467632772 |
| 235456_at | NA | 8,445741122 | 7,395744079 |
| 223408_s_at | FOXK2 | 7,165992685 | 6,272491702 |
| 227254_at | POU2F1 | 8,336382726 | 7,293784761 |
| 200020_at | TARDBP | 10,76903008 | 9,421862656 |
| 212533_at | WEE1 | 10,43370823 | 9,128271353 |
| 221951_at | TMEM80 | 7,175345298 | 6,276410006 |
| 223434_at | GBP3 | 9,273634478 | 8,110318325 |
| 1556346_at | COTL1 | 5,572807153 | 4,873224227 |
| 241998_at | C2orf80 | 9,246800953 | 8,085653466 |
| 201248_s_at | SREBF2 | 7,853421164 | 6,866410598 |
| 216389_s_at | DCAF11 | 6,618206765 | 5,785897161 |
| 1552618_at | STX6 | 8,330097063 | 7,282015598 |
| 230574_at | NA | 5,956724774 | 5,206992443 |
| 209841_s_at | LRRN3 | 11,7160576 | 10,24056367 |
| 213351_s_at | TMCC1 | 9,685960137 | 8,466039766 |
| 222297_x_at | RPL18 | 4,452169413 | 3,89132149 |
| 236852_at | FBXO43 | 6,37992412 | 5,576204462 |
| 224437_s_at | VTA1 | 10,09660037 | 8,82293483 |
| 1568873_at | ZNF519 | 5,039005505 | 4,402281688 |
| 238965_at | C21orf2 | 6,284974751 | 5,490502282 |
| 203348_s_at | ETV5 | 10,89349754 | 9,515371636 |
| 223556_at | HELLS | 6,875838628 | 6,00491422 |
| 220233_at | FBXO17 | 8,635719716 | 7,541559779 |
| 238975_at | MMAB | 6,095897362 | 5,322508938 |
| 236718_at | MYO10 | 6,772225985 | 5,91193741 |
| 223249_at | CLDN12 | 9,668026972 | 8,438936802 |
| 1554883_a_at | ERCC8 | 7,555614389 | 6,594682238 |
| 227476_at | LPGAT1 | 7,609013178 | 6,640634234 |

| | | | |
|---|---|---|---|
| 211814_s_at | CCNE2 | 8,435872905 | 7,361244258 |
| 209840_s_at | LRRN3 | 11,57024422 | 10,09553093 |
| 203929_s_at | MAPT | 7,243981894 | 6,320652997 |
| 205268_s_at | ADD2 | 6,681259497 | 5,829516219 |
| 224981_at | TMEM219 | 9,701767564 | 8,464207269 |
| 231313_at | NA | 5,020003709 | 4,379264111 |
| 225227_at | SKIL | 7,868749165 | 6,863181278 |
| 1556646_at | DCTN5 | 9,298960573 | 8,110097437 |
| 205166_at | CAPN5 | 6,962004239 | 6,07187955 |
| 209032_s_at | CADM1 | 11,61603666 | 10,13061682 |
| 202598_at | S100A13 | 9,671648397 | 8,433599307 |
| 225512_at | ZBTB38 | 9,185691734 | 8,009621373 |
| 220387_s_at | HHLA3 | 7,156811185 | 6,240267149 |
| 211698_at | EID1 | 10,36733228 | 9,03918897 |
| 238654_at | VSIG10L | 3,780769624 | 3,296214106 |
| 235046_at | INPP4B | 8,598021078 | 7,49565912 |
| 208398_s_at | TBPL1 | 9,2370611 | 8,051810736 |
| 224960_at | SCYL2 | 10,00579189 | 8,721899641 |
| 218309_at | CAMK2N1 | 10,78044055 | 9,396913553 |
| 230241_at | TOR1AIP2 | 6,333539762 | 5,520238041 |
| 225692_at | CAMTA1 | 10,55588156 | 9,20028015 |
| 226388_at | TCEA3 | 8,308865201 | 7,239311027 |
| 218021_at | NA | 8,411499816 | 7,327676748 |
| 210964_s_at | GYG2 | 7,044404235 | 6,135820191 |
| 223005_s_at | TMEM245 | 8,660737439 | 7,543660259 |
| 223414_s_at | LYAR | 7,022130548 | 6,116385481 |
| 228722_at | PRMT2 | 7,859118076 | 6,844454087 |
| 217790_s_at | SSR3 | 6,811825881 | 5,931839502 |
| 220797_at | NA | 6,990699122 | 6,086940892 |
| 221279_at | GDAP1 | 6,767906894 | 5,892147358 |
| 216959_x_at | NRCAM | 9,009686889 | 7,840496088 |
| 228565_at | KIAA1804 | 5,958697829 | 5,185352857 |
| 1552579_a_at | ADAM21 | 4,770077267 | 4,150265536 |
| 211087_x_at | MAPK14 | 6,083679557 | 5,293121641 |
| 228560_at | CHDH | 6,037143443 | 5,252456786 |
| 228646_at | PPP1R1C | 7,367729668 | 6,409509256 |
| 222609_s_at | EXOSC1 | 8,17747218 | 7,111281288 |
| 205152_at | SLC6A1 | 7,646717158 | 6,649131446 |
| 212970_at | APBB2 | 8,545016019 | 7,427200273 |
| 225376_at | GID8 | 10,22115074 | 8,883440887 |
| 218980_at | FHOD3 | 7,819097448 | 6,794422154 |
| 225435_at | SSR1 | 9,828792834 | 8,540035232 |
| 222396_at | HN1 | 11,10498799 | 9,648797099 |
| 223340_at | ATL1 | 8,910602424 | 7,74207335 |
| 218537_at | HCFC1R1 | 8,537260887 | 7,417578955 |
| 1564883_a_at | TAS1R1 | 4,710879574 | 4,092998673 |
| 210508_s_at | KCNQ2 | 10,7115159 | 9,305017089 |
| 208670_s_at | EID1 | 11,12053086 | 9,66025931 |
| 237270_at | NA | 8,101315073 | 7,036223733 |
| 206582_s_at | ADGRG1 | 6,461883726 | 5,610768669 |
| 204594_s_at | MIEF1 | 8,692781047 | 7,547176491 |
| 213745_at | ATRNL1 | 7,13346461 | 6,192354309 |
| 242624_at | ABLIM2 | 5,94194062 | 5,157044874 |
| 238758_at | NA | 5,69894162 | 4,946027804 |
| 218187_s_at | C8orf33 | 9,808583901 | 8,511809994 |
| 226088_at | ZDHHC12 | 7,175592888 | 6,22670404 |

| | | | |
|---|---|---|---|
| 236174_at | NA | 5,437971614 | 4,717045151 |
| 220140_s_at | SNX11 | 8,099057337 | 7,024965399 |
| 229584_at | LRRK2 | 6,578164644 | 5,704711596 |
| 211975_at | ARFGAP2 | 8,901699082 | 7,718111237 |
| 228721_at | KRBOX1 | 8,329900469 | 7,221989111 |
| 227112_at | TMCC1 | 10,3758148 | 8,995584555 |
| 202564_x_at | ARL2 | 8,473840888 | 7,345672536 |
| 219211_at | USP18 | 7,455139284 | 6,462543792 |
| 224734_at | HMGB1 | 9,941083596 | 8,615077661 |
| 227890_at | TMEM198 | 7,952686869 | 6,891702342 |
| 211056_s_at | SRD5A1 | 7,824592962 | 6,77986461 |
| 204825_at | MELK | 9,438316043 | 8,177405774 |
| 244704_at | NFYB | 4,18094714 | 3,621377321 |
| 209237_s_at | SLC23A2 | 7,052059886 | 6,108148988 |
| 213253_at | SMC2 | 7,468243165 | 6,467354771 |
| 218857_s_at | ASRGL1 | 9,063604322 | 7,848527763 |
| 224100_s_at | DPYSL5 | 7,129027874 | 6,1728129 |
| 235562_at | C3orf70 | 7,883558995 | 6,82593138 |
| 213852_at | NA | 10,55680101 | 9,140005698 |
| 217978_s_at | UBE2Q1 | 10,28360062 | 8,903282159 |
| 202472_at | MPI | 7,401167212 | 6,405051171 |
| 228302_x_at | CAMK2N1 | 8,197976135 | 7,094416535 |
| 205120_s_at | SGCB | 10,46733048 | 9,057278162 |
| 200083_at | USP22 | 11,13946468 | 9,637395359 |
| 221265_s_at | VWA9 | 8,839508091 | 7,64666917 |
| 230109_at | PDE7B | 7,828186252 | 6,770602367 |
| 239326_at | NA | 4,768634453 | 4,124159489 |
| 225991_at | TMEM41A | 7,266893391 | 6,284781288 |
| 243405_at | NA | 7,006511053 | 6,059060208 |
| 202931_x_at | BIN1 | 8,131090781 | 7,031246105 |
| 240357_at | NA | 5,547873679 | 4,797433475 |
| 220651_s_at | MCM10 | 6,773006015 | 5,855425119 |
| 219170_at | FSD1 | 7,785934895 | 6,73071358 |
| 203593_at | CD2AP | 8,738579999 | 7,553817428 |
| 228033_at | E2F7 | 10,04069143 | 8,672474149 |
| 207836_s_at | RBPMS | 7,461128229 | 6,44429074 |
| 232416_at | CELF5 | 7,176394971 | 6,194474645 |
| 201490_s_at | PPIF | 7,755314414 | 6,69417626 |
| 217514_at | ST8SIA5 | 8,228426472 | 7,102290641 |
| 224671_at | MRPL10 | 9,217594506 | 7,955574165 |
| 218561_s_at | LYRM4 | 9,762803835 | 8,425334409 |
| 223362_s_at | SEPT3 | 7,390309822 | 6,377805068 |
| 1554408_a_at | TK1 | 7,897411838 | 6,812725944 |
| 235117_at | CHAC2 | 7,734122127 | 6,670724481 |
| 231723_at | SNX12 | 7,193013384 | 6,203983683 |
| 239854_at | SYCE3 | 6,097807365 | 5,258606326 |
| 209230_s_at | NUPR1 | 6,797408111 | 5,861004893 |
| 208609_s_at | NA | 6,103785872 | 5,262297773 |
| 236270_at | NFATC4 | 6,373843668 | 5,495124429 |
| 238504_at | SDHAF4 | 8,526520523 | 7,347023622 |
| 226785_at | ATP11C | 8,125174554 | 7,000892821 |
| 221193_s_at | ZCCHC10 | 8,302751383 | 7,153559063 |
| 224613_s_at | DNAJC5 | 7,233097808 | 6,231948762 |
| 211276_at | TCEAL2 | 8,738322276 | 7,527701429 |
| 39966_at | CSPG5 | 9,506976158 | 8,188481205 |
| 208788_at | ELOVL5 | 11,43158056 | 9,845787597 |

| | | | |
|---|---|---|---|
| 204392_at | CAMK1 | 7,525219346 | 6,480854832 |
| 232547_at | SRCIN1 | 6,972280519 | 6,003809432 |
| 202764_at | STIM1 | 6,691910363 | 5,761790314 |
| 241355_at | HR | 7,784714965 | 6,70165398 |
| 1555775_a_at | ZAR1 | 5,830137198 | 5,018265295 |
| 201414_s_at | NAP1L4 | 9,381096909 | 8,074210523 |
| 217726_at | COPZ1 | 9,988370012 | 8,595230903 |
| 241905_at | PIK3C2A | 8,024594869 | 6,905044871 |
| 206045_s_at | NOL4 | 7,513780636 | 6,463721939 |
| 205889_s_at | JAKMIP2 | 6,389756139 | 5,496477232 |
| 235685_at | NA | 6,883024679 | 5,918751281 |
| 242975_s_at | NA | 7,370635219 | 6,33802059 |
| 238574_at | SLC25A51 | 6,519981263 | 5,606193548 |
| 1558225_at | NA | 2,924340864 | 2,514332399 |
| 225283_at | ARRDC4 | 10,42355837 | 8,961788866 |
| 217499_x_at | NA | 7,048146132 | 6,059530228 |
| 238605_at | NOL4 | 6,947674444 | 5,972620067 |
| 200740_s_at | SUMO3 | 11,22714889 | 9,6491414 |
| 215518_at | STXBP5L | 4,537184605 | 3,898984014 |
| 209513_s_at | HSDL2 | 9,547933559 | 8,204527467 |
| 210127_at | RAB6B | 6,40765857 | 5,505731522 |
| 202670_at | MAP2K1 | 10,43249732 | 8,962675655 |
| 204421_s_at | FGF2 | 6,523277185 | 5,603095873 |
| 241416_at | NA | 5,452197761 | 4,682100492 |
| 1553479_at | TMEM145 | 6,078472944 | 5,219394145 |
| 226572_at | SOCS7 | 8,539175565 | 7,331681395 |
| 225817_at | CGNL1 | 7,840007858 | 6,730464853 |
| 212669_at | CAMK2G | 7,123440156 | 6,114137363 |
| 222139_at | ERV3-2 | 5,716925999 | 4,905738881 |
| 223854_at | NA | 8,753355312 | 7,511226287 |
| 200999_s_at | CKAP4 | 11,18234189 | 9,594251446 |
| 201397_at | PHGDH | 7,955795973 | 6,824129267 |
| 212301_at | RTF1 | 10,10769462 | 8,668823549 |
| 205412_at | ACAT1 | 10,54927073 | 9,047402354 |
| 213264_at | PCBP2 | 6,655021042 | 5,705153461 |
| 212092_at | PEG10 | 11,67629369 | 10,0061451 |
| 226852_at | MTA3 | 6,922601231 | 5,931096449 |
| 213923_at | RAP2B | 9,797917385 | 8,393749904 |
| 225489_at | TMEM18 | 8,466159823 | 7,252737248 |
| 200974_at | ACTA2 | 8,762599105 | 7,506205725 |
| 207074_s_at | SLC18A1 | 9,148770998 | 7,832940983 |
| 211926_s_at | MYH9 | 8,053819929 | 6,894366894 |
| 200998_s_at | CKAP4 | 10,40512057 | 8,907145015 |
| 229822_at | PARVB | 7,49090127 | 6,411555651 |
| 242001_at | NA | 4,535506392 | 3,880652312 |
| 200028_s_at | STARD7 | 11,098742 | 9,494936037 |
| 205344_at | CSPG5 | 6,986508419 | 5,976668756 |
| 1569796_s_at | ATRNL1 | 7,097779466 | 6,069031352 |
| 215170_s_at | CEP152 | 5,78027284 | 4,942468774 |
| 208978_at | CRIP2 | 9,621300248 | 8,226131021 |
| 202203_s_at | AMFR | 9,122066282 | 7,797599591 |
| 216945_x_at | PASK | 6,196457215 | 5,295472994 |
| 205376_at | INPP4B | 7,732798742 | 6,607430894 |
| 225001_at | RAB3D | 7,834497631 | 6,693591157 |
| 230502_s_at | NA | 6,576163139 | 5,618040759 |
| 205698_s_at | MAP2K6 | 8,176360148 | 6,984213269 |

| | | | |
|---|---|---|---|
| 213362_at | PTPRD | 7,638506887 | 6,523807281 |
| 37433_at | PIAS2 | 7,841248638 | 6,695670215 |
| 205050_s_at | MAPK8IP2 | 6,010788856 | 5,132326316 |
| 207525_s_at | GIPC1 | 8,937873806 | 7,625430298 |
| 213352_at | TMCC1 | 8,628592857 | 7,358523744 |
| 1556789_a_at | PAXBP1-AS1 | 4,7230317 | 4,026431401 |
| 206093_x_at | NA | 7,262891058 | 6,19122877 |
| 222730_s_at | ZDHHC2 | 7,358132229 | 6,271977518 |
| 242760_x_at | PIGB | 6,755470492 | 5,757012541 |
| 236311_at | LOH12CR2 | 7,023384167 | 5,984661726 |
| 214087_s_at | MYBPC1 | 6,492500103 | 5,532064972 |
| 203619_s_at | FAIM2 | 6,857895997 | 5,84339272 |
| 208877_at | PAK2 | 9,942779532 | 8,469039427 |
| 214373_at | NA | 6,823687185 | 5,812062918 |
| 225876_at | NIPAL3 | 10,01608139 | 8,525797566 |
| 213272_s_at | TMEM159 | 6,946135146 | 5,912476041 |
| 202338_at | TK1 | 7,188091726 | 6,118118425 |
| 201009_s_at | TXNIP | 11,65440214 | 9,919464607 |
| 224684_at | SNX12 | 8,887311091 | 7,563654278 |
| 214121_x_at | PDLIM7 | 6,144258117 | 5,228509609 |
| 229111_at | NA | 8,189428647 | 6,968058965 |
| 202235_at | SLC16A1 | 8,623701816 | 7,336644411 |
| 228773_at | LOC100506100 | 7,117553375 | 6,055127066 |
| 1555852_at | PSMB8-AS1 | 7,163943187 | 6,093394129 |
| 217993_s_at | MAT2B | 10,66318285 | 9,069608881 |
| 224931_at | SLC41A3 | 7,571584519 | 6,438340082 |
| 229264_at | NA | 6,238480907 | 5,303270989 |
| 224611_s_at | DNAJC5 | 9,323525306 | 7,924802483 |
| 223007_s_at | TMEM245 | 9,929003596 | 8,438792942 |
| 223749_at | C1QTNF2 | 7,049720347 | 5,991513952 |
| 225198_at | VAPA | 9,783587416 | 8,313128253 |
| 212297_at | ATP13A3 | 9,342216999 | 7,937291605 |
| 224612_s_at | DNAJC5 | 8,856401873 | 7,521476307 |
| 236761_at | LHFPL3 | 12,40976332 | 10,53824837 |
| 1569022_a_at | PIK3C2A | 6,926291509 | 5,881313712 |
| 235572_at | SPC24 | 8,433477136 | 7,160548364 |
| 230942_at | CMTM5 | 6,761560344 | 5,739981521 |
| 213535_s_at | UBE2I | 10,94202967 | 9,285951303 |
| 203007_x_at | LYPLA1 | 9,633967828 | 8,174910581 |
| 228338_at | COLCA2 | 6,455451228 | 5,477774941 |
| 205712_at | PTPRD | 7,022355269 | 5,958812022 |
| 213256_at | MARCH3 | 7,111650286 | 6,032507025 |
| 201771_at | SCAMP3 | 9,540201613 | 8,09173895 |
| 201933_at | CHMP1A | 8,792413562 | 7,454798925 |
| 220231_at | PPP1R17 | 4,547956485 | 3,855238861 |
| 218711_s_at | SDPR | 5,126422934 | 4,345125655 |
| 221613_s_at | ZFAND6 | 11,43655514 | 9,692213385 |
| 202912_at | ADM | 10,83474866 | 9,180824569 |
| 200695_at | PPP2R1A | 10,07671024 | 8,536464258 |
| 204730_at | RIMS3 | 7,718280913 | 6,538313715 |
| 1556269_at | MYT1 | 4,845326706 | 4,104427782 |
| 228792_at | MYEF2 | 6,503122232 | 5,508335932 |
| 231828_at | PSMD5-AS1 | 7,511614902 | 6,361246544 |
| 220486_x_at | NA | 7,398480426 | 6,264494472 |
| 223008_s_at | TMEM245 | 10,43783065 | 8,837651322 |

| | | | |
|---|---|---|---|
| 219791_s_at | HAND2-AS1 | 4,454567707 | 3,771020938 |
| 214744_s_at | NA | 5,808132271 | 4,916708652 |
| 202330_s_at | UNG | 8,522862755 | 7,212598294 |
| 201008_s_at | TXNIP | 11,14990671 | 9,434015548 |
| 206051_at | ELAVL4 | 8,232437451 | 6,964241366 |
| 226183_at | GSK3B | 8,419938018 | 7,121347416 |
| 216375_s_at | ETV5 | 8,827064563 | 7,465640845 |
| 209078_s_at | TXN2 | 9,631250744 | 8,145157878 |
| 236834_at | SCFD2 | 9,439574887 | 7,982651878 |
| 200011_s_at | ARF3 | 10,02815023 | 8,479658871 |
| 240857_at | DNAH9 | 4,578142014 | 3,871129589 |
| 217289_s_at | SLC37A4 | 7,27622435 | 6,151919326 |
| 224753_at | CDCA5 | 9,124768248 | 7,713947021 |
| 201870_at | TOMM34 | 9,670372698 | 8,175053021 |
| 225487_at | TMEM18 | 6,80945003 | 5,755587556 |
| 201087_at | PXN | 7,749559028 | 6,54998677 |
| 218102_at | DERA | 9,731026954 | 8,224713465 |
| 235072_s_at | KIF13A | 9,124510899 | 7,711956557 |
| 235785_at | NA | 6,184140253 | 5,226653141 |
| 202464_s_at | PFKFB3 | 9,548474552 | 8,070067917 |
| 1552947_x_at | ZNF114 | 5,544540425 | 4,684616928 |
| 213174_at | TTC9 | 6,065477349 | 5,123774189 |
| 222857_s_at | KCNMB4 | 8,857899419 | 7,482516194 |
| 226029_at | VANGL2 | 9,123656947 | 7,706661858 |
| 226112_at | SGCB | 10,86710484 | 9,179026816 |
| 226923_at | SCFD2 | 11,25461981 | 9,505601269 |
| 212449_s_at | LYPLA1 | 9,84368831 | 8,312604958 |
| 227153_at | IMMP2L | 9,756830942 | 8,238593363 |
| 235422_at | NA | 7,60972426 | 6,424648232 |
| 227731_at | CNBP | 8,090024061 | 6,82963788 |
| 217856_at | RBM8A | 9,720318092 | 8,20528413 |
| 1553288_a_at | NYAP1 | 6,637396236 | 5,601706043 |
| 211613_s_at | GPD2 | 5,13873672 | 4,33676591 |
| 202269_x_at | GBP1 | 8,19703189 | 6,917533926 |
| 204081_at | NRGN | 7,384664626 | 6,230033437 |
| 235697_at | NA | 5,347168439 | 4,51091769 |
| 228861_at | CDS2 | 6,196238591 | 5,226470283 |
| 213534_s_at | PASK | 6,493433757 | 5,476170686 |
| 45714_at | HCFC1R1 | 8,969141053 | 7,563161738 |
| 213424_at | KIAA0895 | 7,927252304 | 6,68310984 |
| 213712_at | ELOVL2 | 10,0353965 | 8,456994978 |
| 228096_at | MINOS1 | 7,070793002 | 5,955844388 |
| 227107_at | PANX1 | 9,878740629 | 8,318847547 |
| 222376_at | NA | 6,441506516 | 5,424254265 |
| 1554027_a_at | SLC4A4 | 5,148797418 | 4,335535201 |
| 219172_at | UBTD1 | 6,466905715 | 5,443906063 |
| 205234_at | SLC16A4 | 9,127880855 | 7,683660462 |
| 215711_s_at | WEE1 | 8,923502702 | 7,51160245 |
| 212180_at | CRKL | 10,55848411 | 8,887275227 |
| 226748_at | LYSMD2 | 9,146564524 | 7,697343622 |
| 226117_at | TIFA | 7,286552454 | 6,130571916 |
| 202270_at | GBP1 | 8,343698386 | 7,018990803 |
| 204070_at | RARRES3 | 7,959373346 | 6,693392268 |
| 222805_at | MANEA | 8,608489408 | 7,238117931 |
| 238073_at | ELAVL4 | 8,398963143 | 7,061433534 |
| 210202_s_at | BIN1 | 6,496811018 | 5,462184085 |

| | | | |
|---|---|---|---|
| 219010_at | C1orf106 | 8,853069542 | 7,442759213 |
| 225098_at | ABI2 | 10,74101265 | 9,028845115 |
| 208992_s_at | STAT3 | 10,10250265 | 8,491895842 |
| 223276_at | SMIM3 | 11,35280337 | 9,539174002 |
| 216105_x_at | PPP2R4 | 8,068178576 | 6,778862036 |
| 203362_s_at | MAD2L1 | 10,76710182 | 9,04610214 |
| 218190_s_at | UQCR10 | 12,1976852 | 10,24798195 |
| 236207_at | SSFA2 | 7,942813394 | 6,670462132 |
| 223006_s_at | TMEM245 | 9,782846037 | 8,214891652 |
| 206452_x_at | PPP2R4 | 8,218744535 | 6,895652093 |
| 243287_s_at | OSTM1 | 4,880569808 | 4,093808077 |
| 223868_s_at | WWOX | 5,078333833 | 4,259124547 |
| 204000_at | GNB5 | 7,896430538 | 6,621100326 |
| 206857_s_at | FKBP1B | 9,192744706 | 7,707264903 |
| 213050_at | COBL | 7,953214294 | 6,666858508 |
| 209965_s_at | RAD51D | 6,97473467 | 5,845912611 |
| 210959_s_at | SRD5A1 | 8,470129363 | 7,097926129 |
| 223707_at | NA | 4,409951612 | 3,694451771 |
| 222764_at | ASRGL1 | 8,342321119 | 6,987963507 |
| 209512_at | HSDL2 | 8,519122042 | 7,134755334 |
| 212800_at | STX6 | 8,32036469 | 6,966118056 |
| 208424_s_at | CIAPIN1 | 9,532141497 | 7,978487954 |
| 1555900_at | DCTN5 | 7,845226532 | 6,565537148 |
| 226292_at | CAPN5 | 8,683963815 | 7,267452238 |
| 220532_s_at | TMEM176B | 7,141576781 | 5,973217553 |
| 225864_at | FAM84B | 9,639188699 | 8,061306479 |
| 232230_at | OLMALINC | 6,804911071 | 5,68917731 |
| 209077_at | TXN2 | 9,506517759 | 7,947562377 |
| 207231_at | DZIP3 | 6,950513739 | 5,810393973 |
| 211366_x_at | CASP1 | 6,616596228 | 5,530927449 |
| 205141_at | ANG | 6,336670631 | 5,296605234 |
| 207012_at | MMP16 | 7,842411227 | 6,553010548 |
| 225112_at | ABI2 | 10,78047984 | 9,004797636 |
| 228662_at | SOCS7 | 9,146267595 | 7,636958202 |
| 213131_at | OLFM1 | 9,63230443 | 8,040554536 |
| 206502_s_at | INSM1 | 10,87072667 | 9,074317022 |
| 217188_s_at | C14orf1 | 8,959481743 | 7,477880744 |
| 223784_at | TMEM27 | 4,741570979 | 3,956299583 |
| 233437_at | GABRA4 | 5,117633638 | 4,270033876 |
| 227897_at | NA | 9,293077847 | 7,753053151 |
| 203854_at | CFI | 8,31234116 | 6,933832625 |
| 213280_at | RAP1GAP2 | 5,444883262 | 4,541639185 |
| 222797_at | DPYSL5 | 8,816198223 | 7,353237005 |
| 213009_s_at | TRIM37 | 10,75494947 | 8,968944531 |
| 212757_s_at | CAMK2G | 8,254992185 | 6,883557324 |
| 219461_at | PAK6 | 5,089063695 | 4,243441582 |
| 219175_s_at | SLC41A3 | 7,598696892 | 6,333145883 |
| 236170_x_at | NA | 7,298492511 | 6,082609251 |
| 211622_s_at | ARF3 | 8,074160877 | 6,728092989 |
| 212973_at | RPIA | 8,957720409 | 7,464103426 |
| 1553633_s_at | NA | 5,486192157 | 4,570621613 |
| 236372_at | PANX1 | 6,215361717 | 5,176006699 |
| 205586_x_at | VGF | 5,678129842 | 4,727719033 |
| 1554768_a_at | MAD2L1 | 10,09913024 | 8,407684723 |
| 1557038_s_at | UBAC2-AS1 | 6,915947039 | 5,757518646 |
| 205303_at | KCNJ8 | 7,295854209 | 6,073422474 |

| | | | |
|---|---|---|---|
| 203908_at | SLC4A4 | 8,549883212 | 7,11652432 |
| 227998_at | S100A16 | 11,58679909 | 9,642263625 |
| 226350_at | CHML | 8,005679274 | 6,66160285 |
| 228274_at | SDSL | 7,808726669 | 6,497433766 |
| 218332_at | BEX1 | 11,79220492 | 9,811193454 |
| 235024_at | JADE1 | 6,129530844 | 5,099432986 |
| 202357_s_at | CFB | 4,754961724 | 3,953635792 |
| 230625_s_at | TSPAN12 | 6,954089658 | 5,780962102 |
| 203148_s_at | TRIM14 | 9,273470716 | 7,706012556 |
| 211503_s_at | RAB14 | 9,740972905 | 8,0941882 |
| 233230_s_at | SLAIN2 | 6,161657758 | 5,11856773 |
| 228456_s_at | CDS2 | 10,41646076 | 8,652167068 |
| 226431_at | FAM117B | 8,339872562 | 6,927122289 |
| 205894_at | ARSE | 5,952511311 | 4,943215383 |
| 221497_x_at | EGLN1 | 8,729510944 | 7,245905204 |
| 202830_s_at | SLC37A4 | 7,850707534 | 6,514300749 |
| 1553207_at | ARL10 | 6,046521513 | 5,016113753 |
| 220914_at | NA | 4,558924404 | 3,781477264 |
| 219549_s_at | RTN3 | 11,81014674 | 9,790257248 |
| 219201_s_at | TWSG1 | 7,607022291 | 6,305878244 |
| 231579_s_at | TIMP2 | 12,54418957 | 10,39816789 |
| 228051_at | ARFGEF3 | 7,294530778 | 6,042415705 |
| 201678_s_at | HMCES | 8,035505466 | 6,655910186 |
| 37793_r_at | RAD51D | 5,79592588 | 4,79946555 |
| 219274_at | TSPAN12 | 9,791322235 | 8,10723732 |
| 232682_at | MREG | 7,518965924 | 6,224757201 |
| 231577_s_at | GBP1 | 8,143242275 | 6,740274434 |
| 223201_s_at | NA | 6,820770541 | 5,644383526 |
| 229733_s_at | NA | 7,54668125 | 6,243017426 |
| 235543_at | LOC102723779 | 6,231873359 | 5,154399001 |
| 230201_at | FXR1 | 7,334740158 | 6,064632751 |
| 229866_at | STK32A | 8,553759104 | 7,072096369 |
| 202009_at | TWF2 | 8,039323647 | 6,645774252 |
| 229321_s_at | NA | 8,332065867 | 6,882861355 |
| 235224_s_at | CAND1 | 6,650243846 | 5,489772585 |
| 202562_s_at | C14orf1 | 9,556694773 | 7,888875277 |
| 235295_at | PANX1 | 8,183337732 | 6,754204178 |
| 208874_x_at | PPP2R4 | 8,285235408 | 6,835606385 |
| 231558_at | INSM1 | 4,867867512 | 4,01554418 |
| 208078_s_at | NA | 8,506321022 | 7,01613425 |
| 204519_s_at | PLLP | 7,027856313 | 5,796644398 |
| 219648_at | MREG | 9,350685603 | 7,710327061 |
| 228584_at | SGCB | 9,452699538 | 7,791505948 |
| 200734_s_at | ARF3 | 10,39092383 | 8,564359733 |
| 235309_at | RPS15A | 8,64069515 | 7,119751293 |
| 225119_at | CHMP4B | 8,574261289 | 7,06340568 |
| 222386_s_at | COPZ1 | 10,32557458 | 8,503176991 |
| 1556213_a_at | BTG3 | 5,887575595 | 4,848104632 |
| 204723_at | SCN3B | 5,030235067 | 4,141844389 |
| 218976_at | DNAJC12 | 6,405322037 | 5,272499425 |
| 220029_at | ELOVL2 | 7,952579927 | 6,540252141 |
| 204306_s_at | CD151 | 9,993307077 | 8,218085148 |
| 235948_at | RIMKLA | 7,068780629 | 5,811645038 |
| 228142_at | UQCR10 | 8,154003287 | 6,702916198 |
| 230393_at | CUL5 | 5,307460011 | 4,361950354 |
| 1555464_at | IFIH1 | 4,204873898 | 3,455738844 |

| | | | |
|---|---|---|---|
| 224735_at | CYB561A3 | 7,655768773 | 6,2912187 |
| 209983_s_at | NRXN2 | 7,493011558 | 6,156933506 |
| 203528_at | SEMA4D | 5,504714375 | 4,521584687 |
| 200927_s_at | RAB14 | 10,20114521 | 8,378978926 |
| 224314_s_at | EGLN1 | 7,999489673 | 6,569689663 |
| 225048_at | PHF10 | 9,628838333 | 7,905425183 |
| 231925_at | NA | 7,410405156 | 6,083202335 |
| 223614_at | MMP16 | 9,52595905 | 7,817324253 |
| 1555892_s_at | PSMD5-AS1 | 6,794076827 | 5,575202999 |
| 236283_x_at | LOC646214 | 7,369472326 | 6,045233772 |
| 225498_at | CHMP4B | 10,7587157 | 8,819030871 |
| 203180_at | ALDH1A3 | 4,029750912 | 3,301838265 |
| 205006_s_at | NMT2 | 7,234915949 | 5,928019945 |
| 236278_at | HIST1H3E | 6,731899748 | 5,515305752 |
| 212070_at | ADGRG1 | 11,18861883 | 9,166484886 |
| 201883_s_at | B4GALT1 | 6,229763831 | 5,103617921 |
| 224638_at | SPPL3 | 6,860781328 | 5,619941479 |
| 208968_s_at | CIAPIN1 | 10,29050281 | 8,42716861 |
| 225406_at | TWSG1 | 10,33572707 | 8,448040832 |
| 34408_at | RTN2 | 7,026771296 | 5,743334564 |
| 208760_at | UBE2I | 9,062141345 | 7,402422583 |
| 223183_at | AGPAT3 | 8,278372295 | 6,75979194 |
| 221220_s_at | SCYL2 | 8,088720524 | 6,601874362 |
| 205227_at | IL1RAP | 7,685046509 | 6,271931628 |
| 204437_s_at | FOLR1 | 6,410175756 | 5,231412172 |
| 1560503_a_at | TFAP2A-AS1 | 6,514281878 | 5,314834919 |
| 214113_s_at | RBM8A | 10,90415443 | 8,886443317 |
| 238066_at | RBP7 | 6,152481487 | 5,006612095 |
| 203439_s_at | STC2 | 7,276165344 | 5,92069169 |
| 210007_s_at | GPD2 | 6,981877981 | 5,676452882 |
| 204260_at | CHGB | 5,681691527 | 4,617307303 |
| 236037_at | ARFGEF3 | 4,284777482 | 3,481585238 |
| 243301_at | COL22A1 | 3,970631957 | 3,226116736 |
| 220942_x_at | FAM162A | 11,60698601 | 9,430342137 |
| 205440_s_at | NPY1R | 8,870822163 | 7,207246987 |
| 40148_at | APBB2 | 8,210179494 | 6,666048764 |
| 225928_at | VTI1B | 8,125821529 | 6,593055131 |
| 223193_x_at | FAM162A | 11,5448832 | 9,3654289 |
| 228811_at | NA | 6,19145622 | 5,022207355 |
| 235346_at | FUNDC1 | 9,343517408 | 7,578395937 |
| 205737_at | KCNQ2 | 7,784250065 | 6,309582915 |
| 239202_at | RAB3B | 4,717340389 | 3,821177391 |
| 224560_at | TIMP2 | 12,11484412 | 9,810120877 |
| 205700_at | HSD17B6 | 5,568264558 | 4,508144654 |
| 209970_x_at | CASP1 | 6,440986432 | 5,208831476 |
| 235205_at | OXR1 | 8,926338139 | 7,215128218 |
| 223925_s_at | MTPN | 7,691888088 | 6,21730984 |
| 213419_at | APBB2 | 8,334667352 | 6,735307356 |
| 202095_s_at | BIRC5 | 10,15355717 | 8,202795773 |
| 236721_at | ALKBH1 | 5,169265364 | 4,175383593 |
| 217383_at | PGK1 | 6,046213964 | 4,882422576 |
| 233814_at | EFNA5 | 5,800880672 | 4,683898394 |
| 214006_s_at | GGCX | 8,195172093 | 6,615796007 |
| 1554095_at | RBM33 | 4,676975153 | 3,771100435 |
| 243156_at | NA | 5,580462241 | 4,498003434 |
| 210560_at | GBX2 | 5,507347442 | 4,438309731 |

| | | | |
|---|---|---|---|
| 208991_at | STAT3 | 10,7001501 | 8,615519705 |
| 202656_s_at | SERTAD2 | 8,551016209 | 6,883206431 |
| 230104_s_at | TPPP | 6,944200485 | 5,588724496 |
| 221581_s_at | LAT2 | 6,087287589 | 4,898261033 |
| 208829_at | TAPBP | 9,139923751 | 7,345156121 |
| 1553392_at | NA | 5,156910288 | 4,143104292 |
| 220915_s_at | NA | 5,90656316 | 4,743726308 |
| 229656_s_at | EML6 | 8,930145402 | 7,17089972 |
| 205375_at | MDFI | 7,626695994 | 6,12357662 |
| 204365_s_at | REEP1 | 7,563297935 | 6,070268836 |
| 210334_x_at | BIRC5 | 8,93064795 | 7,166301144 |
| 205715_at | BST1 | 6,001974135 | 4,815849186 |
| 236838_at | SRCIN1 | 6,714598188 | 5,387242469 |
| 36499_at | CELSR2 | 9,693058052 | 7,776663294 |
| 1560023_x_at | NA | 5,15427875 | 4,134253587 |
| 1555310_a_at | PAK6 | 6,089464002 | 4,884357104 |
| 223570_at | MCM10 | 6,528164025 | 5,235781278 |
| 242294_at | FBXO45 | 6,931546049 | 5,550051214 |
| 224345_x_at | FAM162A | 11,45989055 | 9,173916868 |
| 221236_s_at | STMN4 | 8,214911198 | 6,572985198 |
| 235719_at | CYP4V2 | 5,696025972 | 4,554666955 |
| 229582_at | INO80C | 9,218734594 | 7,367266843 |
| 204029_at | CELSR2 | 8,947369398 | 7,149613092 |
| 209323_at | PRKRIR | 10,33135628 | 8,253463309 |
| 209452_s_at | VTI1B | 10,25484491 | 8,183559909 |
| 226576_at | ARHGAP26 | 5,98639774 | 4,776874757 |
| 239688_at | SMC1A | 5,039794718 | 4,020865278 |
| 1555867_at | GNG4 | 7,91937225 | 6,315150364 |
| 204364_s_at | REEP1 | 7,453696542 | 5,941781133 |
| 227547_at | NA | 9,188839432 | 7,324916117 |
| 205304_s_at | KCNJ8 | 6,708733271 | 5,346304733 |
| 1555141_a_at | NA | 4,535141613 | 3,611255004 |
| 225289_at | STAT3 | 9,873096249 | 7,84965689 |
| 232553_at | PCYT1B | 7,174797314 | 5,704054153 |
| 201677_at | HMCES | 6,691024422 | 5,319113676 |
| 200782_at | ANXA5 | 12,25912 | 9,73119285 |
| 237365_at | ELOVL2-AS1 | 6,491970185 | 5,15317855 |
| 212647_at | RRAS | 6,138222564 | 4,872123116 |
| 226456_at | RMI2 | 8,552216223 | 6,782338491 |
| 227997_at | IL17RD | 9,580197237 | 7,593889092 |
| 213552_at | GLCE | 5,869186254 | 4,651475594 |
| 207183_at | GPR19 | 8,129399438 | 6,436200998 |
| 213927_at | MAP3K9 | 5,990640171 | 4,739511256 |
| 227396_at | PTPRJ | 9,998586674 | 7,907273679 |
| 1555826_at | BIRC5 | 6,797649454 | 5,375158238 |
| 242785_at | EML6 | 7,334547839 | 5,797586362 |
| 204995_at | CDK5R1 | 8,23980874 | 6,512770036 |
| 1555602_a_at | ELAVL3 | 7,333880043 | 5,791956996 |
| 222557_at | STMN3 | 11,27226807 | 8,901789831 |
| 226579_at | NA | 8,847574977 | 6,97930114 |
| 201998_at | ST6GAL1 | 7,595531753 | 5,991075056 |
| 239729_at | NA | 6,294693393 | 4,964027622 |
| 211572_s_at | SLC23A2 | 5,476599271 | 4,317856608 |
| 219645_at | CASQ1 | 4,291596612 | 3,383528938 |
| 1555765_a_at | GNG4 | 7,840409598 | 6,181408933 |
| 1554897_s_at | RHBDL2 | 4,725451053 | 3,724728327 |

| | | | |
|---|---|---|---|
| 236312_at | MAD2L1 | 6,965718254 | 5,490248533 |
| 222391_at | TMEM30A | 10,36419142 | 8,157139728 |
| 216247_at | NA | 6,235083869 | 4,905678065 |
| 1562736_at | LHX9 | 3,36094655 | 2,642389923 |
| 205190_at | PLS1 | 5,814060692 | 4,556798829 |
| 204035_at | SCG2 | 8,352124064 | 6,541582498 |
| 221564_at | PRMT2 | 10,52478385 | 8,241527921 |
| 242326_at | COL22A1 | 7,209077809 | 5,642917254 |
| 213599_at | OIP5 | 9,22260384 | 7,216820856 |
| 222456_s_at | LIMA1 | 5,648299254 | 4,419339071 |
| 225556_at | VMA21 | 11,12594136 | 8,705030445 |
| 1554102_a_at | TMTC4 | 9,1139942 | 7,128589665 |
| 217857_s_at | RBM8A | 8,98037559 | 7,02382342 |
| 229590_at | NA | 6,293901419 | 4,920102327 |
| 244088_at | NA | 6,410221152 | 5,005524223 |
| 244362_at | NA | 5,447116327 | 4,253363146 |
| 239209_at | NA | 4,697872656 | 3,665642245 |
| 230163_at | GFRA1 | 6,45666362 | 5,035035365 |
| 229579_s_at | DISP2 | 7,868420911 | 6,132818953 |
| 225926_at | VTI1B | 8,747951754 | 6,816250927 |
| 240236_at | STXBP5L | 6,372717973 | 4,96428193 |
| 215273_s_at | TADA3 | 9,906033418 | 7,71398442 |
| 214949_at | NA | 9,665515633 | 7,524354081 |
| 226632_at | CYGB | 5,748599196 | 4,46889419 |
| 214948_s_at | TMF1 | 9,813996885 | 7,628448623 |
| 225666_at | TMTC4 | 10,95852562 | 8,518007704 |
| 229208_at | HAUS2 | 6,905868488 | 5,36492135 |
| 236369_at | TSPY26P | 8,724576068 | 6,776058876 |
| 232523_at | MEGF10 | 8,139373152 | 6,317220431 |
| 211421_s_at | RET | 4,763915821 | 3,696232904 |
| 203000_at | STMN2 | 11,18694719 | 8,678977377 |
| 205368_at | FAM131B | 8,17237045 | 6,337487706 |
| 204777_s_at | MAL | 7,64529942 | 5,92391273 |
| 202657_s_at | SERTAD2 | 8,959462302 | 6,935681406 |
| 205121_at | SGCB | 7,902182688 | 6,116285194 |
| 206693_at | IL7 | 7,790713086 | 6,027161356 |
| 227612_at | ELAVL3 | 9,165280505 | 7,089101006 |
| 1565951_s_at | CHML | 5,088685602 | 3,93517011 |
| 218115_at | ASF1B | 8,911549653 | 6,882801016 |
| 213150_at | HOXA10 | 6,685357386 | 5,161134632 |
| 1553938_a_at | STK32A | 5,523385445 | 4,262900308 |
| 226847_at | FST | 7,268160499 | 5,607261545 |
| 240629_at | NA | 4,042904668 | 3,116493609 |
| 206751_s_at | PCYT1B | 4,563809955 | 3,518017972 |
| 212690_at | DDHD2 | 9,175808543 | 7,064846388 |
| 221932_s_at | GLRX5 | 10,29319039 | 7,924354643 |
| 210255_at | RAD51B | 5,777594734 | 4,444455511 |
| 1554101_a_at | TMTC4 | 9,086912824 | 6,981450756 |
| 203001_s_at | STMN2 | 10,81260259 | 8,291691018 |
| 205184_at | GNG4 | 8,184188192 | 6,267805052 |
| 224926_at | EXOC4 | 9,801999273 | 7,502548507 |
| 227550_at | GFRA1 | 8,468427791 | 6,474577864 |
| 235198_at | OSTM1 | 8,48724871 | 6,487193286 |
| 236550_s_at | ZNF311 | 5,611768261 | 4,289103572 |
| 211782_at | IDS | 4,377849606 | 3,345061657 |
| 217757_at | A2M | 8,749250544 | 6,677078284 |

| | | | |
|---|---|---|---|
| 1553670_at | INTS4 | 4,505423056 | 3,435660978 |
| 235947_at | LOC101930067 | 3,723472714 | 2,83396977 |
| 209982_s_at | NRXN2 | 7,849047088 | 5,972214705 |
| 207345_at | FST | 5,67292692 | 4,312398104 |
| 224985_at | NRAS | 10,38219655 | 7,861147062 |
| 203438_at | STC2 | 8,956761782 | 6,777283785 |
| 208784_s_at | KLHDC3 | 7,503034856 | 5,649763275 |
| 37512_at | HSD17B6 | 4,394456501 | 3,298157895 |
| 223095_at | MARVELD1 | 8,534867971 | 6,402943517 |
| 219763_at | DENND1A | 6,801844074 | 5,102323511 |
| 205678_at | AP3B2 | 6,540721656 | 4,903208268 |
| 206440_at | LIN7A | 5,568483015 | 4,173359325 |
| 236551_at | ZNF311 | 6,386118755 | 4,78131136 |
| 242086_at | SPATA6 | 8,921854393 | 6,6768187 |
| 223530_at | TDRKH | 6,912186461 | 5,16021225 |
| 225004_at | TMEM101 | 8,253254298 | 6,156958884 |
| 212864_at | CDS2 | 9,104398662 | 6,780078503 |
| 1569342_at | GLI3 | 5,929280445 | 4,403002435 |
| 205204_at | NMB | 8,410086601 | 6,238412791 |
| 232591_s_at | TMEM30A | 8,186033428 | 6,066050492 |
| 207400_at | NPY5R | 7,030246975 | 5,207293832 |
| 230547_at | KCNC1 | 7,657417466 | 5,667620369 |
| 206271_at | TLR3 | 5,658985617 | 4,188372409 |
| 204458_at | PLA2G15 | 7,719522384 | 5,704958956 |
| 1552502_s_at | RHBDL2 | 4,50251646 | 3,325223072 |
| 231098_at | NA | 6,005138057 | 4,432891623 |
| 218196_at | OSTM1 | 9,985563465 | 7,338758849 |
| 204612_at | PKIA | 11,22884001 | 8,247174299 |
| 223500_at | CPLX1 | 5,092921945 | 3,7401659 |
| 229160_at | MUM1L1 | 6,000219202 | 4,404201726 |
| 222480_at | UBE2Q1 | 6,522248019 | 4,785812529 |
| 219196_at | SCG3 | 4,887788202 | 3,585211748 |
| 202094_at | BIRC5 | 8,85126371 | 6,484392971 |
| 200887_s_at | STAT1 | 10,30289605 | 7,54755732 |
| 232422_at | GGACT | 5,507185656 | 4,018988069 |
| 1555022_at | RGS12 | 6,84352203 | 4,97074116 |
| 203662_s_at | TMOD1 | 8,852659613 | 6,428389563 |
| 235197_s_at | OSTM1 | 7,765691813 | 5,633612678 |
| 214383_x_at | KLHDC3 | 7,957921714 | 5,768665572 |
| 227196_at | RHPN2 | 8,252931919 | 5,958210736 |
| 206110_at | NA | 6,087293581 | 4,392235554 |
| 211368_s_at | CASP1 | 6,075450313 | 4,375727699 |
| AFFX-HUMISGF3A/M97935_3_at | STAT1 | 9,882095897 | 7,109633789 |
| 226864_at | PKIA | 9,031280331 | 6,490801278 |
| 239587_at | TLR3 | 5,367575457 | 3,853105308 |
| 203661_s_at | TMOD1 | 8,87950209 | 6,328853069 |
| 217743_s_at | TMEM30A | 9,432162614 | 6,720990141 |
| 207455_at | P2RY1 | 5,700334287 | 4,053018944 |
| 205590_at | RASGRP1 | 7,888334706 | 5,591199406 |
| 207093_s_at | NA | 6,889771823 | 4,867808936 |
| 202454_s_at | ERBB3 | 6,050601238 | 4,271340047 |
| 206101_at | ECM2 | 6,216435718 | 4,379608039 |
| 209875_s_at | SPP1 | 9,812272234 | 6,900304123 |
| 231817_at | USP53 | 4,296455064 | 3,015053375 |

| | | | |
|---|---|---|---|
| 206011_at | CASP1 | 5,957615828 | 4,158356168 |
| 227132_at | ZNF706 | 8,157622839 | 5,687699246 |
| 234103_at | KCNT2 | 5,732226168 | 3,991594204 |
| 205696_s_at | GFRA1 | 5,820245145 | 4,036849362 |
| 238459_x_at | SPATA6 | 6,530439216 | 4,523681101 |
| 203650_at | PROCR | 5,991611607 | 4,137068436 |
| 205675_at | MTTP | 5,420773875 | 3,70152415 |
| 1552703_s_at | NA | 5,621819932 | 3,836782711 |
| 204929_s_at | VAMP5 | 8,544956597 | 5,820706498 |
| 226213_at | ERBB3 | 6,166365317 | 4,116929779 |
| 215388_s_at | NA | 4,717256375 | 3,140300178 |
| 203285_s_at | HS2ST1 | 8,315735138 | 5,484387714 |

| | | | |
|---|---|---|---|
| 205128_x_at | PTGS1 | 8,145666466 | 5,345101078 |
| 218207_s_at | STMN3 | 6,998914139 | 4,570756656 |
| 223836_at | FGFBP2 | 7,505435776 | 4,87815603 |
| 223599_at | TRIM6 | 5,695811698 | 3,70007826 |
| 214005_at | GGCX | 8,474563838 | 5,480402053 |
| 203697_at | FRZB | 5,71568871 | 3,669669278 |
| 236517_at | MEGF10 | 5,95570663 | 3,778679217 |
| 203284_s_at | HS2ST1 | 9,53199598 | 6,001417633 |
| 206718_at | LMO1 | 10,61146829 | 6,674247121 |
| 203283_s_at | HS2ST1 | 9,046275921 | 5,406649606 |
| 1552701_a_at | CARD16 | 5,645517013 | 3,337163282 |

## 11.8 Antibodies used in this study.

| *Antibody (Clone)* | *Host* | *Use* | *Dilution* | *Producer* | *Catalog #* |
|---|---|---|---|---|---|
| **Annexin II (5/Annexin II)** | mouse | IHC | 1:2000 | BD Bioscience | 610068 |
| **Annexin II (C-10)** | mouse | IF<br>*In vitro* neutralization<br>*In vivo* neutralization | 1:100<br>5-20µg/ml<br>2µg/egg | Santa Cruz Biotechnology | sc-28385 |
| **β-actin (AC-74)** | mouse | WB | 1:20000 | Sigma-Aldrich | A5316 |
| **CD133-PE (AC133/1)** | mouse | FC | 1:25 | Miltenyi Biotec | 130-080-801 |
| **GFAP** | rabbit | IF | 1:1000 | Dako | Z0334 |
| **Ki67 (MIB-1)** | mouse | IF | 1:100 | Dako | M7240 |
| **MAP2 (AP-20)** | mouse | IF | 1:100 | Sigma-Aldrich | M1406 |
| **Nestin (10C2)** | mouse | IF | 1:200 | Millipore | MAB5326 |
| **OSP** | rabbit | IF | 1:200 | Abcam | ab53041 |
| **S100** | rabbit | IF | 1:400 | Dako | Z0311 |
| **Sox2 (D6D9)** | rabbit | IF | 1:200 | Cell Signaling Technology | 3579 |
| **anti-mouse-Alexa594** | goat | IF | 1:1000 | Life Technologies | A11005 |
| **anti-mouse-Alexa488** | goat | IF | 1:1000 | Life Technologies | A11001 |
| **anti-rabbit-Alexa488** | goat | IF | 1:1000 | Life Technologies | A11008 |
| **Anti-rabbit-Alexa594** | goat | IF | 1:1000 | Life Technologies | A11012 |
| **anti-mouse-HRP** | goat | WB | 1:50000 | Perkin Elmer | NEF822001EA |

IHC: Immunohistochemistry; IF: immunofluorescence; WB: western blot; FC: flow cytometry.

## 11.9 Sequence of primers used in this study.

| *Gene* | *Sequence (5'-3')* |
|---|---|
| ANXA2 forward | GGGGACGCGAGATAAGGTCC |
| ANXA2 reverse | CGCTTTCTGGTAGTCGCCCT |
| ANXA2_CDS forward | ATGGGCCGCCAGCTAGCG |
| ANXA2_CDS reverse | TCAGTCATCTCCACCACACAGGTAC |
| ANXA2_BamHI-5' | ACTGGGATCCATGGGCCGCCAGCTAGCG |
| ANXA2_XhoI-3' | ACTGCTCGAGTCAGTCATCTCCACCACACAGGTAC |
| ADAM12 forward | CATCGGCATGGCCCCAATCA |
| ADAM12 reverse | GGCTGCACCAAGGGGATTGT |
| COL5A1 forward | CCCTGACAAGAAGTCCGAAGGG |
| COL5A1 reverse | GCAGCCGCAGGAAGGTCAT |
| DNAH9 forward | GGCCCGACCGGATGACCTAT |
| DNAH9 reverse | TCCACCCCTGGAGACAGGATG |
| FBN1 forward | GCTGCGAGTGTCCCTTTGGT |
| FBN1 reverse | GGGCTCAAATCCCTCCTCGC |
| HMMR forward | GGAGTGCCAGTCACCTTCAGT |
| HMMR reverse | ACATCATAAGCACCTGGAGATGG |
| PLAT forward | GCCCGATTCAGAAGAGGAGCC |
| PLAT reverse | ACTGTGCCCTGCCACTGTTG |
| SDK2 forward | CCGTCAACGACGTGGGGAAA |
| SDK2 reverse | ACTGGTTGGTTCGACCGCTG |
| SEMA5A forward | CCCAGGCGCTGGATGACTG |
| SEMA5A reverse | GTGTGGAAAGTGCCAAGGAGAGAG |
| COCH forward | AAGGGAGAGCCCCAACAAGAAC |
| COCH reverse | AGGTCATCCAGAGGTGCCCAA |
| MYO1B forward | GGGTGGAAATGCCGCACACA |
| MYO1B reverse | CGAGCCTTCCAACCCCGGATA |
| MYL5 forward | GTACCGACGCCGAGGAGACC |
| MYL5 reverse | CGATGGAGGCGAACTGGAACA |
| CCNA2 forward | CGTGAAGATGCCCTGGCTTTTA |
| CCNA2 reverse | TGGTACTTCATTAACACTCACTGGC |
| MKI67 forward | GCCTGCTCGACCCTACAGAG |
| MKI67 reverse | ACTGCGGTTGCTCCTTCACTG |
| CDCA3 forward | GGACTCAGATCCCCGCTCTC |
| CDCA3 reverse | GGTACCCAGAGGCAAGTCCAA |
| CDK1 forward | AAGCCGGGATCTACCATACCC |
| CDK1 reverse | GCAGTACTAGGAACCCCTTCCTCT |
| KIF14 forward | CCTCTGCAGGAAAAGACCCCT |
| KIF14 reverse | CGTGTCAGGGTGTTCCACAGTT |
| KIF20A forward | GAACGAACGCAGCGCGTAAT |
| KIF20A reverse | GCCTAGGTCCGAAGACGTGC |
| GUSB forward | GAAAATACGTGGTTGGAGAGCTCATT |
| GUSB reverse | CCGAGTGAAGATCCCCTTTTTA |

## 12. ABBREVIATIONS USED IN THE TEXT

5-ALA: 5-aminolevulinic acid

ANXA2: annexin 2A

BBB: blood brain barrier

BCNU: 1,3-bis[2-chloroethyl]-1-nitrosourea

bFGF: basic fibroblast growth factor

BME: basal membrane extract

BV: bevacizumab

CAM: chick embryo chorioallantoic membrane

CNS: central nervous system

CSCs: cancer stem cells

DAB: 3,3'-diaminobenzidine

DAPI: 4',6-diamidino-2-phenylindole

Down: down-regulated

DSS: disease-specific survival

ECM: extracellular matrix

ECs: endothelial cells

EGF: epidermal growth factor

EGFP: enhanced green fluorescent protein

EGFR: epidermal growth factor receptor

EMT: epithelial to mesenchymal transition

FAs: focal adhesions

FFPE: formalin-fixed and paraffin embedded

FITC: fluorescein isothiocynate

GBM: glioblastoma multiforme

GEO: gene expression omnibus

GFAP: glial fibrillary acidic protein

GO: gene ontology

GSCs: glioma stem cells

GSEA: gene set enrichment analysis

Hi: high

Hif-1α: hypoxia-inducible factor 1, alpha subunit

IHC: immunohistochemestry

lFDR: local false discovery rate

Lo: low

MET: mesenchymal to epithelial transition

MGMT: O(6)-methylguanine-DNA methyltransferase

miRNAs: micro RNAs

MMPs: matrix metalloproteinases

MR: maximal resection

MRI: magnetic resonance imaging

mRNAs: messenger RNAs

MTT: 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide

NES: nuclear export signal

OS: overall survival

PFS: progression free survival

PVDF: polyvinylidene difluoride immobilon-p membrane

RFS: relapse-free survival

RT: radiation therapy

siNEG: non targeting siRNA

siRNA: small interfering RNA

TGCA: the cancer genome atlas

TMZ: temozolomide

tPA: plasminogen activator

US: united states

UTRs: untraslated regions

VEGF: vascular endothelial growth factor

WB: western blot

WHO: world health organization