Quantitative Phosphoproteomics Reveal that mTOR Regulates Cell Growth and Proliferation by Phosphorylating a Functionally Diverse Set of Substrates

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1.3: Summary

The atypical Ser/Thr kinase target of rapamycin (TOR) is a central controller of cell growth and proliferation. TOR forms two distinct multiprotein complexes, TORC1 and TORC2, which are structurally and functionally conserved from yeast to humans. Four major inputs control mammalian TOR (mTOR): growth factors, such as insulin; cellular energy levels, such as the AMP:ATP ratio; stress, such as hypoxia; and nutrients, such as amino acids. mTOR controls cell growth by the positive and negative regulation of several anabolic and catabolic processes, respectively, that collectively regulate cell size and proliferation. These cellular processes include autophagy, cytoskeleton rearrangement, glycolysis, lipogenesis, nutrient transport, ribosome biogenesis, and translation. Dysregulation of the mTOR signaling network has been associated with aging, and a multitude of diseases including cancer, cardiovascular disease, diabetes, inflammation, immune dysfunctions, and neurodegeneration. However, relatively few direct substrates of either one of the two mTOR complexes, mTORC1 and mTORC2, are known.

To determine downstream effectors of mammalian TOR (mTOR), we applied a functional, quantitative phosphoproteomics workflow to identify novel mTORC1 or mTORC2 regulated phosphorylations. Raptor and Rictor are essential components of mTORC1 and mTORC2, respectively. To distinguish phosphorylations regulated by mTORC1 or mTORC2, we specifically deleted Raptor or Rictor using an inducible gene knockout system in mouse embryonic fiberblasts (MEFs). We detected 4584 phosphorylation sites on 1398 proteins, and identified 335 novel mTOR effectors. Many of the novel effectors are implicated in cancer and metabolic diseases, but have no known links to mTOR. To distinguish direct mTOR substrates from indirect effectors, we combined peptide array *in vitro* kinase assays with phosphorylation motif analysis. This revealed that mTORC1 phosphorylates CAD *in vivo* and *in vitro*. CAD (carbamoyl-phosphate synthetase 2, aspartate transcarbamylase, and dihydroorotase) is the initial and rate limiting enzyme in *de novo* pyrimidine synthesis. The macrolide rapamycin, which forms a complex with FKBP12, binds and acutely inhibits mTORC1 but

not mTORC2. Rapamycin treatment inhibited growth factor stimulated CAD phosphorylation and oligomerization, decreased *de novo* pyrimidine synthesis, and delayed progression of S-phase where CAD activity is essential. Thus mTORC1 phosphorylates CAD and thereby stimulates *de novo* pyrimidine synthesis to promote cell proliferation.

Separately, we characterize the autophosphorylation of mTOR on Ser2481. Insulin stimulates the phosphorylation of mTOR at Ser2481 specifically in mTORC2. Knockout of Rictor, but not Raptor, abolished mTOR autophosphorylation at Ser2481. Prolonged treatment with rapamycin, which indirectly inhibits mTORC2 complex formation, inhibited Ser2481 phosphorylation. Surprisingly, mTORC2 autophosphorylation at Ser2481 temporally occurs after the insulin-induced phosphorylation of Akt/PKB and the SGK1 substrate NDGR1. Mutation of Ser2481 to aspartic acid rendered mTOR unable to phosphorylate Akt/PKB *in vitro.* However the function of mTOR-Ser2481 phosphorylation *in vivo* remains elusive, as mutation of mTOR-Ser2481 did not alter Akt/PKB phosphorylation *in vivo*.

In summary, mTORC1 and mTORC2 regulate the phosphorylation of a functionally diverse set of substrates to control several anabolic and catabolic processes that determine cell size and proliferation. As a central controller of cell growth and proliferation, mTOR plays a key role in regulating development, whereas dysregulation of mTOR signaling has been linked to aging and diseases such as cancer and metabolic disorders.

1.4: Abbreviations

4E-BP1:	eukaryotic translation initiation factor 4E binding protein 1
AGC:	cAMP-dependent protein kinase [PKA]/protein kinase G [PKG]/protein kinase C [PKC]
Akt/PKB:	rac protein kinase alpha/ protein kinase B
CAD:	carbamoyl-phosphate synthetase 2, aspartate transcarbamylase, and dihydroorotase
DEPTOR:	DEP-domain-containing mTOR-interacting protein
DNA-PK:	DNA-dependent protein kinase
IMAC:	immobilized metal affinity chromatography
LC-MS/MS:	liquid chromatography coupled to mass spectrometry
mLST8:	mammalian lethal with SEC13 protein 8
MS:	mass spectrometry
mTOR:	mammalian [or mechanistic] target of rapamycin
mTORC1:	mTOR complex 1
mTORC2:	mTOR complex 2
NDGR1:	N-myc downstream regulated
PI3K:	phosphoinositide 3-kinase
PIKK:	phosphatidylinositol 3-kinase-related kinases
PRAS40:	proline-rich Akt/protein kinase B [PKB] substrate 40 kDa
PRR5:	proline-rich protein 5 [also called Protor]
PKC:	protein kinase C
Raptor:	regulatory associated protein of mTOR complex 1
Rictor:	rapamycin insensitive companion of mTOR
S6K:	ribosomal protein S6 kinase
SGK:	serum/glucocorticoid regulated kinase 1
SILAC:	stable isotope labeling with amino acids in cell culture
Sin1:	SAPK [stress-activated protein kinase]-interacting protein 1
SREBP-1:	sterol regulatory element binding protein-1
TSC:	tuberous sclerosis complex
ULK1:	unc-51-like kinase 1

2.0: Introduction

To appropriately control cell growth and proliferation, cells respond to a variety of environmental cues to regulate the synthesis of essential building blocks such as proteins, lipids, sugars, nucleotides and other metabolites. The mammalian target of rapamycin (mTOR) is an atypical Ser/Thr kinase structurally and functionally conserved from yeast to human that positively regulates cell growth, proliferation, and survival, while inhibition of mTOR signaling extends lifespan (reviewed in (Laplante and Sabatini, 2009b; Wullschleger et al., 2006)). mTOR forms two multiprotein complexes, mTOR complex 1 (mTORC1) and mTOR complex 2 (mTORC2).

Nutrients and growth factors activate mTORC1, whereas low cellular energy levels or hypoxic stress inhibit mTORC1. Upon activation, mTORC1 positively regulates protein translation, ribosome biogenesis, lipogenesis, and inhibits autophagy. mTORC2 is activated by growth factors via PI3K (phosphoinositide 3-kinase) dependent ribosome association (Zinzalla et al., 2011). Upon activation, mTORC2 regulates the phosphorylation of several AGC kinases including Akt/PKB, SGK, and canonical PKCs to control cell survival and cytoskeleton rearrangement (reviewed in (Jacinto and Lorberg, 2008)). Thus mTORC1 and mTORC2 link external growth signals to the internal growth capacity of the cell.

As central controllers of cell growth and proliferation, the mTORC1 and mTORC2 signaling networks are key regulatory nodes whose functions regulate development and aging, while dysregulation of mTOR signaling has been linked to cancer and metabolic disorders (reviewed in (Zoncu et al., 2010)). mTORC1 and mTORC2 signal via distinct substrates to collectively control spatial and temporal cell growth, which ultimately determines cell size and regulates proliferation (reviewed in (Robitaille and Hall, 2008; Yang and Guan, 2007)). However, relatively few direct substrates of either one of the two mTOR complexes are known.

Regulation and function of mTOR phosphorylation

mTOR is the founding member of the phosphatidylinositol 3-kinase-related kinases (PIKK) family (Manning et al., 2002), which includes Ataxia telangiectasia mutated (ATM); ATM and Rad3 related (ATR); DNA-dependent

protein kinase (DNA-PK); suppressor with morphological effect on genitalia 1 (SMG1); and transformation/transcription domain-associated protein (TRRAP). Despite the homology to lipid kinases, mTOR has not been demonstrated to have lipid kinase activity, and the significance of mTOR homology to lipid kinases remains unknown.

mTOR has a predicted molecular weight of 280 kDa, and an apparent molecular weight of 220 kDa. The amino (N) terminus of mTOR contains 20 tandem HEAT (Huntingtin, Elongation factor 3, PR65/A subunit of protein phosphatase 2A, TOR) repeats (Diagram 1). This region is followed by a FAT (FRAP (FKBP12-rapamycin-associated protein)/TOR, ATM, TRRAP) domain, an FK506-binding protein 12 (FKBP12)-rapamycin binding (FRB) domain, the kinase domain, and a carboxy (C)-terminal FATC domain. The HEAT repeats mediate protein-protein interactions (Perry and Kleckner, 2003), while the FAT and FATC domains that flank the catalytic site modulate mTOR activity via an unknown mechanism. The FAT and FATC domains are found as a pair in all PIKK family members.

The c-terminal region of mTOR situated between the catalytic domain and the FATC contains a repressor domain (RD) (Scott et al., 1998; Sekulic et al., 2000). Addition of an antibody (mTAB1) that recognizes the repressor domain (Brunn et al., 1997), or partial deletion of the repressor domain (amino acids 2430-2450) increases mTOR *in vitro* kinase activity (Edinger and Thompson, 2004). mTOR is phosphorylated at three sites within the repressor domain: Thr2446, Ser2448, and Ser2481. AMPK phosphorylates Thr-2446 (Cheng et al., 2004) whereas S6K phosphorylates Ser2448 (Chiang and Abraham, 2005; Holz and Blenis, 2005) and mTOR autophosphorylates Ser2481 (Peterson et al., 2000). However, mutation of Thr2446 or Ser2448 has no effect on mTOR kinase activity (Cheng et al., 2004; Chiang and Abraham, 2005; Holz and Blenis, 2005). Thus an unidentified residue within the repressor domain may play an important regulatory role.

Diagram 1

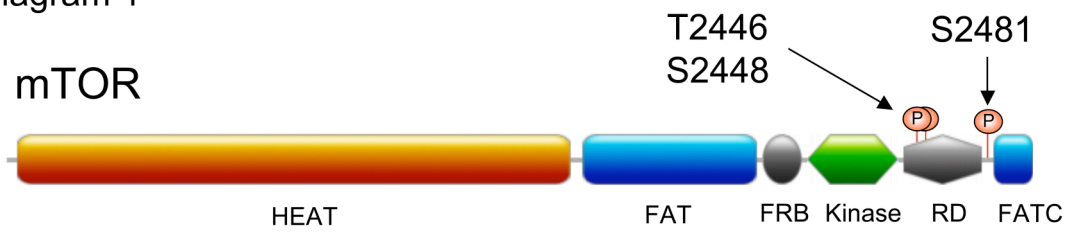

Diagram 1: mTOR. A schematic of mTOR domain organization and phosphorylation sites are shown. Repressor domain (RD). Images were generated with Prosite's MyDomains Image Creator.

mTORC1 and mTORC2 are distinct complexes

mTOR forms two distinct multiprotein complexes, mTORC1 and mTORC2, which are structurally and functionally conserved from yeast to human (Diagram 2).

mTORC1 is composed of mTOR, Raptor, and mLST8 (also called GβL). Whole-body knockout of mTOR is embryonic lethal in mice. Homozygous mTOR-/- mice die at embryonic (E) day E5.5 to E6 (Gangloff et al., 2004; Murakami et al., 2004). Similar to mTOR, Raptor-/- mice die at day E5.5 to E6.5, suggesting that both mTORC1 components are required for progressing past the same stage of embryonic development (Guertin et al., 2006). Additionally, mTORC1 associates with PRAS40 and DEPTOR, proteins that negatively regulate mTORC1 activity (Peterson et al., 2009; Thedieck et al., 2007; Vander Haar et al., 2007; Wang et al., 2007).

mTORC2 is composed of mTOR, Rictor, Sin1, mLST8, and PRR5/PRR5L (also called Protor 1/Protor 2) (reviewed in (Cybulski and Hall, 2009)). PRR5 is not required for the interaction between mTOR, Rictor, Sin1, and mLST8. Deletion of Rictor or Sin1 is embryonic lethal, as mice die after day E10-E10.5 (Guertin et al., 2006; Jacinto et al., 2006). Additionally, loss of Sin1 disrupts Rictor association with mTORC2. Surprisingly, although mLST8 is a component of both mTORC1 and mTORC2, mLST8 knockout mice die at day E10.5, phenotypically resembling Rictor-/- mice (Guertin et al., 2006). Furthermore, mLST8 is required for Akt/PKB hydrophobic motif (HM)

phosphorylation, but not S6K signaling. These data suggest that mLST8 has an essential role only in mTORC2.

Studies in yeast, flies and mammalian cells have shown that mTOR is found in oligomeric supercomplexes, that are likely to be mTORC1-mTORC1 and mTORC2-mTORC2 homodimers (Wang et al., 2006; Wullschleger et al., 2005; Zhang et al., 2006). Multimeric mTOR may have higher kinase activity than monomeric mTOR. It remains to be determined how oligomerization is regulated and how it may lead to increased kinase activity.

Diagram 2

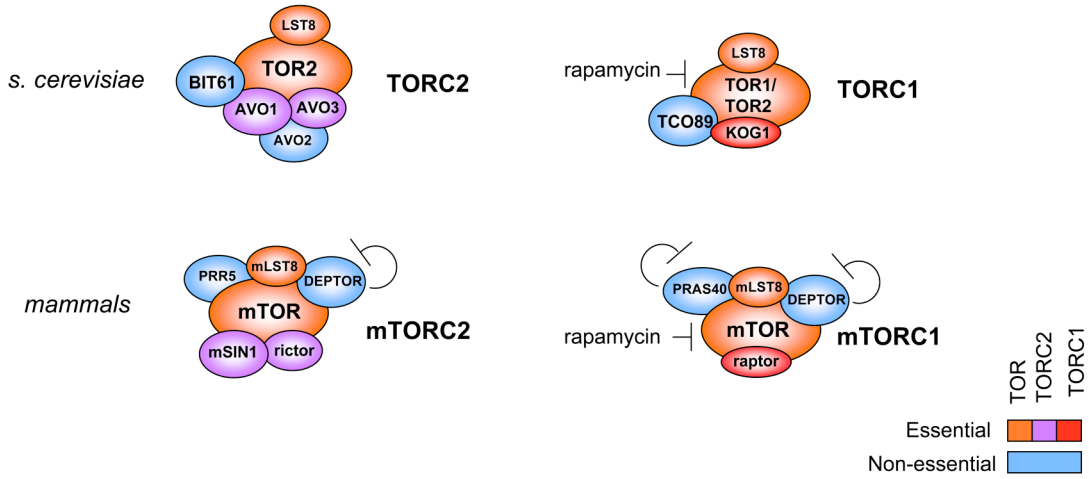

Diagram 2: ***mTORC1 and mTORC2 are conserved regulators of cell growth and proliferation.*** mTOR forms two distinct, multiprotein complexes, mTORC1 and mTORC2, which are structurally and functionally conserved from yeast to human.

Pharmacological inhibition of mTORC1 and mTORC2

The macrolide rapamycin, which forms a complex with FKBP12, binds and allosterically inhibits mTORC1 but not mTORC2. In some cells, prolonged treatment with rapamycin (>24 hours) can inhibit mTORC2 complex assembly (Sarbassov et al., 2006). Recently, several groups have independently developed ATP-competitive inhibitors of mTOR, which include PP242, Torin1, and Ku-0063794 (reviewed in (Sparks and Guertin, 2010)). Pharmacological inhibition of mTOR signaling with ATP-competitive inhibitors lead to the discovery that mTORC1 has rapamycin-resistant functions. In mammals, rapamycin treatment incompletely mimics Raptor deletion (Feldman et al.,

2009; Thoreen et al., 2009). mTOR ATP-competitive inhibitors target both mTORC1 and mTORC2, thus limiting the usefulness of these compounds as research tools. However, ATP-competitive inhibitors of mTOR may prove useful as future cancer therapeutics. PP242 was shown to inhibit the proliferation of cancer cells to a greater extent than rapamycin (Janes et al., 2010).

2.1: *Upstream regulation of mTORC1*

Four major inputs control mTORC1: growth factors, such as insulin; cellular energy levels, such as the AMP:ATP ratio; stress, such as hypoxia; and nutrients, such as amino acids (Diagram 3) (reviewed in (Robitaille and Hall, 2008)). mTORC1 integrates signaling from growth factors, cellular energy levels, and hypoxia through an upstream negative regulator called the tuberous sclerosis complex (TSC1-TSC2), a heterodimeric GTPase-activating protein (reviewed in (Huang and Manning, 2008)).

Growth factors activate mTORC1 by inhibiting TSC1-TSC2

Growth factors, such as insulin, inhibit TSC1-TSC2 through receptor tyrosine kinase (RTK) mediated activation of the phosphoinositide 3-kinase (PI3K) pathway. Insulin binds and activates the insulin receptor (IR), a receptor tyrosine kinase (RTK). The insulin receptor substrate (IRS), and subsequently active PI3K, are then recruited to the insulin receptor (reviewed in (Taniguchi et al., 2006)). The cellular level of phosphatidylinositol-3,4,5-trisphosphate (PI(3,4,5)P3) are maintained by the antagonistic actions of the lipid kinase PI3K and the lipid phosphatase PTEN. Activation of PI3K promotes Akt/PKB and PDK1 recruited to the plasma membrane (reviewed in (Fayard et al., 2010)). At the plasma membrane, Akt/PKB and PDK1 bind directly to PI(3,4,5)P3, where PDK1 phosphorylates and activates Akt/PKB (Alessi et al., 1997). Activated Akt/PKB then phosphorylates and functionally inactivates TSC2 (Gao et al., 2002; Inoki et al., 2002; Tee et al., 2003). The TSC1-TSC2 complex can also be inhibited by canonical MAPK signaling. Similar to Akt/PKB, active ERK or RSK can phosphorylate and inhibit TSC2 GAP activity (Ma et al., 2005). Inactivation of TSC1-TSC2 allows GTP-bound Rheb to activate mTORC1 (Garami et al., 2003; Inoki et al., 2003). In addition to inhibiting TSC1-TSC2, Akt/PKB phosphorylates PRAS40 at Ser247 and inactivates it, which leads to mTORC1 activation (Sancak et al., 2007; Vander Haar et al., 2007). mTORC1 can further phosphorylate PRAS40 at Ser183 and Ser221 (Fonseca et al., 2007; Oshiro et al., 2007). Growth factor activation of mTORC1 leads to the phosphorylation and subsequent degradation of DEPTOR, a negative regulate of mTORC1 activity (Peterson et al., 2009).

Low cellular energy and hypoxic stress inhibit mTORC1 via TSC1-TSC2

In contrast to growth factors that inhibit TSC1-TSC2, low cellular energy and stress activate TSC2 GAP activity. Low energy (high AMP:ATP ratio) activates AMP-activated protein kinase (AMPK) to phosphorylate TSC2 (Inoki et al., 2003). AMPK phosphorylation of TSC2 inhibits mTORC1 by increasing TSC2 GAP activity toward Rheb, a Ras-like GTPase. In addition to phosphorylating TSC2, AMPK also inhibits mTORC1 by directly phosphorylating Raptor (Gwinn et al., 2008). Mutations of the AMPK upstream activating kinase, LKB1, results in hyperactive mTORC1 signaling, thereby linking LKB1 to the TSC1-TSC2 mTORC1 pathway (Corradetti et al., 2004). Hypoxia inhibits mTORC1 signaling through the HIF1-mediated up regulation of two homologous proteins REDD1 and REDD2 (Regulated in Development and DNA damage response genes 1 and 2). REDD acts to activate TSC1-TSC2, independently of LKB1-AMPK, in order to inhibit mTORC1 (Brugarolas et al., 2004; Sofer et al., 2005). The stress and energy signaling pathways are likely to be further associated, as prolonged hypoxia leads to ATP depletion and activation of AMPK.

Amino acids activate mTORC1 downstream of TSC1-TSC2

In contrast to growth factor stimulation, amino acid activation of mTORC1 occurs independently of TSC1-TSC2 (Smith et al., 2005). Activation of mTORC1 by amino acids requires the Ras-like GTPases Rheb and Rag, both of which bind directly to mTORC1 (reviewed in (Duran and Hall, 2012)). Amino acids stimulate mTORC1 localization to a late endosomal/lysosomal compartment containing active Rheb. mTORC1 is recruited to the lysosomal compartment by the actions of lysosome associated protein complexes including Rag heterodimers, Ragulator, and vacuolar-ATPase (v-ATPase). Rag heterodimers (RagA or RagB binding to RagC or RagD) promote the translocation of mTORC1 to the lysosomal compartment (Sancak et al., 2008). Furthermore, Rag heterodimers are recruited to the lysosomal compartment via Ragulator, a scaffolding protein complex that is composed of MP1, p14, and p18 (Sancak et al., 2010). Additionally, v-ATPase, which interacts with Ragulator, is required for amino acid activation of mTORC1

(Zoncu et al., 2011). Thus amino acid stimulated v-ATPase-to-Ragulator-to-Rag-to-mTORC1 binding facilitates the activation of mTORC1 by lysosome associated, active Rheb. hVps34 has also been implicated in the amino acid activation of mTORC1 (Gulati et al., 2008; Nobukuni et al., 2005). However, in flies Vps34 functions downstream of TOR (Juhasz et al., 2008). How amino acids GTP-load, and thereby activate, the Rag GTPases to ultimately activate mTORC1 remains to be determined. Intriguingly, MAP4K3 acts upstream of Rag-mediated mTORC1 activation (Yan et al., 2010). Amino acids stimulate MAP4K3 activity to phosphorylate an unknown substrate upstream of the Rag/Ragulator complex. Where as under amino acid starved conditions, PP2A T61 epsilon inhibits MAP4K3 and thus subsequent mTORC1 activation. Upon activation, mTORC1 promotes protein translation, ribosome biogenesis, lipogenesis, and inhibits autophagy.

Diagram 3

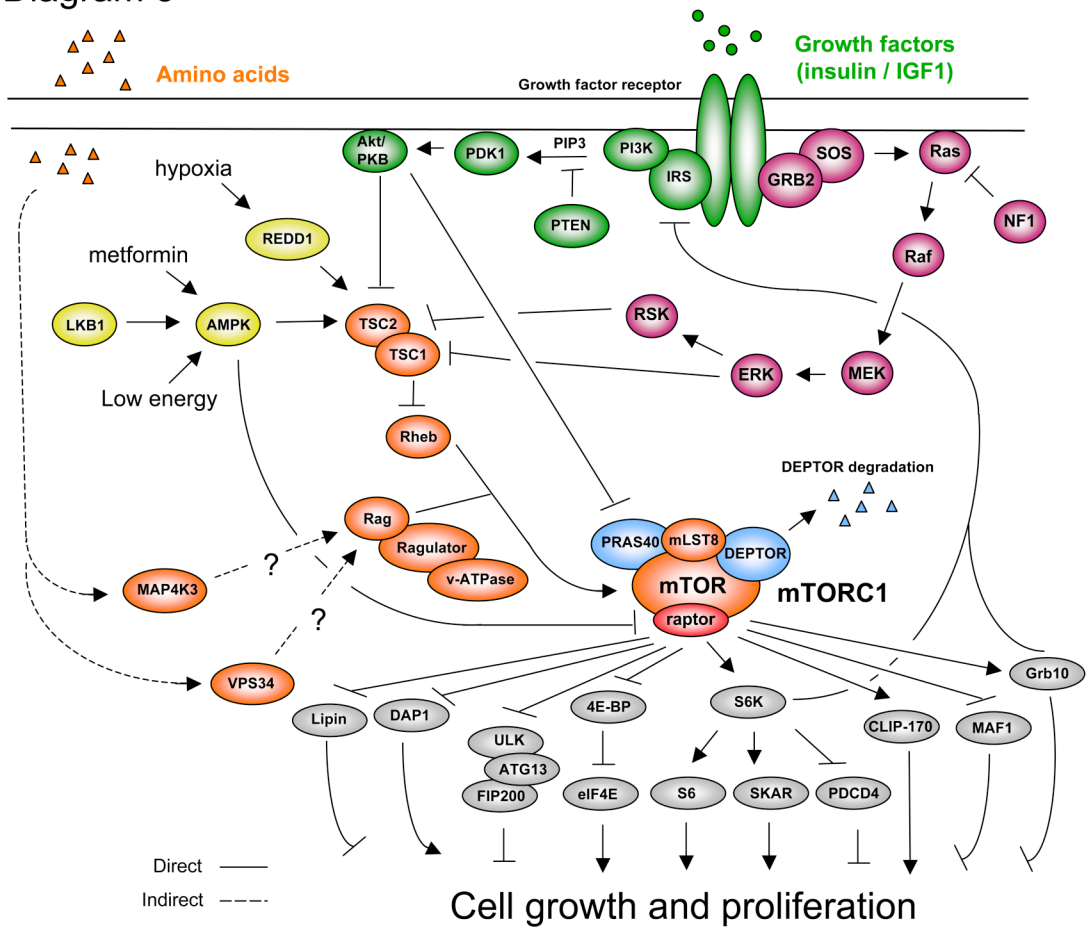

Diagram 3: ***mTORC1 signaling network.*** Amino acid and growth factor activation of mTORC1 promotes cell growth and proliferation.

2.2: *Upstream regulation of mTORC2*

In contrast to the detailed understanding of mTORC1 activation, the upstream regulators of mTORC2 have only recently been described (Diagram 4). Further work is necessary to refine how growth factor signaling activates mTORC2.

Growth factors activate mTORC2 via PI3K signaling

Growth factors signal to mTORC2 via receptor tyrosine kinase (RTK) activation of PI3K. Similar to the activation of mTORC1, upon insulin stimuli, the insulin receptor substrate (IRS) and subsequently active PI3K are recruited to the insulin receptor. The cellular level of phosphatidylinositol-3,4,5-trisphosphate (PI(3,4,5)P3) are maintained by the antagonistic actions of the lipid kinase PI3K and the lipid phosphatase PTEN. Activation of PI3K promotes the association of mTORC2 with intact 80S ribosomes. The interaction between mTORC2 and the ribosome is required for mTORC2 activation, independent of protein translation (Zinzalla et al., 2011) . How (PI(3,4,5)P3) promotes mTORC2 association with the ribosome and subsequent activation remains a mystery, but PI(3,4,5)P3-containing liposomes do not stimulate mTORC2 *in vitro* kinase activity (Frias et al., 2006). Growth factor activation of mTORC2 leads to the phosphorylation and subsequent degradation of DEPTOR, a negative regulate of mTORC2 activity (Peterson et al., 2009).

A mTORC1 mediated negative feedback loop inhibits mTORC2

The TSC1-TSC2 complex may function upstream of mTORC2, but this activity is independent of TSC2 GAP activity (Huang et al., 2008). Loss of TSC1-TSC2 inhibits the phosphorylation of mTORC2 substrates, while simultaneously hyper-activating mTORC1. Hyper-active mTORC1 inhibits mTORC2 signaling through multiple mechanisms involving S6K and Grb10. Active S6K directly phosphorylates Rictor and IRS, which is part of a negative feedback loop that attenuates insulin signaling (Dibble et al., 2009; Harrington et al., 2004; Shah et al., 2004; Treins et al., 2009). mTORC1 phosphorylates and stabilizes Grb10, which also attenuates PI3K signaling to mTORC2 (Hsu et al., 2011; Yu et al., 2011). Additionally, loss of TSC1-TSC2 increases ER

stress, which then inhibits mTORC2 via GSK3β mediated phosphorylation of Rictor (Chen et al., 2011). It is unclear to what degree S6K-mediated Rictor phosphorylation, IRS inhibition, and increased ER stress individually contribute to mTORC2 inactivation.

Alternative mechanisms of mTORC2 activation

In dictyostelium, RasC is an upstream regulator of TORC2, independent of PI3K and canonical MAPK signaling. RasC physically binds to TORC2 and activates it through an unknown mechanism (Cai et al., 2010; Charest et al., 2010). Mammalian Ras can also bind to Sin1 *in vitro*, but the physiological significance of this interaction has not been demonstrated (Schroder et al., 2007). Additionally, mTORC2 and mTORC1 bind to phosphatidic acid (PA), suggesting that PA could facilitate membrane localization of mTOR (Fang et al., 2001). Taken together, this data suggests that growth factors activate mTORC2 though multiple mechanisms. Alternatively, mTORC2 may form distinct sub-complexes that differentially respond to upstream signaling from RTK or G-protein coupled receptor (GPCR) inputs. In support of the second hypothesis, mTOR and Rictor associate with different Sin1 isoforms (Sin1.1, Sin1.2, or Sin1.5) to form three distinct mTORC2 complexes. Interestingly, the *in vitro* kinase activity of mTORC2 containing the Sin1.5 isoform is insensitive to insulin stimulation (Frias et al., 2006). Upon growth factor activation, mTORC2 promotes cell survival and cytoskeleton rearrangement.

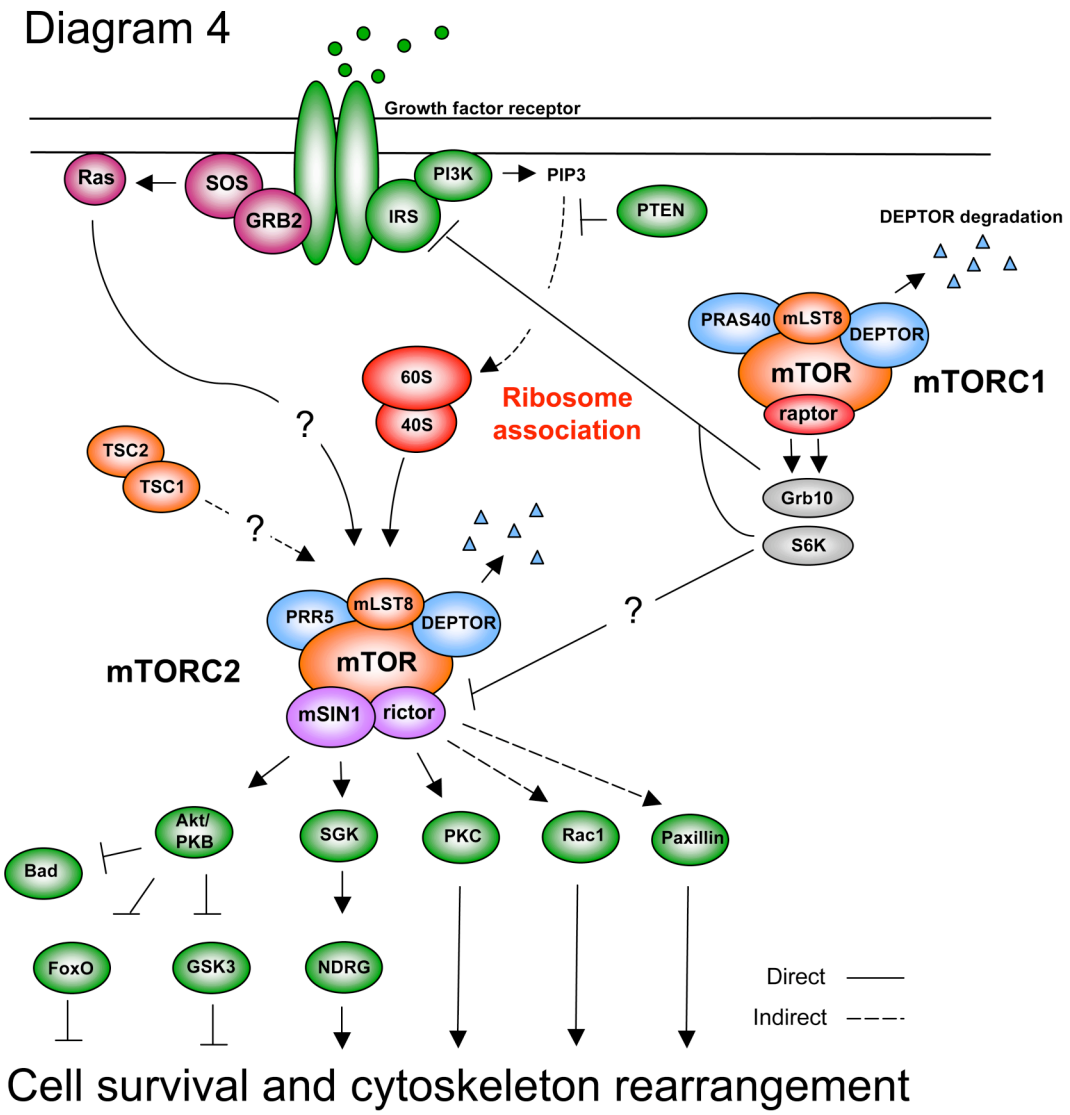

Diagram 4: ***mTORC2 signaling network.*** Growth factor activation of mTORC2 promotes cell survival and cytoskeleton rearrangement.

2.3: *Downstream effectors of mTORC1*

mTORC1 positively regulates protein translation

mTORC1 activates cap-dependent translation initiation and elongation by phosphorylating the eukaryotic initiation factor 4E (eIF4E)-binding protein 1 (4E-BP1) and the p70 ribosomal S6 kinase (S6K) (Beretta et al., 1996; Gingras et al., 2001; Hara et al., 1997; Pearson et al., 1995). The phosphorylation of 4E-BP1 prevents its binding to eIF4E, enabling eIF4E to then associate with eIF4G to stimulate translation initiation (Holz and Blenis, 2005). mTORC1 and phosphoinositide-dependent kinase 1 (PDK1) phosphorylate and activate S6K. Activated S6K then promotes translation initiation by phosphorylating eIF4B, programmed cell death protein 4 (PDCD4) and eEF2 kinase (eEF2K) (Dorrello et al., 2006; Wang et al., 2001). Phosphorylation of eIF4B and PDCD4 activates translation initiation, whereas phosphorylation of eEF2K up regulates translation elongation. S6K also promotes the translation efficiency of spliced mRNAs via S6K-Aly/REF-like substrate (SKAR) (Ma et al., 2008). SKAR associates with mRNAs in a splicing-dependent manner, where it then recruits activated S6K and thereby preferentially enhances translation of spliced mRNAs. Additionally, S6K phosphorylates 40S ribosomal protein S6, but the significance of this phosphorylation is unknown. mTORC1 associates with its substrates 4E-BP1 and S6K through Raptor and a TOR signaling (TOS) motif in 4E-BP1 and S6K (Nojima et al., 2003; Schalm and Blenis, 2002). The TOS motif is a conserved five-amino-acid sequence that is necessary for the *in vivo* phosphorylation of these proteins by mTORC1. A similar substrate recognition motif has not been identified for mTORC2.

mTORC1 promotes ribosome biogenesis

mTORC1 promotes the synthesis of ribosomes and transfer RNAs (tRNAs). Rapamycin blocks the biosynthesis of ribosomes by inhibiting transcription of RNA polymerase I (Pol I)-dependent rRNA genes, Pol II-dependent ribosomal protein genes (RP genes), and Pol III-dependent tRNA genes (reviewed in (Martin and Hall, 2005)). mTOR controls Pol I via the essential transcription initiation factor TIF-1A (Transcriptional Intermediary Factor 1A). Rapamycin treatment leads to TIF-1A inactivation, and thus

impairs formation of the transcription initiation complex. Furthermore, TIF1A translocates from the nucleus to the cytoplasm upon rapamycin-mediated mTORC1 inactivation (Mayer et al., 2004). In yeast, the forkhead-like transcription factor FHL1 functions as a TOR-dependent regulator of Pol II-dependent RP gene expression (Martin et al., 2004). mTORC1 regulates of Pol III-mediated gene expression by directly phosphorylated and inhibiting MAF1, a Pol III transcriptional repressor (Michels et al., 2010). mTORC1 associates with TFIIIC, is recruited to Pol III-transcribed genes, and relieves MAF1 mediated repression, thus allowing Pol III transcription to occur (Kantidakis et al., 2010). mTOR also controls ribosome biogenesis by promoting translation of 5' oligopyrimidine (TOP) mRNAs (Schwab et al., 1999). 5' TOP mRNAs, defined by a 5' oligopyrimidine tract, encode components of the translation apparatus, including ribosomal proteins and elongation factors.

mTORC1 positively regulates lipogenesis

mTORC1 positively regulates *de novo* lipogenesis by activating sterol regulatory element binding protein-1 (SREBP-1) (reviewed in (Laplante and Sabatini, 2009a)). SREBP-1 is an basic helix loop helix transcription factor that regulate lipogenesis by controlling the expression of genes required for cholesterol, fatty acid, and triglycerides synthesis. mTORC1 positively regulates the activity of SREBP-1 by phosphorylating and inhibiting Lipin1 (Peterson et al., 2011). Lipin1 is phosphatidic acid phosphatase that negatively regulates SREBP-1 activity. Growth factor stimulated, mTORC1 mediated phosphorylation of Lipin1 inhibits Lipin1 nuclear localization. Lipin1 that has been phosphorylated by mTORC1 cannot enter the nucleus and inhibit the transcriptional activity of SREBP-1. It remains to be determined how the phosphatidic acid phosphatase activity of Lipin1 inhibits SREBP-1.

mTORC1 inhibits autophagy

mTORC1 negatively regulates macroautophagy, a starvation-induced catabolic process where bulk cytoplasm is enclosed in a double membrane structure and delivered to the vacuole for degradation. Rapamycin induces autophagy in yeast and human tissue culture, demonstrating the conserved

role of mTORC1 as an inhibitor of autophagy (Kamada et al., 2000; Paglin et al., 2005). mTORC1 directly inhibits autophagy by phosphorylating and repressing unc-51-like kinase 1 (ULK1), component of a conserved protein complex composed of ULK1, autophagy-related gene 13 (ATG13) and focal adhesion kinase family-interacting protein of 200 kDa (FIP200) (Ganley et al., 2009; Hosokawa et al., 2009; Jung et al., 2009). mTORC1 also directly phosphorylates and represses DAP1 (Koren et al., 2010). Unlike the ULK1/ATG13/FIP200 complex, DAP1 is a negative regulator of autophagy. Thus via positive and negative regulation, mTORC1 activity tightly controls the absolute level of cellular autophagy. Additionally, dysregulation of mTORC1 may contribute to cancer cell survival, as tumor cells may temporarily activate autophagy to overcome nutrient deprivation under poor growth conditions.

2.4: *Downstream functions of mTORC2*

Unlike mTORC1, which can be specifically inhibited by rapamycin, mTORC2 is insensitive to acute rapamycin treatment. Thus, many of the downstream effectors and physiological functions of mTORC2 remain unknown.

mTORC2 controls AGC kinase activation and protein stability

mTORC1 and mTORC2 phosphorylate and thereby activate several members of the AGC kinase family (reviewed in (Jacinto and Lorberg, 2008)). The AGC kinase activated by mTORC1 includes S6K, while mTORC2 regulates Akt/PKB, SGK, and PKCα (Chung et al., 1992; Facchinetti et al., 2008; Garcia-Martinez and Alessi, 2008; Sarbassov et al., 2005). mTOR phosphorylates the hydrophobic motif (HM) in the AGC kinases to stimulate kinase activity. In S6K and SGK, phosphorylation of the HM creates a docking site for PDK1 and subsequent phosphorylation of the AGC kinase activation loop (reviewed in (Pearce et al., 2009)).

In response to growth factors, mTORC2 phosphorylates Akt/PKB at the hydrophobic motif (Akt/PKB-Ser473) (Sarbassov et al., 2005). Where as, in response to DNA damage, DNA-PK regulates Akt/PKB HM phosphorylation (Bozulic et al., 2008). PDK1 phosphorylates Akt/PKB at the activation loop (Akt/PKB-Thr308) (Alessi et al., 1997). Phosphorylation of both the activation loop and hydrophobic motif is required for the full activation of Akt/PKB. Ablation of Sin1 or Rictor results in loss of Akt/PKB HM phosphorylation, yet the phosphorylation of several Akt/PKB targets is unaffected (Guertin et al., 2006; Jacinto et al., 2006). This suggests that either the phosphorylation of Akt/PKB-Ser473 alters substrate specificity, or that in the absence of active Akt/PKB, other AGC kinases such as SGK, S6K or RSK can phosphorylate a subset of Akt/PKB substrates. Notably, mTORC2 is required for Akt/PKB mediated phosphorylation of Foxo1/3a.

Additionally, mTORC2 regulates phosphorylation of the turn motif (TM) in Akt/PKB and canonical PKCs to promote AGC kinase protein stability (Facchinetti et al., 2008; Ikenoue et al., 2008). In yeast, TOR phosphorylates and activates the AGC kinases Gad8, Ypk2, and Sch9 (Kamada et al., 2005; Matsuo et al., 2003; Urban et al., 2007). Future studies may reveal additional AGC kinases that are regulated by mTOR.

mTORC2 promotes cell survival

mTORC2 deficient cells are sensitive to stress induced apoptosis (Jacinto et al., 2006). mTORC2 promotes cell survival through the activation of Akt/PKB and serum and glucocorticoid-inducible kinase (SGK), two AGC kinases that have both distinct and overlapping substrates. Akt/PKB negatively regulates the pro-apoptotic protein BAD, while SGK regulates the phosphorylation of NDRG1, and both kinases negatively regulate FOXO (Brunet et al., 1999; Datta et al., 1997; Murray et al., 2004). Interestingly, mTORC2 activity is required for prostrate tumorigenesis in PTEN null tumors, and not for normal prostate function (Guertin et al., 2009). This suggests that inhibiting mTORC2-mediated cell survival would be attractive cancer therapeutic target with few side affects to healthy tissue.

mTORC2 regulates cytoskeleton remodeling

mTORC2 regulates actin cytoskeleton remodeling in yeast, and is important for chemotaxis and cell migration in dictyostelium and mammals respectively (Charest et al., 2010; Jacinto et al., 2004; Kamada et al., 2005). Furthermore, loss of mTORC2 perturbs cell morphology and inhibits dendritic tiling (Koike-Kumagai et al., 2009). mTORC2 dependent cytoskeleton remodeling is likely mediated by the mTORC2 effectors PKCα, Paxillin, and Rac1 (reviewed in (Cybulski and Hall, 2009)). The molecular mechanism by which mTORC2 regulates these effectors to control cytoskeleton remodeling has not been well characterized.

Identification of novel mTORC1 and mTORC2 substrates

The mTORC1 and mTORC2 signaling networks have emerged as central controllers of cell growth that are important for development, aging, and diseases such as cancer and diabetes. In mice, tissue specific knockouts of mTOR or mTORC1/mTORC2 components have demonstrated that mTOR plays a key role in regulating muscle atrophy, glucose metabolism, and lipid metabolism (reviewed in (Polak and Hall, 2009)). To better understand how cell growth and proliferation is regulated, we sought to determine which novel substrates mTORC1 and mTORC2 phosphorylate. Relatively few direct substrates of either mTORC1 or mTORC2 are known. Identifying novel mTOR substrates may reveal new therapeutic options to target mTOR dysregulation in cancer and metabolic disorders.

Here we developed a functional proteomics workflow to quantitatively identify novel mTORC1 or mTORC2 regulated phosphorylations, and distinguish between direct mTOR substrates and indirect effectors. In total, we identified 335 novel mTORC1 or mTORC2 substrates or indirect effectors. We identified CAD as a potential mTORC1 substrate. CAD, (carbamoyl-phosphate synthetase 2, aspartate transcarbamylase, and dihydroorotase), is the initial and rate limiting enzyme of the *de novo* pyrimidine synthesis pathway, a conserved and essential metabolic pathway important for cell growth and proliferation (Tatibana and Shigesada, 1972). CAD activity is essential in highly proliferating cells, particularly in S-phase. (Karle and Cysyk, 1984; Swyryd et al., 1974). We validated that CAD is a direct substrate of mTORC1, and determined that mTORC1 positively regulates growth factor stimulated *de novo* pyrimidine synthesis to promote S-phase progression. Thus our quantitative phosphoproteomic workflow revealed a novel mTORC1 substrate that positively regulates cell proliferation. Our research provides new insights into how signaling networks regulate the synthesis of essential metabolic building blocks such as proteins, lipids, and nucleotides.

mTOR autophosphorylation is specific to mTORC2

Separately, we set out to investigate the functional consequence of mTOR-Ser2481 phosphorylation, which occurs within a repressor domain. We show that mTOR autophosphorylation at Ser2481 is specific to mTORC2,

requires an intact mTORC2 complex, and is stimulated by growth factors. Unexpectedly, mTORC2 autophosphorylation at Ser2481 temporally occurred after the phosphorylation of mTORC2 substrates. Furthermore, mTOR autophosphorylation at Ser2481 negatively regulated mTORC2 *in vitro* activity towards Akt/PKB. However the function of mTOR-Ser2481 phosphorylation *in vivo* remains elusive, as mutation of mTOR-Ser2481 did not alter Akt/PKB phosphorylation *in vivo*.

3.0: Results

3.1: *Quantitative phosphoproteomics reveal that mTORC1 phosphorylates CAD and positively regulates de novo pyrimidine synthesis*

Quantitative phosphoproteomics reveals 335 novel mTORC1 and mTORC2 effectors

Relatively few direct substrates of either mTORC1 or mTORC2 are known. Here we developed a functional proteomics workflow to quantitatively identify novel mTORC1 or mTORC2 regulated phosphorylations, and distinguish between direct mTOR substrates and indirect effectors. We integrated stable isotope labeling by amino acids in cell culture (SILAC) (Ong et al., 2002), preparative SDS-PAGE fractionation (Li et al., 2007), phosphopeptide enrichment (Bodenmiller et al., 2007), high accuracy mass spectrometry (Olsen et al., 2005), and bioinformatic programs (Cox and Mann, 2008) to quantify and identify mTORC1 or mTORC2 regulated phosphorylation changes *in vivo*. Mass spectrometry (MS) has been used successfully to analyze the global, *in vivo* phosphorylation targets of kinases and phosphatases (Bodenmiller et al., 2010; Pan et al., 2009). To identify the specific mTORC1 and mTORC2 regulated phosphoproteomes, we deleted Raptor or Rictor using an inducible gene knockout system in mouse embryonic fibroblasts (MEFs) (Cybulski et al., 2012; Patursky-Polischuk et al., 2009). Raptor and Rictor are essential components of mTORC1 and mTORC2, respectively (Figure 1A).

We then performed a series of quantitative phosphoproteomic experiments to identify novel proteins whose phosphorylation changed in an mTORC1 or mTORC2 dependent manner (Figure 1B). Using a SILAC triple label strategy, we analyzed four biological replicate experiments, rotating each SILAC label per biological replicate. Each biological replicate was measured as two technical replicates yielding a total of 220 nano-LC-MS/MS runs. Phosphopeptide quantification was reproducible across technical and biological replicates, with a R^2 value of 0.9884 and 0.6131 respectively (Figure 1C and Figure 1D). Using a 1% false discovery rate (FDR), we detected 4584 unique phosphorylation sites on 1398 proteins.

For a phosphorylation to be identified as being regulated by mTORC1 or mTORC2, we chose a stringent cut-off of >1.5 standard deviations (SD) from the $\log_2$ transformed mean ratio (iRapKO/Control, iRicKO/Control, or iRicKO/iRapKO) (Figure 1E). Furthermore the phosphorylation must have been detected in 2 out of 4 biological replicates in the Raptor knockout or Rictor knockout experiments. In total, the phosphorylations of 335 proteins were significantly changed, identifying these as mTOR substrates or indirect effectors (Table 1). We detected and correctly identified 18 previously validated mTORC1 or mTORC2 regulated phosphorylations on 9 mTOR effectors including Raptor, Rictor, GSK3β, NDRG1, PRAS40, and S6. We confirmed by western blot that the *in vivo* phosphorylation of GSK3β-pS9, NDRG1-pT330, and S6-pS235/236 match our observed SILAC ratios, further validating our phosphoproteomic analysis (Figure 2B).

To identify a direct substrate of mTOR, we then focused on the phosphorylations that were down regulated by mTORC1 or mTORC2 inhibition, respectively. Many of the novel effectors are implicated in cancer and metabolic diseases, but have no known links to mTOR (Figure 1F). Thus mTORC1 and mTORC2 control cell growth and proliferation by regulating a diverse set of direct substrates and indirect effectors. Additionally, we compared our mTOR regulated phosphoproteome to previously published studies (Hsu et al., 2011; Yu et al., 2011). These studies and our own incompletely identified the known mTOR effectors, suggesting additional novel mTORC1 or mTORC2 substrates remain to be revealed (Figure 1G). Thus all three datasets are likely sampling different parts of the global mTOR regulated phosphoproteome.

Figure 1

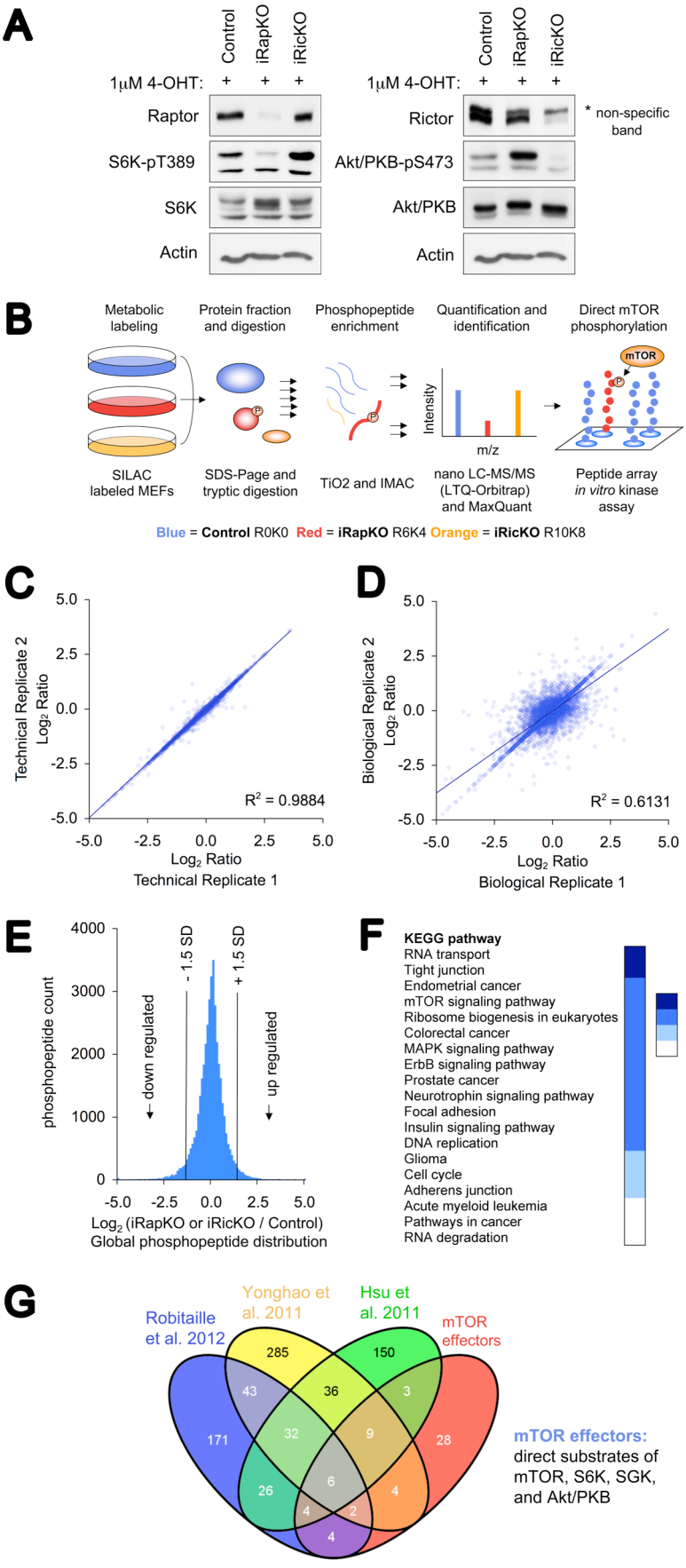
A
Control
iRapKO
iRicKO
1μM 4-OHT: + + +
Raptor
S6K-pT389
S6K
Actin
Rictor
Akt/PKB-pS473
Akt/PKB
* non-specific band
B
Metabolic labeling
Protein fraction and digestion
Phosphopeptide enrichment
Quantification and identification
Direct mTOR phosphorylation
mTOR
Intensity
m/z
SILAC labeled MEFs
SDS-Page and tryptic digestion
TiO2 and IMAC
nano LC-MS/MS (LTQ-Orbitrap) and MaxQuant
Peptide array in vitro kinase assay
Blue = Control R0K0 Red = iRapKO R6K4 Orange = iRicKO R10K8
C
Technical Replicate 2 Log2 Ratio
R2 = 0.9884
Log2 Ratio
Technical Replicate 1
D
Biological Replicate 2 Log2 Ratio
R2 = 0.6131
Log2 Ratio
Biological Replicate 1
E
phosphopeptide count
- 1.5 SD
+ 1.5 SD
down regulated
up regulated
Log2 (iRapKO or iRicKO / Control)
Global phosphopeptide distribution
F
KEGG pathway
RNA transport
Tight junction
Endometrial cancer
mTOR signaling pathway
Ribosome biogenesis in eukaryotes
Colorectal cancer
MAPK signaling pathway
ErbB signaling pathway
Prostate cancer
Neurotrophin signaling pathway
Focal adhesion
Insulin signaling pathway
DNA replication
Glioma
Cell cycle
Adherens junction
Acute myeloid leukemia
Pathways in cancer
RNA degradation
p-value
>0.00001
>0.0001
>0.001
N.D.
G
Robitaille et al. 2012
Yonghao et al. 2011
Hsu et al. 2011
mTOR effectors
285
150
43
36
3
171
32
9
28
26
6
4
4
2
4
mTOR effectors: direct substrates of mTOR, S6K, SGK, and Akt/PKB

Figure 1: ***Functional phosphoproteomics reveals 335 novel mTORC1 or mTORC2 regulated phosphoproteins.*** **A.** Knockout of Raptor or Rictor inhibits mTORC1 or mTORC2 signaling, respectively. We generated floxed Raptor or Rictor mouse embryonic fibroblasts with an intergraded 4-OHT inducible Cre. Three days after 4-OHT treatment, Raptor or Rictor protein levels are decreased by 90%. This decrease corresponds to a decrease in mTORC1 or mTORC2 signaling. * denotes non-specific band. **B.** Quantitative phosphoproteomic workflow used to identify mTORC1 or mTORC2 regulated phosphorylations. We detected 4584 phosphorylation sites on 1398 proteins and identified 335 novel mTOR effectors. **C.** Phosphopeptide quantification is robust across technical replicates, R^2=0.9884. **D.** Phosphopeptide quantification is reproducible between biological replicates, R^2=0.6131. **E.** Global distribute of all 4584 phosphopeptides. Regulated phosphorylations are +/- >1.5 SD of the $\log_2$ transformed ratio mean. **F.** KEGG pathways that are statistically enriched in the mTOR regulated phosphoproteins. **G.** Comparison of mTOR regulated phosphoproteins identified in three different phosphoproteomic studies.

Identification of mTOR consensus motif

To determine if mTOR controls the phosphorylation of specific motifs *in vivo*, we analyzed the primary amino acid sequence surrounding the down regulated phosphorylations with Motif-X (Schwartz and Gygi, 2005). Phosphorylation motif analysis revealed that mTORC1 and mTORC2 regulates the phosphorylation of pS-P and pT-P sites (potential direct mTOR phosphorylation sites) and R-x-x-pS sites (consensus site for AGC kinases, including mTOR effectors proteins S6K, SGK, Akt/PKB, and canonical PKCs) (Figure 2A). We confirmed the *in silico* results by examining the phosphorylation of R-x-x-pS/T sites known to be regulated by AGC kinases Akt/PKB, SGK, and S6K (Figure 2B). These results suggest that mTOR regulates the novel effectors directly or via AGC kinase activation.

To distinguish between direct mTOR substrates and indirect effectors, we performed a peptide array mTOR *in vitro* kinase assay. mTOR robustly phosphorylated peptides corresponding to validated mTOR substrates Akt/PKB and 4E-BP1 (Figure 2C). In total 33% of peptides identified in the mTORC1 and mTORC2 regulated phosphoproteomes were directly phosphorylated by mTOR *in vitro* (Figure 2D and Table 1). Thus the proteins these phosphorylation sites correspond to are identified as potential direct mTOR substrates.

Phosphorylation motif analysis of the peptides which mTOR can phosphorylate *in vitro* revealed that mTOR phosphorylated two distinct types of phosphorylation motifs: pS/T-P sites and hydrophobic motif (HM) F-x-x-F-pS-Y sites (Figure 2E). We confirmed that mTORC1 and mTORC2 regulate HM phosphorylations *in vivo* using phospho-specific motif antibodies against bulky hydrophobic (Φ) sites (Figure 2F). Many of the putative phosphorylations detected by the motif antibodies were similar, and therefore mTOR independent. However, we detected thirteen phosphorylations that were regulated by mTORC1 or mTORC2.

The remaining sites that mTOR phosphorylated *in vitro* did not contain a well defined amino acid motif. *In vivo* and *in vitro*, mTORC1 can also phosphorylate serine followed by glutamine residues (pSer-Gln) such as those in MAF1 (Michels et al., 2010). This is consistent with our data that mTOR directly phosphorylated a wide range of motifs. Thus mTOR is a promiscuous kinase, having a preference rather than an absolute requirement for serine or threonine followed by a proline (Ser/Thr-Pro), and serine or threonine flanked by bulky hydrophobic residues (Φ-Ser/Thr-Φ).

Figure 2

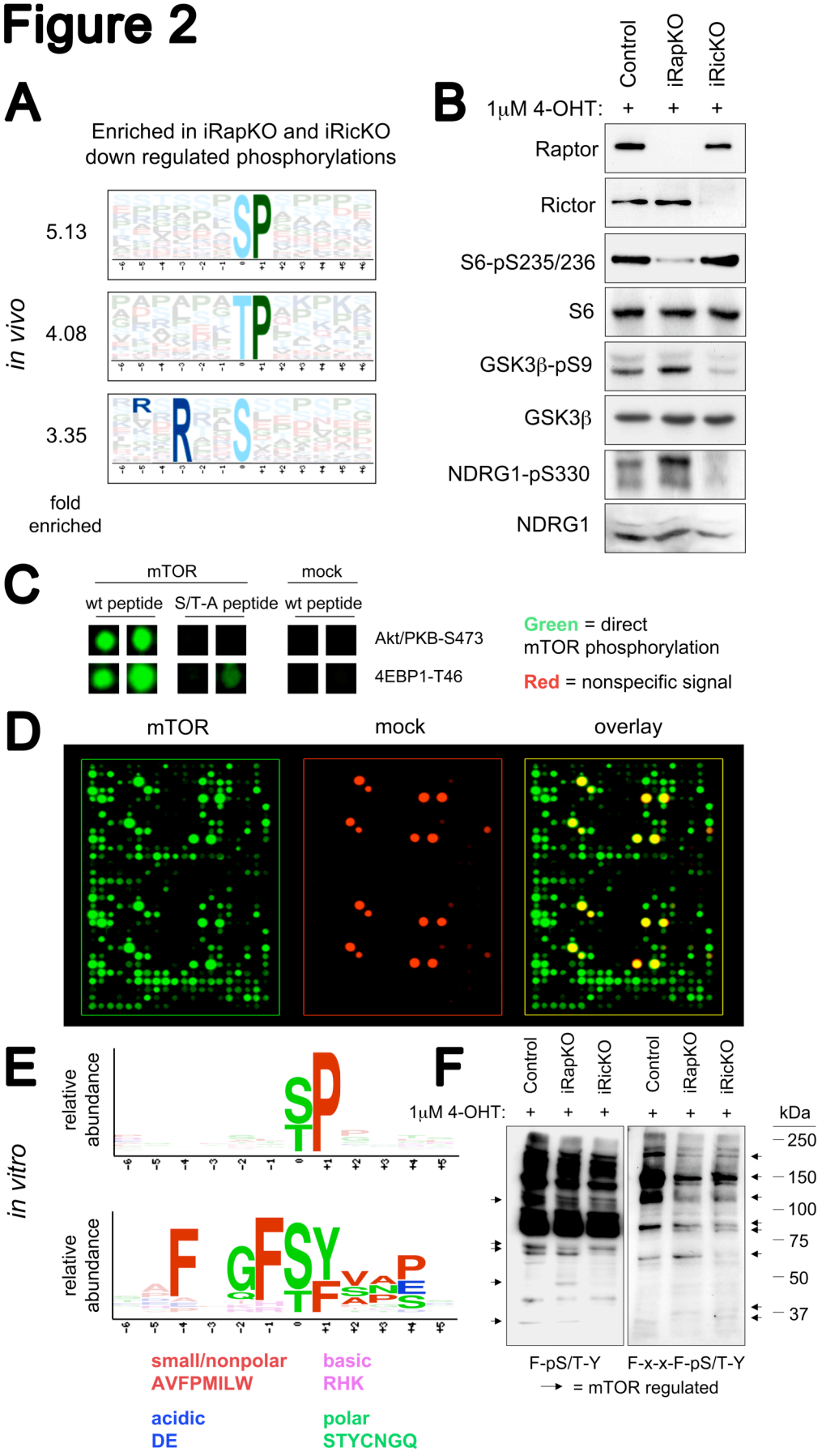
A
Enriched in iRapKO and iRicKO
down regulated phosphorylations
in vivo
5.13
4.08
3.35
fold
enriched
B
Control
iRapKO
iRicKO
1μM 4-OHT: + + +
Raptor
Rictor
S6-pS235/236
S6
GSK3β-pS9
GSK3β
NDRG1-pS330
NDRG1
C
mTOR
mock
wt peptide
S/T-A peptide
wt peptide
Akt/PKB-S473
4EBP1-T46
Green = direct
mTOR phosphorylation
Red = nonspecific signal
D
mTOR
mock
overlay
E
in vitro
relative
abundance
relative
abundance
small/nonpolar
AVFPMILW
basic
RHK
acidic
DE
polar
STYCNGQ
F
Control
iRapKO
iRicKO
Control
iRapKO
iRicKO
1μM 4-OHT: + + + + + +
kDa
250
150
100
75
50
37
F-pS/T-Y
F-x-x-F-pS/T-Y
= mTOR regulated

Figure 2: ***33% of the phosphopeptides identified by mass spectrometry can be directly phosphorylated by mTOR.*** **A.** Analysis of the amino acid sequence surrounding phosphorylations down regulated by deletion of Raptor or Rictor. Motif-x was used to determine phosphorylation motifs that were significantly enriched above the mouse proteome. **B.** Phosphorylation at Akt/PKB, SGK, or S6K regulated R-x-x-S/T sites are decreased by Raptor or Rictor knockout. Four days after 4-OHT treatment, cells were harvested and mTOR signaling pathway was analyzed by western blot. Protein lysates are the same as those in Figure 3F, and Supplemental Figure 7. **C.** Peptide array mTOR *in vitro* kinase positive controls are shown in insert. **D.** *In vitro* phosphorylation of novel mTOR regulated peptides by recombinant mTOR. Peptides identified in the mTORC1 and mTORC2 regulated phosphoproteomes were synthesized on cellulose membranes using a MultiPep robotic spotter. Membranes were then subjected to an *in vitro* kinase assay using gamma-^{32}P ATP and recombinant mTOR. Each peptide was synthesized in duplicate with a matching peptide where Ala was substituted for Ser/Thr. Image was false colored for visual clarity **E.** mTOR primarily phosphorylates pS/T-P sites (37.5%) and F-x-x-F-pS-Y sites (25.0%). *In vitro* kinase motif analysis was performed with WebLogo. **F.** mTORC1 and mTORC2 regulate at least 13 distinct hydrophobic (Φ) site phosphorylations *in vivo.* iRapKO and iRicKO MEFs were treated as in Figure 2B. Protein lysates are the same as those in Figure 2B, and Figure 3F.

Identification of CAD as a novel mTORC1 substrate

To identify a direct substrate of mTORC1 or mTORC2, we focused further on the novel effectors whose peptide could be phosphorylated by mTOR *in vitro*. One putative substrate of particular interest to us was CAD (carbamoyl-phosphate synthetase 2, aspartate transcarbamylase, and dihydroorotase). CAD is the initial and rate limiting enzyme of the *de novo* pyrimidine synthesis pathway, a conserved and essential metabolic pathway important for cell growth and proliferation (Tatibana and Shigesada, 1972). In our phosphoproteome data, CAD-Ser1859 phosphorylation was specifically down regulated by Raptor knockout (Table 1), and mTOR robustly phosphorylated the same peptide *in vitro* (Figure 3A). Additionally, we identified that CAD contains a putative TOS motif of FELVI (aa 1389 – 1393) (Figure 3B and 3C). CAD enzymatic activities and protein are conserved from worms to human, while in yeast CAD function is conserved by the action of two genes, URA2/URA4. In mammals, similar to the activation of mTORC1, *de novo* pyrimidine synthesis is positively regulated by growth factors (Graves

et al., 2000; Smith and Buchanan, 1979). Thus CAD was an ideal candidate to be an mTORC1 substrate.

To validate that mTORC1 regulation of CAD phosphorylation was not specific to MEFs, we examined if rapamycin could inhibit CAD phosphorylation in HeLa cells. Growth factors robustly stimulated the phosphorylation of CAD-pS1859 in a rapamycin sensitive manner (Figure 3D), without altering CAD expression (Figure 3E). Therefore we generated a phospho-specific antibody against CAD-Ser1859. We validated that the antibody specially recognized CAD-Ser1859 phosphorylation (Figure 3F). In agreement with our mass spectrometry results, western blot experiments confirmed that CAD-Ser1859 phosphorylation was stimulated by growth factors in a rapamycin sensitive manner (Figure 3E). Similarly, CAD-Ser1859 phosphorylation was specifically inhibited upon Raptor, but not Rictor, knockout (Figure 3G). We then confirmed that mTOR could phosphorylate CAD *in vitro* (Figure 3H). In agreement with our results *in vivo*, mass spectrometry identified that mTOR phosphorylated CAD *in vitro* at Ser1859 (data not shown). Thus CAD is a novel mTORC1 substrate. Finally, to determine if mTORC1 mediated phosphorylation of CAD was physiologically relevant, we examined the phosphorylation of CAD in liver specific TSC1 knockout mice (L-TSC1 KO). Deletion of tuberous sclerosis protein 1 (TSC1) leads to hyper activation of mTORC1 (Shah et al., 2004). In the liver, CAD-Ser1859 phosphorylation was increased in TSC1 knockout mice. Furthermore, the increase in CAD Ser1859 phosphorylation was specifically inhibited by rapamycin treatment (Figure 3I). Thus mTORC1 directly regulates the rapamycin sensitive phosphorylation of CAD *in vivo and in vitro*.

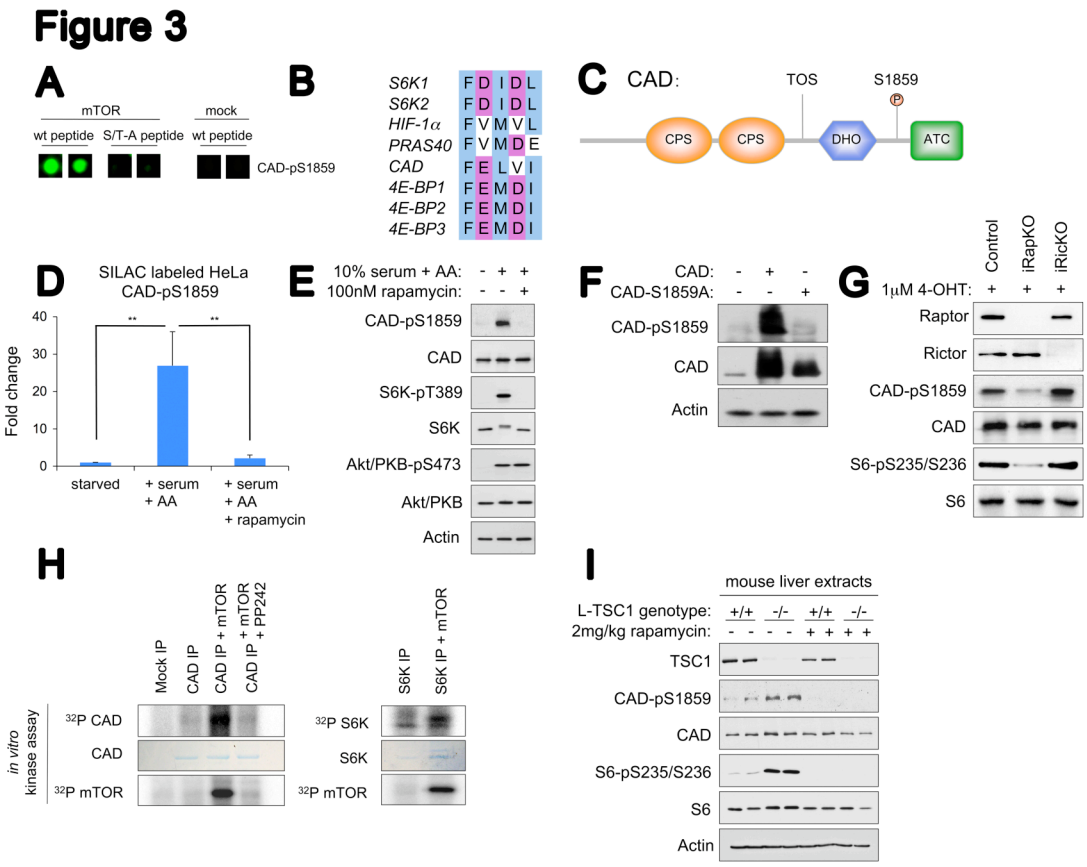

Figure 3: ***CAD is a novel mTORC1 substrate*** **A.** Peptide array mTOR *in vitro* kinase spots for CAD-Ser1859. **B.** CAD contains a putative TOS motif of FELVI (aa 1389 – 1393). TOS motif conservation in human mTORC1 substrates. **C.** Diagram of CAD protein, mTORC1 regulated phosphorylation site, and TOS motif. The first three metabolites of the *de novo* pyrimidine synthesis pathway are synthesized by the CPS (carbamoyl-phosphate synthetase), ATC (aspartate transcarbamylase) and DHO (dihydroorotase) domains of CAD, respectively. **D.** Rapamycin inhibits growth factor stimulated phosphorylation of CAD-pS1859. Values are expressed as mean +/- SD. ** indicates a statistical difference of **p<0.01. n=3. HeLa cells were grown in SILAC media for 7 days and then treated with rapamycin for 1h. CAD was immunoprecipitated, trypsinized, and analyzed by nano-LC-MS/MS. **E.** 1 hour rapamycin treatment in HeLa cells does not alter CAD expression, while CAD-Ser1859 phosphorylation is inhibited. HeLa cells were serum starved for starved 16 hours, prior to restimulation with 10% dialyzed serum +/- 100nM rapamycin. **F.** G9c cells, which lack endogenous CAD, were transfected with either wild type or mutant CAD in the presence of growth factors. The mTORC1 dependent phosphorylation of CAD is only detected in wild type CAD. **G.** Deletion of Raptor inhibits CAD-Ser1859 phosphorylation. iRapKO and iRicKO MEFs were treated as in Figure 2B. Protein lysates are the same as those in Figure 2B, and Supplemental Figure 7. **H.** mTOR phosphorylates CAD *in vitro* in a PP242 sensitive manner. CAD was immunoprecipitated and incubated with mTOR for 30min at 37C. S6K is an mTORC1 *in vitro* kinase

assay positive control. **I.** CAD-Ser1859 phosphorylation is regulated by mTORC1 in the mouse liver. Ctrl: TSC1-fl/fl mice, KO: TSC1-fl/fl; Albumin-Cre mice. 12 week old littermates were starved overnight and treated with rapamycin or sham (0.9% NaCl) for six hours prior to sacrifice.

mTORC1 positively regulates de novo pyrimidine synthesis

We then determined what biological relevance mTORC1 mediated phosphorylation of CAD had on *de novo* pyrimidine synthesis. In *de novo* pyrimidine synthesis, CAD synthesizes the pyrimidine ring from glutamine, bicarbonate, and aspartic acid. The pyrimidine ring is then attached to ribose to form a pyrimidine nucleotide. To measure the rate of *de novo* pyrimidine synthesis, we metabolically labeled newly synthesized pyrimidines with N15-amide labeled glutamine (Figure 4A). We then performed a quantitative metabolic flux analysis using targeted uHPLC-MS/MS to measure the rate of N15 incorporation into UDP and UTP, thus allowing us to determine the relative rate of *de novo* pyrimidine synthesis. N15-amide labeled glutamine was taken up by the cells independent of growth factors or rapamycin treatment (Figure 4B). N15 incorporation was not detected in an intermediate of the pentose phosphate pathway (6-phospho-gluconate (6-PG)) demonstrating the specificity of the N15 labeling to newly synthesized pyrimidines (Figure 4B).

Under starved conditions, we observed a low level of *de novo* pyrimidine synthesis, whereas growth factors stimulated an increased in the synthesis of UDP and UTP. Furthermore, rapamycin treatment completely inhibited the growth factor stimulated *de novo* pyrimidine synthesis, thereby decreasing the absolute *de novo* synthesis of UDP and UTP by 62.4% and 57.8%, respectively (Figure 4B). The observed low to high metabolic flux through *de novo* pyrimidine synthesis is consistent with a CAD enzymatic transition from a low activity to a high activity conformation (Cohen et al., 1985).

Additionally, rapamycin inhibited the growth factor stimulated increase in DHOA, the final CAD synthesized metabolite, as well as OA and UTP intercellular concentrations (Figure 4C). Conversely, rapamycin did not inhibit the growth factor stimulated increase in purine synthesis, as measured by GDP and GTP concentrations (Figure 4D). Thus, mTORC1 positively

regulates CAD activity to control growth factor stimulated *de novo* pyrimidine synthesis.

Figure 4

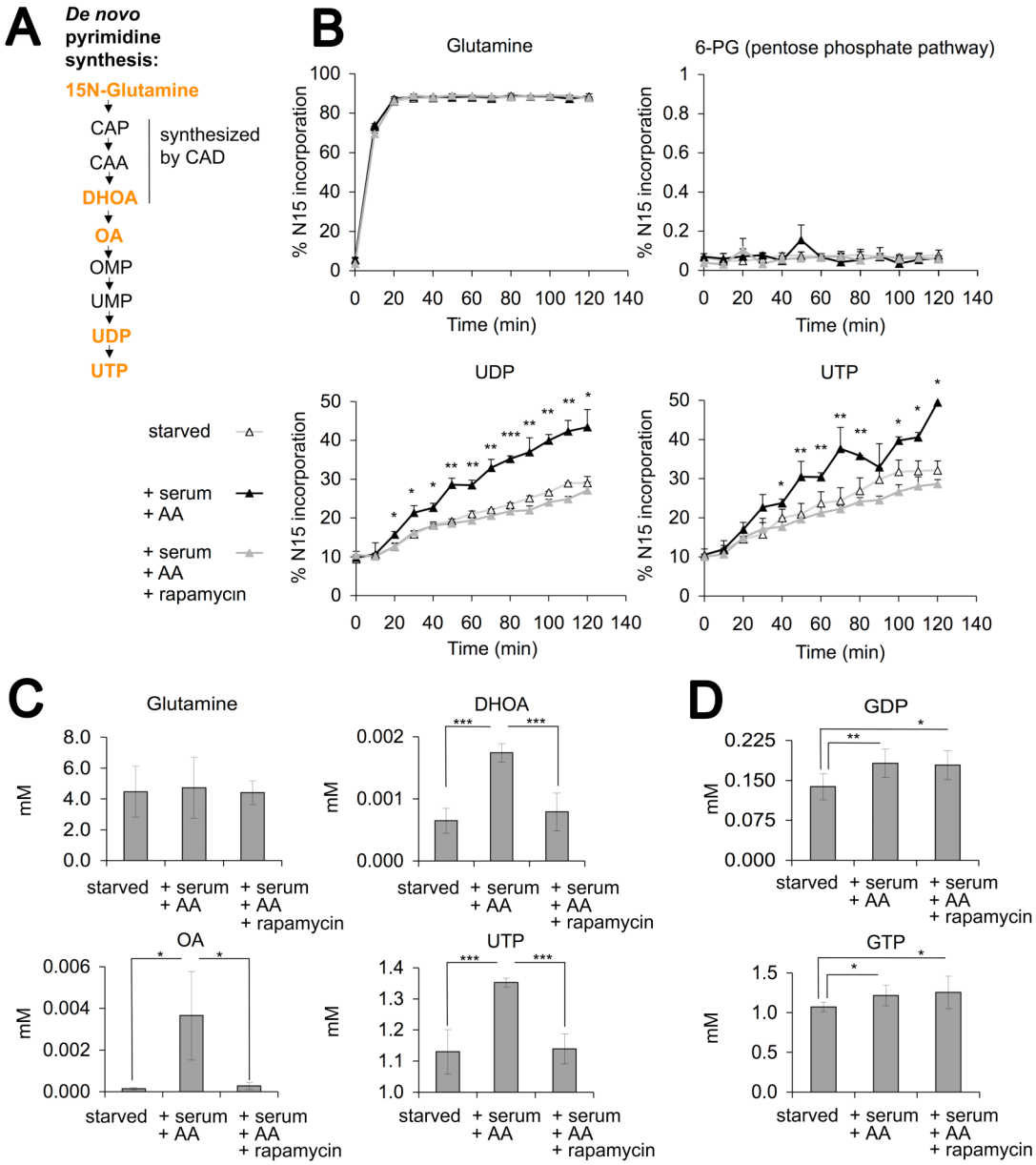

Figure 4: mTORC1 *positively regulates growth factor stimulated de novo pyrimidine synthesis.* A. Diagram depicting *de novo* pyrimidine synthesis pathway. **B.** Rapamycin treatment inhibits growth factor stimulated *de novo* pyrimidine synthesis of UDP and UTP. HeLa cells were serum starved for starved 16 hours, prior to restimulation with 10% dialyzed serum +/- 100nM rapamycin. At time point 0, pyrimidines were metabolically labeled by feeding HeLa cells 4mM N15-amide labeled glutamine. Metabolites were then measured using a targeted approach with uHPLC-MS/MS. **C.** Rapamycin inhibited the growth factor stimulated increase in DHOA, OA, and UTP cellular concentrations. **D.** Rapamycin does not inhibit the growth factor stimulated increase in GDP or GTP levels. Total cellular concentrations of metabolites

were calculated by comparing the amount of metabolites in the cells to a N15 labeled internal standard and exogenous metabolite standard curves. Values are expressed as mean +/- SD. * indicates a statistical difference of *p<0.05, **p<0.01, ***p<0.001. n=3-6.

mTORC1 regulates CAD oligomerization

To identify a potential mechanism of how mTORC1 regulates CAD activity, we examined the cellular distribution of endogenous CAD. Growth factors stimulated the formation of punctate structures containing CAD. Whereas rapamycin treatment inhibited the formation of CAD punctate structures, closely resembling serum starvation (Figure 5A and 5B). Punctate structures were only observed in the presence of antibody specific to CAD (data not shown).

In vitro CAD can oligomerize into a hexamer (Lee et al., 1985). Furthermore, CAD orthologs assemble into large oligomers (Zhang et al., 2009). Thus the CAD punctate structures may be CAD oligomers. Using immunoelectron microscopy, we observed that growth factors stimulated the formation of CAD punctate structures in the cytoplasm (Figure 5C). In agreement with the immunofluorescence results, punctate structures were only observed in the presence of antibody specific to CAD (Figure 5C).

Additionally, we tested whether CAD could colocalize with proteins that form punctate structures in immunofluorescence microscopy. CAD did not colocalize with EEA1 (early endosomes), LAMP-2 (lysosomes), Catalase (peroxisomes), and Complex IV subunit I (mitochondria) supporting our hypothesis that the CAD punctate structures are CAD oligomers (Figure 5D).

We then enriched for CAD oligomers using glycerol gradients (Figure 5E and 5F). Growth factors stimulated the formation of CAD oligomers in a rapamycin sensitive manner (Figure 5E and Figure 5G). Furthermore, mutation of CAD-Ser1859 to Ala inhibited the growth factor stimulated formation of CAD oligomers (Figure 5F and Figure 5H). Thus mTORC1-mediated phosphorylation of CAD-Ser1859 promotes growth factor dependent CAD oligomerization.

Figure 5

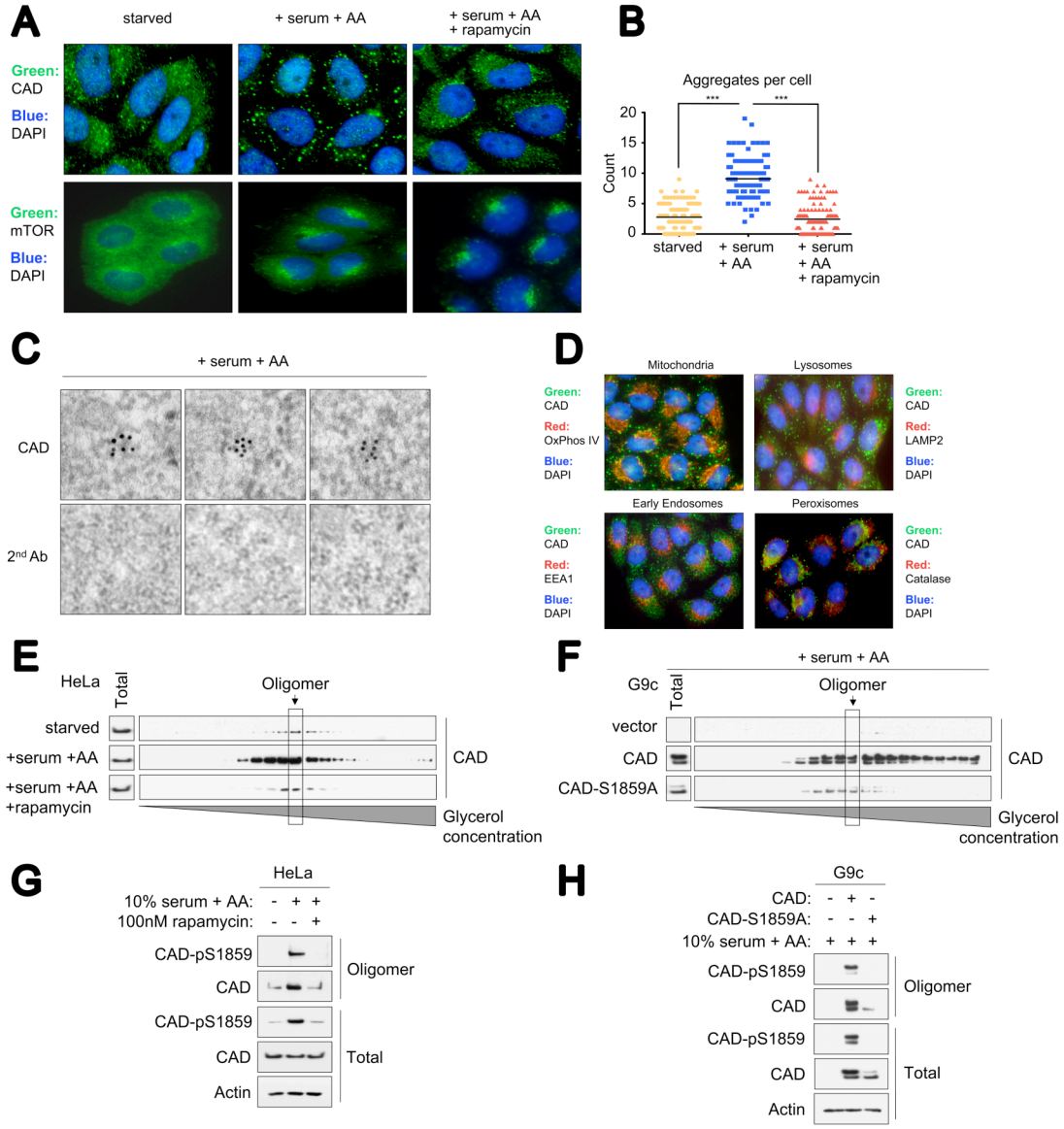

Figure 5: ***Rapamycin regulates CAD oligomerization.*** **A.** Rapamycin inhibits the growth factor stimulated translocation of CAD to punctate structures. HeLa cells were synchronized in early s-phase using a double thymidine block. Following synchronization, cell were serum starved for 16h hours in D-MEM containing with 0.1% D-FCS + 2.5mM thymidine, followed by 30min AA starvation in 1xPBS. Cells were then released in DMEM (starved) or DMEM + 10% D-FCS +2xAA (stimulated) or DMEM + 10% D-FCS + 2xAA + 100nM rapamycin (rapamycin). Endogenous CAD was then visualized by immunocytochemsitry after 1h rapamycin treatment. **B.** Quantification of Figure 5A**.** Black bars represent the mean. *** indicates a statistical difference of $p<0.001$. n=116 cell counted per condition **C.** CAD forms oligomeric structures. HeLa cells were serum starved for starved 16 hours, prior to restimulation with 10% dialyzed serum for 1hour. Endogenous CAD was then visualized by immunoelectron microscopy. Three representative aggregate structures are shown. Punctate structures were only observed in the presence

of antibody specific to CAD**. D.** CAD punctate structures did not colocalize with EEA1 (early endosomes), LAMP-2 (lysosomes), Catalase (peroxisomes), and Complex IV subunit I (mitochondria). HeLa cells were serum starved for starved 16 hours, prior to restimulation with 10% dialyzed serum. Endogenous CAD and the corresponding membrane marker were then visualized by immunocytochemsitry after 1h restimulation. **E.** HeLa cells were serum starved for 16h hours in D-MEM containing with 0.1% D-FCS, followed by 30min AA starvation in 1xPBS. Cells were restimulated with DMEM (starved) or DMEM + 10% D-FCS + 2x AA (stimulated) or DMEM + 10% D-FCS + 2x AA + 100nM rapamycin (rapamycin) for 1 hour. CAD oligomers were then isolated on 10-35% sucrose gradients. **F.** Mutation of CAD-Ser1859 to Ala inhibited the growth factor stimulated formation of CAD oligomers. G9c cells were transfected with either wild type or mutant CAD. CAD oligomers were isolated on 10-35% sucrose gradients. Gradient fractions are run across multiple SDS-PAGE gels. **G.** The peak fractions from CAD oligomers isolated in Figure 5E are shown. **H.** The peak fractions from CAD oligomers isolated in Figure 5F are shown.

mTORC1 regulates cell cycle progression

In the absence of exogenous pyrimidines, CAD activity is essential for cell proliferation (Patterson and Carnright, 1977), and particularly important for proper S-phase progression (Mitchell and Hoogenraad, 1975). Therefore, we examined if the decrease in *de novo* pyrimidine synthesis induced by rapamycin treatment had a physiological effect on cell cycle progression. Cells were synchronized in early S-phase using a double thymidine block to circumvent the G1/S arrest that prolonged rapamycin treatment induces (Heitman et al., 1991; Terada et al., 1993). Similar to serum starvation, rapamycin treatment delayed S-phase progression by 32% (Figure 6A). As the cells entered G2/M, the delay in cell cycle progression increased to 52%, consistent with an additional requirement for mTORC1 in G2/M (Ramirez-Valle et al., 2010). Furthermore, the rapamycin-induced delay in cell cycle progression was rescued by the addition of exogenous pyrimidines (Figure 6A).

In cells lacking endogenous CAD activity, cell proliferation is dependent on the supply of exogenous pyrimidines (Figure 6B). In the absence of exogenous pyrimidines, expression of wild type CAD rescued the cell proliferation defect, while expression of mutant CAD (Ser1859Ala) that cannot be phosphorylated by mTORC1 only partially restored cell proliferation (Figure

6B). This data supports our model where mTORC1 phosphorylation of CAD promotes cell proliferation by regulating CAD oligermization, and thus a CAD enzymatic transition from a low activity state to a high activity oligomerized conformation. Thus mTORC1 controls cell proliferation in part by positively regulating *de novo* pyrimidine synthesis.

To examine the potential clinical relevance of our results, we further tested the ability of rapamycin to inhibit cell proliferation. Everolimus, a synthetic rapamycin derivative, is used currently as a cancer therapeutic (Motzer et al., 2008). However, rapamycin does not strongly inhibit proliferation in all cell types (Figure 6C), (Neshat et al., 2001). Therefore we reasoned that inhibition of mTORC1 combined with a chemotherapeutic nucleoside (6-azauridine) would synergistically deplete pyrimidine pools, and thus be a potent inhibitor of proliferation in cell types that are resistant to rapamycin treatment. In HeLa cells, we observed that the addition of rapamycin and 6-azauridine inhibited cell proliferation to a greater extent than rapamycin or 6-azauridine alone (Figure 6D). Proliferation was inhibited by 42.8% at low nanomolar concentrations of each drug (10nM rapamycin + 64nM 6-azauridine). Thus the combination of rapamycin and 6-azauridine together may increase the therapeutic window for cancer therapy, particularly in tumors that do not respond to rapamycin treatment.
In summary (Figure 6E), we have shown that mTORC1 regulates cell proliferation, in part, by regulating CAD phosphorylation and oligermization to promote *de novo* pyrimidine synthesis.

Figure 6

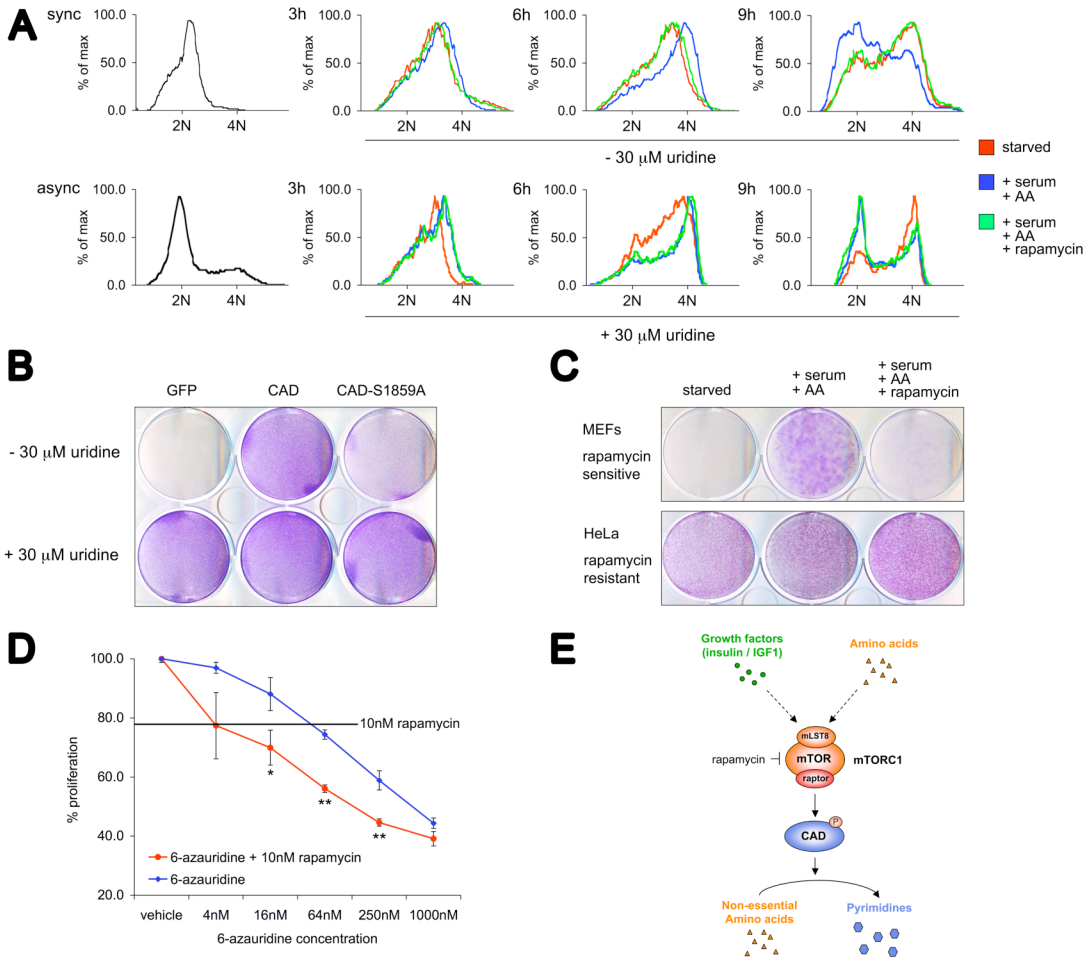

Figure 6: ***Rapamycin inhibits s-phase progression.*** **A.** Exogenous pyrimidines rescue the rapamycin-induced delay in cell cycle progression. HeLa cells were synchronized in early S-phase using a double thymidine block. Cells were then released in DMEM (starved) or DMEM + 10% D-FCS + 2x AA (stimulated) or DMEM + 10% D-FCS + 2x AA + 100nM rapamycin (rapamycin), +/- 30μM uridine. DNA content was analyzed by flow cytometry. **B.** Expression of wild type CAD, but not mutant CAD, restored normal cell proliferation. G9c cells, which lack endogenous CAD activity, were transfected with either wild type or mutant CAD. Cells were visualized with crystal violet five days after transfection. **C.** Rapamycin strongly inhibits proliferation in MEFs, but not HeLa cells. MEFs or HeLa cells were grown for three days in DMEM + 0.1% D-FCS (starved), DMEM + 10% D-FCS (stimulated), or DMEM + 10% D-FCS + 100nM rapamycin (rapamycin). Cells were then visualized with crystal violet. **D.** Rapamycin and 6-azauridine inhibited cell proliferation to a greater extent than rapamycin or 6-azauridine alone. HeLa cells were grown for 42 hours +/- rapamycin and 6-azauridine. Cell proliferation was then measured with an AlamarBlue assay. The black bar represents cell proliferation in the presence of 10nM rapamycin. Values are expressed as mean +/- SD. * indicates a statistical difference between (rapamycin + 6-azauridine) vs (rapamycin) or (6-azauridine) alone. *p<0.05, **p<0.01. n=3 **E.**

mTORC1 promotes cell proliferation by regulating CAD phosphorylation, oligermization, and activity to positively regulate *de novo* pyrimidine synthesis.

3.2: *mTOR autophosphorylation at Ser2481 regulates mTORC2 in vitro kinase activity*

Growth factors stimulate mTOR autophosphorylation at Ser2481 specifically in mTORC2

To investigate the functional consequence of mTOR phosphorylation, we examined how growth factors affect mTOR-Ser2481 phosphorylation. mTOR phosphorylation at Ser2481 is stimulated by insulin or serum, and inhibited by wortmannin (Figure 7A). Thus mTOR phosphorylation at Ser2481 is growth factor responsive. This data is inconclusive to determine if Phosphoinositide 3-kinase (PI3K) is upstream of mTORC2 as wortmannin can directly inhibit mTOR. Acute (1 hour) rapamycin treatment inhibits mTORC1 but not mTORC2. As mTOR-Ser2481 phosphorylation is not sensitive to acute rapamycin treatment (Figure 7A) (Peterson et al., 2000), we hypothesized that this phosphorylation site might be specific to mTORC2. To test this, we isolated mTORC1 or mTORC2 complexes by immuoprecipitating Raptor or Rictor, which are specific components of mTORC1 and mTORC2, respectively. We observed that mTOR phosphorylated at Ser2481 was found specifically in mTORC2, whereas mTOR phosphorylated at Ser2448 was observed in mTORC1 and mTORC2 (Figure 7B). We then confirmed that mTOR phosphorylation at Ser2481 requires mTOR kinase activity *in vivo* (Figure 7C) and *in vitro* (data not shown). Thus mTOR autophosphorylation at Ser2481 is observed specifically within mTORC2. Additionally, we observed that mTOR phosphorylated multiple interacting partners, including Raptor, Rictor, and Sin1, *in vitro* (Figure 7D).

Next we examined if mTOR autophosphorylation at Ser2481 required specific components of mTORC1 (Raptor) or mTORC2 (Rictor and Sin1). Using inducible Rictor or Raptor knockouts MEFS (Cybulski et al., 2012; Patursky-Polischuk et al., 2009), we observed that knockout of Rictor blocked mTOR autophosphorylation of Ser2481, where Ser2481 phosphorylation was unaffected by Raptor knockout (Figure 7E). Phosphorylation of Ser2481 was also blocked in constitutive Sin1 -/- mouse embryonic fiberblasts (MEFs) (Figure 7F). Finally, prolonged rapamycin treatment (24 hours), which indirectly inhibits mTORC2 complex formation (Sarbassov et al., 2006), inhibited mTOR-Ser2481 phosphorylation (Figure 7G). Thus growth factors

stimulate mTORC2 autophosphorylation at Ser2481, and mTOR-Ser2481 autophosphorylation is dependent on mTORC2 complex integrity.

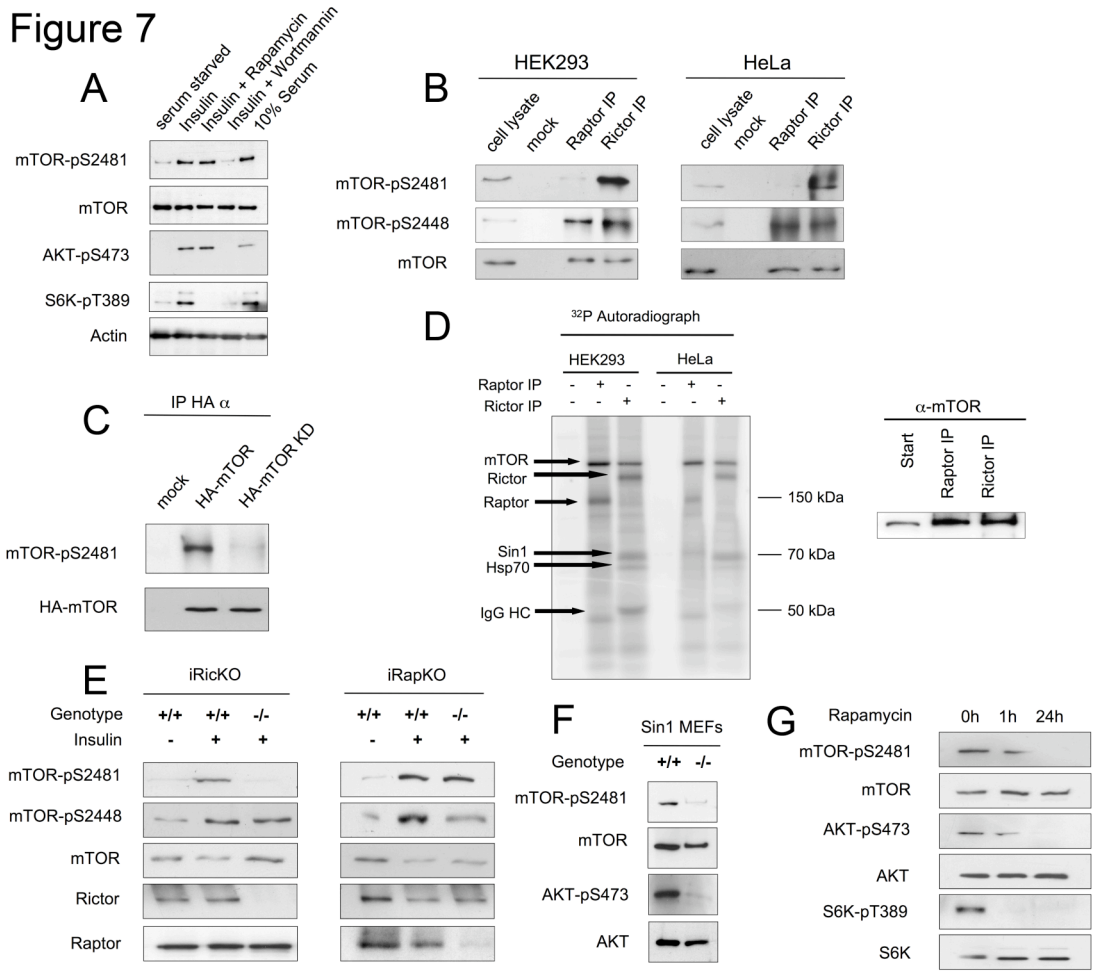

Figure 7: ***Growth factors stimulate mTOR autophosphorylation at Ser2481 specifically in mTORC2***. **A.** HEK293 cells were serum starved overnight in 0.1% FBS, then restimulated with 100nM insulin or 10% FBS for 15min. Cells were pretreated with 100nM rapamycin for 1h or 100nM wortmannin for 30 min as indicated. **B.** HEK293 cells were stimulated with 100nM insulin for 15min prior to lysis. mTORC1 or mTORC2 immunocomplexes were purified via Raptor or Rictor antibodies. Equal amounts of mTOR were loaded. **C.** HA-mTOR or HA-mTOR kinase dead (KD) were expressed in HEK293 cells. 48 hours post-transfection, cells were stimulated with 100nM insulin for 15min. HA-mTOR and HA-mTOR KD were then immunoprecipitated with HA antibodies coupled to protein-A sepharose. **D.** HEK293 or HeLa cells were serum starved overnight in 0.1% FBS, then restimulated with 100nM insulin. Endogenous mTORC1 or mTORC2 was immunoprecipitated with Raptor or Rictor specific antibodies treated as described for the *in vitro* kinase assay. ^{32}P-ATP-labeled bands were excised and digested by trypsin, and the corresponding proteins identified by mass spectrometry. **E.** Knockout of Rictor or Raptor was induced with 1μM 4-OHT 72 hours prior to cell lysis. Cells were then serum starved overnight in 0.1% FBS, and stimulated with 100nM for 15min. **F.** Cell extracts from either constitutive Sin1 -/- MEFs or control MEFs. **G.** iRicKO MEFs were treated with 100nM rapamycin for the indicated time.

mTORC2 autophosphorylation at Ser2481 temporally occurs after the insulin-induced phosphorylation of Akt/PKB

Next we investigated the temporal regulation of the mTOR signaling network. Surprisingly, mTORC2 autophosphorylation at Ser2481 temporally occurred after the insulin-induced Akt/PKB and NDRG1 phosphorylation (Figure 8A). Maximal phosphorylation of Akt/PKB and NDGR1 occurred between 2min - 5min after insulin stimulation, whereas maximal mTORC2 autophosphorylation at Ser2481 occurred 15min – 30min after insulin stimulation. In contrast to the phosphorylation of mTOR-Ser2481, maximum mTOR phosphorylation at Ser2448 occurred between 30min - 45min and corresponded temporally to the maximum phosphorylation of S6K-Thr389. Thus maximum phosphorylation of mTOR-Ser2481 occurs after the phosphorylation of mTORC2 substrates *in vivo.* This data suggests mTOR-Ser2481 phosphorylation may inhibit mTORC2 activity.

To examine the functional role of mTORC2 autophosphorylation at Ser2481, we mutated mTOR Ser2481 to either alanine (Ala) or aspartic acid (Asp). Mutation of Ser2481 to either alanine or aspartic acid did not disrupt mTORC1 or mTORC2 complex stability (Figure 8B). Thus mTOR-Ser2481 is not required for mTORC1 or mTORC2 complex integrity. To determine if mTOR-Ser2481 regulates mTOR kinase activity, we then preformed *in vitro* kinase assays using Akt/PKB as a substrate. Wild type mTOR and mTOR-Ser2481Ala phosphorylated Akt/PKB-Ser473*,* while kinase dead mTOR and mTOR-Ser2481Asp could not phosphorylate Akt/PKB *in vitro* (Figure 8C). As mTOR-Ser2481Asp was unable to phosphorylate Akt/PKB *in vitro*, we hypothesized that mutation of mTOR-Ser2481 to alanine may render mTOR constitutively active. However, mTOR-Ser2481Ala immunoprecipitated from insulin stimulated cells phosphorylated Akt/PKB *in vitro* to a greater extent than in serum-starved conditions (Figure 8D). Thus mutation of Ser2481 to alanine is not sufficient to render mTOR constitutively active. This data is in agreement with recent findings that growth factor stimulated mTORC2 activation requires a direct interaction with intact ribosomes (Zinzalla et al., 2011).

We then investigated the *in vivo* function of mTOR-Ser2481 phosphorylation. Expression of kinase dead (KD) mTOR, mTOR-Ser2481Ala,

or mTOR-Ser2481Asp did not significantly affect the *in vivo* phosphorylation of Akt/PKB Ser473 (data not shown). As no dominate negative affect was observed with kinase dead mTOR, we concluded the levels of endogenous mTOR were sufficient to regulate Akt/PKB phosphorylation. Thus the functional role of mTORC2-Ser2481 autophosphorylation *in vivo* remains elusive.

We then further characterized the regulation of mTOR phosphorylation at Ser2448. We observed that mTOR-Ser2448 was phosphorylated in mTORC1 and mTORC2 (Figure 7B), and that mTOR-Ser2448 phosphorylation was reduced by Raptor, but not Rictor, knockout (Figure 7E). In agreement with our results, mTOR-Ser2448 phosphorylation was previously shown to be mediated by S6K1 (Chiang and Abraham, 2005; Holz and Blenis, 2005). Therefore, we investigated if there was possible crosstalk between mTORC1 and mTORC2 via S6K1 phosphorylation of Ser2448 in mTORC2. HEK293 cells were treated with rapamycin for 1 hour before specifically immuoprecipitating mTORC1 or mTORC2. We observed that acute rapamycin treatment did not block Ser2448 phosphorylation in mTORC2, whereas mTOR disassociated from Raptor upon rapamycin treatment (Figure 8E). In agreement with these observations, rapamycin treatment partially decreased mTOR-Ser2448 phosphorylation *in vivo* when S6K1 phosphorylation was completely inhibited (Figure 8E). Thus mTORC2 phosphorylation at Ser2448 is Rictor-independent and rapamycin insensitive. The functional of mTOR-Ser2448 phosphorylation in both mTORC1 and mTORC2 is unknown.

In summary (Figure 8F), we observed that growth factor stimulated mTOR autophosphorylation at Ser2481 was specific to mTORC2, occurred after the phosphorylation of mTORC2 substrates, and regulated mTORC2 *in vitro* activity towards Akt/PKB. Conversely, mTOR-Ser2448 phosphorylation was observed in both mTORC1 and mTORC2. mTOR-Ser2448 phosphorylation in mTORC1 was regulated by both rapamycin treatment and Raptor knockout, whereas mTOR-Ser2448 phosphorylation in mTORC2 was insensitive to rapamycin treatment or Rictor knockout. Future work is required to reveal the *in vivo* function of both mTOR-Ser2448 and mTOR-Ser2481 phosphorylation.

Figure 8

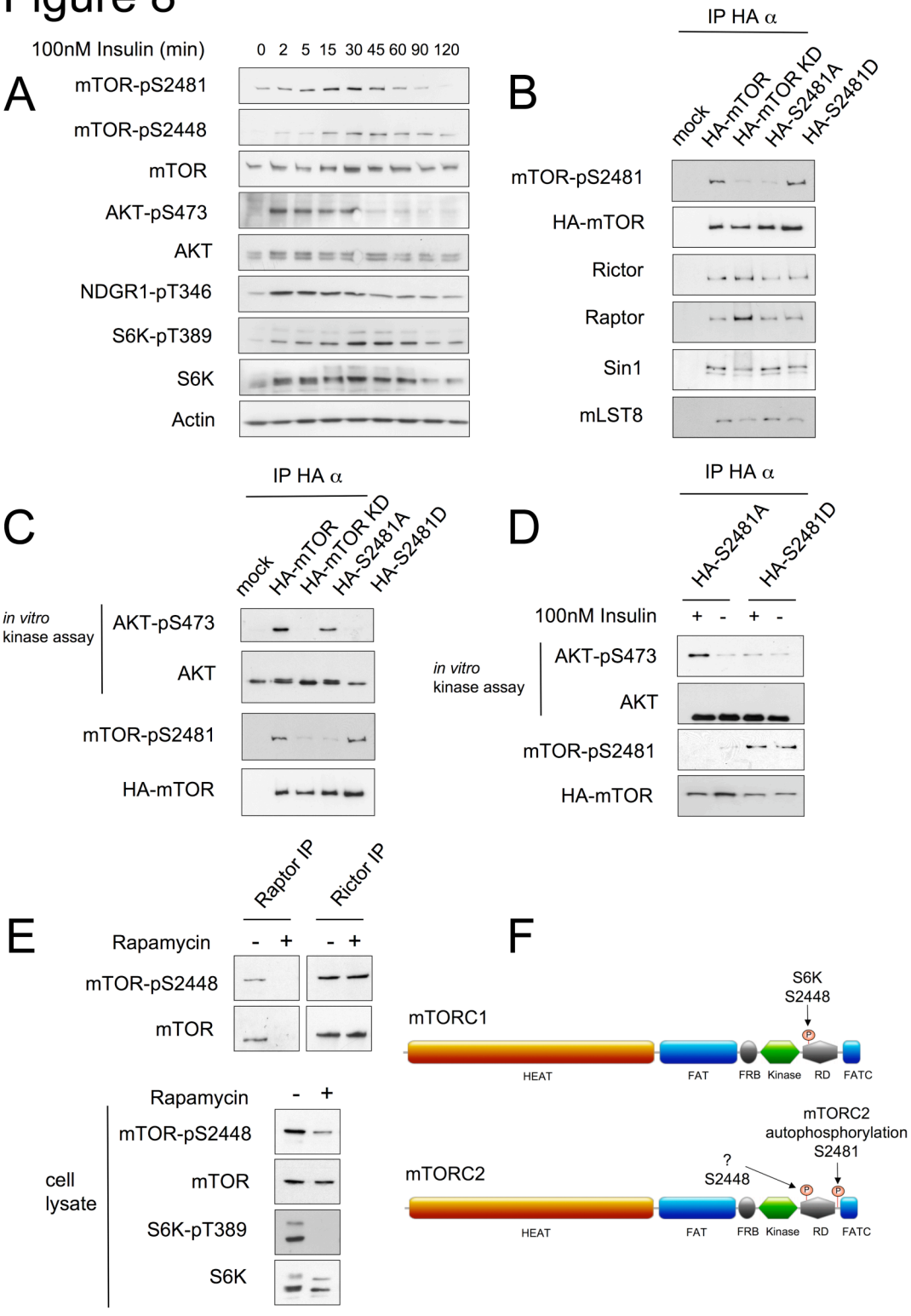

Figure 8: ***Insulin-stimulated mTORC2 autophosphorylation temporally occurs after the phosphorylation of Akt/PKB*****. A.** HeLa cells were serum starved overnight in 0.1% FBS, then restimulated with 100nM insulin for the indicated time point. **B.** HA-mTOR, HA-mTOR kinase dead (KD), HA-mTOR

Ser-2481-Ala, or HA-mTOR Ser-2481-Asp were expressed in HEK293 cells. 48 hours post-transfection, cells were lysed and HA-mTOR constructs were immunoprecipitated with HA antibodies coupled to protein-A sepharose. **C.** Immunoprecipitations from Figure 9B were split into two equal tubes: one tube was used to assess total protein, and one for mTOR *in vitro* kinase assay. **D.** HA-mTOR Ser-2481-Ala or HA-mTOR Ser-2481-Asp were expressed in HEK293 cells. 48 hours post-transfection, cells were either serum starved overnight in 0.1% FBS or serum starved overnight in 0.1% FBS and then restimulated with 100nM insulin. *In vitro* kinases assays were preformed as described in Figure 9C. **E.** HEK293 cells were pretreated with 100nM rapamycin for 1h, then stimulated with 100nM insulin for 15min prior to lysis. mTORC1 or mTORC2 immunocomplexes were purified via Raptor or Rictor antibodies. **F.** A schematic of mTORC1 and mTORC2 phosphorylation sites and the kinases responsible for their phosphorylation are shown. Repressor domain (RD). Images were generated with Prosite's MyDomains Image Creator.

4.0: Discussion

4.1: Identification of the mTOR regulated phosphoproteome

To identify novel mTORC1 or mTORC2 substrates, we used a quantitative and functional phosphoproteomic approach. We quantified the phosphorylation of 1398 unique proteins, which represents 52% coverage of the known mTORC1 and mTORC2 signaling networks. First, we performed a large-scale analysis of the mTORC1 and mTORC2 regulated phosphoproteomes by inducible knockout of essential mTORC1 or mTORC2 components, followed by phosphopeptide enrichment and high accuracy mass spectrometry. Then we analyzed which phosphopeptides identified by mass spectrometry could be phosphorylated by mTOR *in vitro*. This workflow allowed us to obtain a global view of the mTORC1 and mTORC2 regulated phosphoproteomes. A major challenge encountered by many phosphoproteomic datasets is the inability to distinguish between direct and indirect effectors. Our peptide array *in vitro* kinase assay provided the functional data necessary to identify potential direct mTOR substrates from indirect effectors. Using the inducible gene knockout of other kinases or phosphatases, followed by peptide array *in vitro* kinase or phosphase assay, this workflow could be more broadly applied to study the downstream functions of additional kinases and phosphatases.

In yeast, rapamycin sensitive phosphoproteomes have identified several novel TORC1 effectors (Huber et al., 2009; Soulard et al., 2010). However in mammals, rapamycin treatment incompletely mimics Raptor deletion, as mTORC1 has rapamycin-resistant functions (Feldman et al., 2009; Thoreen et al., 2009). Additionally, prolonged rapamycin treatment inhibits mTORC1 and mTORC2 (Sarbassov et al., 2006). Thus rapamycin will only identify a subset of mTORC1 substrates, where our approach to delete Raptor avoids the above stated limitations. Recently, ATP-competitive inhibitors of mTOR have revealed portions of the larger mTOR regulated phosphoproteome (Hsu et al., 2011; Yu et al., 2011). However ATP-competitive inhibitors of mTOR target both mTORC1 and mTORC2 (reviewed in (Sparks and Guertin, 2010). Thus these studies cannot distinguish mTORC1 substrates from mTORC2 substrates. Inducible deletion of Raptor

or Rictor allowed us to overcome the above stated challenge and reveal the specific mTORC1 or mTORC2 regulated phosphoproteome. Additionally, these studies and our own incompletely identified the known mTOR effectors, suggesting additional novel mTORC1 or mTORC2 substrates remain to be revealed. Thus all three datasets are likely sampling different parts of the global mTOR regulated phosphoproteome. Currently, mTOR has been implicated to directly or indirectly regulate the phosphorylation of 803 distinct proteins. This corresponds to 3.9% of all mammalian genes. Given the broad role of mTOR in regulating cell physiology, many mTOR targets are expected and many may remain to be characterized.

Quantitatively defining the mTORC1 and mTORC2 regulated phosphoproteomes revealed that mTORC1 phosphorylates CAD to positively regulate *de novo* pyrimidine synthesis. Thus we identified a novel biological function of mTORC1, and identified 335 novel substrates or indirect effectors of mTORC1 or mTORC2, central controllers of cell growth.

For appropriate cell growth to occur, cells needs to coordinate the production of essential building block such as proteins, lipids, sugars, nucleotides and other metabolites. mTORC1 and mTORC2, as central controllers of cell growth, have well established roles in regulating protein synthesis, translation, and an emerging role in lipid and glucose homeostasis (reviewed in (Laplante and Sabatini, 2009a; Polak and Hall, 2009). Here we have revealed a novel finding that mTORC1 directly phosphorylates CAD to positively regulate growth factor stimulated *de novo* pyrimidine synthesis, and thereby cell proliferation. There are several key findings in the literature which hinted that CAD may function downstream of mTORC1. In flies, mutations within the CAD gene, rudimentary, have smaller cell size (Fausto-Sterling and Hsieh, 1976). Furthermore, *de novo* pyrimidine synthesis is known to be positively regulated by growth factors (Smith and Buchanan, 1979).

Pyrimidines, in addition to being essential components of DNA and RNA, are used as an energy source to drive specific cellular functions. UTP is the source of energy for activating glucose and galactose, while CTP is an energy source in lipid metabolism. Thus mTORC1 likely regulates *de novo* pyrimidine synthesis to both promote cell proliferation, and as part of a larger role in controlling lipid and glucose homeostasis *in vivo.* Furthermore, in

contrast to purines, which are synthesized in the mitochondria, pyrimidines are synthesized in cytoplasm providing a spatial localization where regulation of *de novo* pyrimidine synthesis would be accessible to direct mTOR phosphorylation. We showed that mTORC1 regulates CAD phosphorylation, oligomerization, and function. mTORC1 mediated phosphorylation of CAD promotes CAD oligomerization, and increased *de novo* pyrimidine synthesis *in vivo.* This data suggests that mTORC1 mediated CAD oligomerization may facilitate steric channeling of CAD synthesized metabolites, and thus explain the increase the rate of *de novo* pyrimidine synthesis.

De novo pyrimidine synthesis requires PRPP (5-phosphoribosyl-1-pyrophosphate), which is produced via the pentose phosphate pathway. Thus it is likely that regulation of the *de novo* pyrimidine synthesis pathway and the pentose phosphate pathway are coordinated. Interestingly, TSC1 -/- MEFs, which have hyperactive mTORC1 signaling, display an increase flux through the oxidative branch of the pentose phosphate that is partially dependent on SREBP-1 (Duvel et al., 2010). Our data demonstrates that mTORC1 acutely (1 hour) regulates the production of pyrimidines by directly phosphorylating and activating CAD, the initial and rate limiting step of de novo pyrimidine synthesis. Separately and in a prolonged manner (12-20 hours), mTORC1 regulates the production of PRPP via SREBP-1 dependent transcriptional activity. Thus it is likely that mTORC1 controls *de novo* pyrimidine synthesis through a combination of direct and indirect effectors to properly regulate cell proliferation.

4.2: Regulation of mTOR phosphorylation

Separately, we investigated the regulation of mTOR phosphorylation at two sties, mTOR-Ser2481 and mTOR-Ser2448. Here we report that mTOR autophosphorylation at Ser2481 is specific to mTORC2, requires an intact complex, and is stimulated by growth factors. Growth factor activation of mTORC2 leads to the rapid phosphorylation of Akt/PKB and SGK1 substrate NDGR1. If mTOR-Ser2481phosphorylation was a marker of active mTORC2, we hypothesize that mTORC2 autophosphorylation would precede the phosphorylation of mTORC2 substrates. However, *in vivo* mTORC2 activity towards Akt/PKB-Ser473 phosphorylation preceded mTORC2

autophosphorylation at Ser2481. This data suggests mTOR-Ser2481 phosphorylation may contribute to inhibition of mTOR activity towards Akt/PKB. Furthermore, mTOR-Ser2481 is within a repressor domain of mTOR. The repressor domain is 95% conserved in vertebrates, yet poorly conserved in invertebrates. This data suggests the repressor domain may be required for vertebrate specific functions of mTOR. Interesting, other regulatory sites in the mTOR signaling network are also solely conversed in vertebrates, such as ERK (Ma et al., 2005) and IKKβ (Lee et al., 2007) phosphorylation of TSC2. Addition of an antibody (mTAB1) that recognizes the repressor domain (RD) (Brunn et al., 1997), or partial deletion of the repressor domain (amino acids 2430-2450) increases mTOR *in vitro* kinase activity (Edinger and Thompson, 2004). We identified that mTORC2 autophosphorylation at Ser2481 inhibits mTORC2 *in vitro* kinase activity. One possible mechanism could be that mTOR-Ser2481 phosphorylation blocks substrate presentation. Alternatively, mutation of mTOR-Ser2481 to aspartic acid may not properly mimic the functional role of phosphorylation at this site. Furthermore, as the expression of mTOR-Ser2481 mutated to aspartic acid did not alter mTORC2 signaling *in vivo*, there are likely additional regulatory mechanisms that inactivate grow factor regulated mTORC2 activity. Many phosphorylations sites have recently been discovered in mTOR and mTOR interaction proteins (Gwinn et al., 2008; Hayashi et al., 2007; Wang et al., 2009b). mTOR can phosphorylate Raptor, Rictor, and Sin1 at multiple sites *in vivo* (Acosta-Jaquez et al., 2009; Foster et al., 2009; Wang et al., 2009a). Thus multiple phosphorylations may each contribute a small portion to the regulation of mTOR activity. It is likely that certain phosphorylations will positively regulate mTOR activity, while others may contribute to a feedback inhibition mTOR activity. Therefore it will be important to examine these phosphorylations under specific physiological conditions to determine their function role.

We also characterized the phosphorylation of mTOR at Ser2448. mTOR-Ser2448 phosphorylation was first proposed to be an Akt/PKB site (Sekulic et al., 2000). Subsequent work demonstrated phosphorylation of mTOR-Ser2448 was mediated by S6K (Chiang and Abraham, 2005; Holz and Blenis, 2005). Our data suggest S6K phosphorylates mTORC1, but an

unidentified Raptor and Rictor independent-kinase phosphorylates Ser2448 in mTORC2 (Fig 2). A recent study showed that cytoplasmic mTOR-Ser2448 phosphorylation correlated with tumor progression and poor survival in human gastric cancer. Interestingly, nuclear mTOR-Ser2448 phosphorylation was associated with better overall survival (Murayama et al., 2009). Thus mTOR-Ser2448 phosphorylation may prove useful as a clinical biomarker. Similarly, while this work was in progress, another group published the observation that mTOR-Ser2481 phosphorylation was specific to mTORC2, and can be utilized as a biomarker for mTORC2 sensitively to rapamycin (Copp et al., 2009). Although the functional significance of mTOR-Ser2448 and mTOR-Ser2481 phosphorylation remains to be clarified, our results suggests that further investigation of mTOR phosphorylation may identify important functional roles and/or prove useful as clinical biomarkers.

4.3: Closing remarks

The mTORC1 and mTORC2 signaling networks have emerged as central controllers of cell growth and proliferation that are important for development, aging, and diseases such as cancer and diabetes. Future work to identify direct substrates of mTOR may reveal new cellular processes that mTORC1 and mTORC2 regulate to ultimately determine cell size and positively regulate proliferation.

5.0: Experimental Procedures

Antibodies: CAD antibody for western/IP (#A301-374A), and CAD antibody for IF/ImmunoEM (#IHC-00280) from Bethyl. Anti-Akt/PKB and Anti-mTOR (for endogenous IP) from Santa Cruz Biotechnology. Alexa Fluor 488 anti-rabbit and Alexa Fluor 594 anti-mouse secondary antibodies from Invitrogen. HRP-coupled anti-mouse and anti-rabbit secondary antibodies from Pierce; HRP-coupled anti-IgG, light chain specific, anti-rabbit secondary antibody from Jackson Immunoresearch; HRP-coupled anti-rabbit IgM from Abcam; Ten-nanometer gold particles coupled to goat anti-rabbit IgG from BBInternational; Anti-Rictor and anti-Raptor antibodies were produced as previously described (Jacinto et al., 2004). All other commercial antibodies from Cell Signaling Technology.

Antibody production: CAD-Ser1859 phospho-specific, rabbit polyclonal antibodies were raised against a KLH-coupled peptide (RIHRApSDPGLPAE), which corresponds to residues 1854–1866 of human CAD. Antibodies were generated and affinity purified by Eurogentec.

Bioinformatics: In vivo kinase motif analysis was performed with Motif-X (Schwartz and Gygi, 2005). *In vitro* kinase motif analysis was performed with WebLogo (Crooks et al., 2004). We searched for human, fish, fly, worm, and yeast orthologs of our novel mouse mTOR effectors using g-profiler (Reimand et al., 2007). KEGG pathway analysis was done using the Benjamini-Hochberg FDR in g-profiler. Using the previously identified TOS motifs found in PRAS40, S6K, and 4E-BP, (Lee et al., 2008) we developed a consensus TOS motif corresponding to: F-[DEV]-[MLI]-[DEV]-[LIE]. We then searched for putative TOS motifs using ScanProsite (Gattiker et al., 2002). Sequence alignments were done with ClustalW2 (Larkin et al., 2007). Venn diagrams were created with VENNY (Oliveros, 2007). HeLa cell volume was calculated from BioNumbers (Milo et al., 2010). Previously identified growth factor regulated phosphorylations were searched for in PhosphositePlus (Hornbeck et al., 2004).

Cell culture: Cells were maintained in D-MEM containing 10% dialyzed fetal bovine serum (D-FCS). For overnight serum deprivation, cells were grown for 16 hours in D-MEM containing with 0.1% D-FCS. iRapKO and iRicKO are inducible Raptor and Rictor, respectively, knockout MEF cell lines. Generation of the iRapKO and iRicKO cell lines was previously described (Cybulski et al., 2012; Patursky-Polischuk et al., 2009). Briefly, immortalized MEFs contain floxed Raptor or Rictor alleles, and 4-hydroxytamoxifen (4-OHT) inducible Cre recombinase. iRapKO (Raptor knockout) cells or iRicKO (Rictor knockout) cells were compared to control cells treated with 1 μM 4-OHT. 72 hours after 4-OHT treatment, the deletion of Raptor and inhibition of mTORC1 signaling or deletion of Rictor and inhibition of mTORC2 signaling was confirmed by western blot. For SILAC experiments, MEFs or HeLa cells were culture for 7 passages in SILAC media + 10% D-FCS. Cells were then subjected to 4-OHT treatment (MEFs) or cell harvest (HeLa). HeLa cells were transfected with Lipofectamine 2000 following the manufacture's instructions. Wild-type and mutant CAD was transfected into G9c cells with FuGene, following the manufacture's instructions. G9c cells lack functional CAD activity, and require the addition of 30μM uridine to the media to maintain cell growth and proliferation (Qiu and Davidson, 2000). Cell proliferation was measured using Crystal Violet staining or an AlamarBlue assay as previously described (Colombi et al., 2010).

Chemicals: SILAC media and D-FCS from DundeeCellProducts; Glutamine and Pen/Strep from Invitrogen. N15-amide glutamine from Cambridge Isotope Labs. Lipofectamine 2000, and recombinant mTOR from Invitrogen. PALA was a kind gift from the NCI/DTP Open Chemical Repository. Protein A-agarose from Zymed. Soluble peptides were synthesized by GenScript. CAD siRNA and Non-targeting siRNA SMARTpools from Dharmacon. Additional cell culture reagents including D-MEM, insulin, and rapamycin, wortmannin, and PP242 from Sigma.

Flow cytometry: HeLa cells were arrested in early S-phase using a double thymidine block. 40% confluent cells were subsequently grown in complete

media + 2.5mM thymidine for 18h, released in complete media for 9h, and arrested in S-phase with a second 16 hour incubation in complete media + 2.5mM thymidine. Cells were then released, ± 30μM uridine, in DMEM (starved) or DMEM + 10% D-FCS + 2x AA (stimulated) or DMEM + 10% D-FCS + 2x AA + 100nM rapamycin (rapamycin). Cells were trypsinized and washed 2x in 1xPBS + 0.1% BSA. Cells were fixed in 75% ice-cold EtOH for 1h at 4C. After washing 2x 1xPBS, cells were permeabilized with 0.25% Trition-100 in 1x PBS for 5min at 4C. Cells were washed, and then treated with 30ug/mL RNase A for 15min at 37C. After washing, cells were resuspended at 1x10^6 cells/mL in PI staining buffer (1xPBS + 3.8mM NaCitrate + 50 ug/mL propidium iodide + 10ug/mL RNase A) and incubated in the dark for 2h at 4C. The PI staining was then measured with a Beckman Coulter Cell Lab Quanta SC Flow cytometer.

Fluorescence Microscopy: HeLa cells were grown on cover slips to 60% confluence. Cells were serum starved for 16h hours in D-MEM containing with 0.1% D-FCS, followed by 30min AA starvation in 1xPBS. Cells were restimulated with 10% D-FCS and double the concentration of AAs in D-MEM for 1h. Cells were then washed 3x 1xPBS, and fixed with 4% paraformaldehyde in 1xPBS for 15min at 24C. After washing 2x 1xPBS, cells were quenched with 50mM ammonium chloride in 1xPBS for 10min at 24C. Cells were washed 2x 1xPBS and permeabilized with 0.1% Trition-100 in 1xPBS for 5min. After washing 2x 1xPBS, cells were blocked in 2% BSA in 1xPBS for 1h at 24C. Cells were washed 2x 1xPBS and incubated with primary antibody in 1xPBS + 0.3% BSA (1:200 dilution) for 2h at 24C. After washing 3x 1xPBS, cells were incubated with secondary antibodies in 1xPBS + 0.3% BSA (1:200 dilution) and keep in the dark for 1h at 24C. Cells were washed 3x 1xPBS, stained 3min with DAPI (1:1000 dilution) in 1xPBS, before mounting on microscope slides. Images were taken with a 40x objective on a Zeiss AxioImager Z1 microscope and an AxioCam MRm camera (150-300ms exposure time). Inducible knockout of Raptor was performed as previously described, and MEFs were images as described above.

Glycerol Gradient Ultracentrifugation: Cells ($1x10^7$) were suspended in 250μL of lysis buffer containing 100mM Tris-HCL pH 8.0, 100mM KCL, 25 mM MgCl2, 1 mM DTT, 7.5% (vol/vol) DMSO, and 2.5% (vol/vol) glycerol. CAD oligomers were then isolated on 10–35% (vol/vol) glycerol gradients as previously described (Lee et al., 1985).

Immunoelectron microscopy: HeLa cells were serum starved for 16h hours in D-MEM containing with 0.1% D-FCS, followed by 30min AA starvation in 1xPBS. Cells were restimulated with 10% D-FCS and double the concentration of AAs in D-MEM for 1h. Cells were then fixed and treated for immunoelectron microscopy as previously described (Stettler et al., 2009). Ten-nanometer gold particles coupled to goat anti-rabbit IgG were used to detect rabbit anti-CAD antibodies.

Immunoprecipitations: Cells were rinsed twice with ice-cold PBS before lysis. Lysis buffer contained 40mM HEPES pH 7.4, 150mM NaCl, 0.3% CHAPS supplemented with protease and phosphatase inhibitors (1x Roche complete protease inhibitor cocktail, 1 µg/ml Aprotinin, 1 µg/ml Pepstatin, 10 mM NaF, 10 mM β-glycerophosphate, 0.5mM ortho-vanadate). Cells were harvested and incubated on ice for 5 minutes. Cells suspensions were then gently sonicated for 5 seconds on ice. Cell debris was removed by centrifugation for 10 minutes at 10000g. The protein concentration was determined with a Bio-Rad assay. For immunoprecipitations (IP), 5 µg of antibody was incubated with 1mL of cleared cell lysate from a 10 cm plate, and rotated for 2 hours (HA IP) or overnight (mTOR IP) at 4°C. Normal rabbit IgG was used for mock IPs. 50 µl of a 50% slurry of protein A-agarose was added and then additionally incubated for one hour. Beads were collected by centrifugation, and immunoprecipitations were washed three times in lysis buffer before being resuspended in 2x SDS-PAGE sample buffer.

Metabolic Measurements: Prior to metabolic labeling, HeLa cells were serum starved for 16h hours in D-MEM containing with 0.1% D-FCS, followed by 30min AA starvation in 1xPBS. Cells were restimulated with 10% D-FCS and 2x AA (minus glutamine) + 4mM N15-amide labeled glutamine. Cells were

washed 2x with ice-cold 1xPBS. Cells were then quenched by flash freezing the plates in liquid nitrogen. Metabolites were extracted with 75% EtOH in 10mM ammonium acetate, pH 7.5 for 5min at 80C. Cell debris was removed via centrifugation at 3000g for 5min at 4C. Samples were then dried in a speed-vac at stored at -80C until measurement. Metabolites were then measured using a targeted approach with uHPLC-MS/MS as previously described (Buescher et al., 2010). Total cellular concentrations of metabolites were calculated using a HeLa cell volume of 2425 μM^3, and then comparing the relative amount of metabolites in cells to a heavy isotope labeled internal standard and exogenous metabolite standard curves.

mTOR endogenous in vitro kinase assay: *In vitro* kinase protocol was modified from (Sarbassov et al., 2005). Briefly, immunoprecipitations of mTOR or HA-mTOR were prepared as previously described. After three washes in lysis buffer, immunoprecipitations were split into two equal tubes: one tube was used to assess mTOR phosphorylation at Ser-2481, and one for *in vitro* kinase assay. Immunoprecipitations for *in vitro* kinase assay were resuspended in kinase reaction buffer (25 mM Hepes pH 7.4, 50mM NaCl, 1 mM MgCl2, and 1mM ATP) at 37C for 30min plus inactive 1µg Akt/PKB1 (Upstate Biotechnology) as a substrate.

mTOR recombinant in vitro kinase assay: Cells were rinsed three times with ice-cold 1xPBS before lysis. Cells were then lysed in RIPA buffer (50mM Tris, pH 7.4, 150mM NaCl, 1mM EDTA, 1.0% NP-40, and 0.1% Deoxycholate with protease and phosphatase inhibitors: 1x Roche complete protease inhibitor cocktail, 1µg/ml Aprotinin, 1µg/ml Pepstatin, 10mM NaF, 10mM β-glycerophosphate, 0.5mM ortho-vanadate). Cells were harvested by scrapping and incubated on ice for 20 minutes. Cell debris was removed by centrifugation for 10 minutes at 1000g. The protein concentration was determined with a BCA assay. 5µg of antibody was incubated with 1mg of cleared cell lysate and rotated for 3 hours at 4°C. Normal rabbit IgG was used for mock IPs. 40µl of a 50% slurry of protein A-agarose was added and then incubated for one additional hour. Beads were collected by centrifugation, and immunoprecipitations were washed four times in lysis buffer before being

resuspended in kinase reaction buffer (25mM HEPES pH 7.4, 50mM NaCl, 0.01% Tween, 1mM $MnCl_2$, 1mM DTT, and 1mM ATP + 10uCi ^{32}P-ATP) at 37C for 30min with 100ng mTOR (Invitrogen) +/- 200nM PP242.

Peptide array spotting: An array of 600 peptides was synthesized on cellulose paper using an intavis AG MultiPep robotic spotter following the manufacture's instructions. 12-mer peptides (6aa-pS/T-5aa) of each pSer/Thr site identified as mTOR regulated in 2/3 SILAC labels were spotted in duplicate. Additionally, Ala was substituted for each pSer/Thr identified via MS and spotted in duplicate (6aa-A-5aa).

Peptide array in vitro kinase assay: The printed peptide array was moistened in 95% EtOH, and blocked overnight at 24C in peptide kinase buffer (25mM HEPES pH 7.2, 50mM NaCL, 0.01% Tween-20, 10mM $MnCl_2$, 1mM EDTA) supplemented with 0.2 mg/mL BSA. The array was then additionally blocked with a cold-kinase assay (peptide kinase buffer + 1.0mg/mL BSA + 1mM ATP and incubated at 37C for 30min). The mTOR kinase reaction was carried out with peptide kinase buffer + 0.1mg/mL BSA + 500uM ATP + 500uCi ^{32}P-ATP + 100ng mTOR (Invitrogen) for 3h at 37C. After extensive washing (3x for 10min in [50mM Tris, pH 6.8, 8M urea, 1% SDS, 0.5% B-ME], 2x ddH20, 3x for 10min in [50mM Tris, pH 6.8, 1M NaCL], 2x ddH20, 3x for 10min in [5% phosphoric acid, pH 1.5], 2x ddH20, 2min in 95% EtOH) the array was air dried and incorporation of ^{32}P into the peptides was measured with a PhosphorScreen (Molecular Dynamics) and a STORM scanner (Amersham/GE).

Peptide in vitro kinase assay: Soluble peptides were incubated in peptide kinase buffer (25mM HEPES pH 7.2, 50mM NaCL, 0.01% Tween-20, 10mM $MnCl_2$, 1mM EDTA + 0.1mg/mL BSA + 500uM ATP + 500uCi ^{32}P-ATP + 100ng mTOR (Invitrogen) +/- 500nM PP242) for 30min at 37C. Peptides were then spotted and air dried on Whatman P81 paper. After washing 3x [0.5% phosphoric acid, pH 1.5] and 1x 100% acetone, the incorporation of ^{32}P into the peptides was measured with a liquid scintillation counter.

Phosphoproteomics: Protein extraction, SDS-PAGE protein fractionation, in-gel digestion, peptide desalting, phosphopeptide enrichment, nano-LC-MS/MS analysis, database search, and quantitation were previously described (Soulard et al., 2010) with the following changes: 2mg of each SILAC labeled protein extract was mixed together prior to SDS-PAGE fractionation. Identification of phosphopeptides was done with MaxQuant 1.13.13 against the mouse or human Swiss-Prot/TrEMB database downloaded from Uniprot on June 30th, 2009. The databases contained forward and reverse mouse or human sequences as well as common contaminants.

Plasmids: HA-mTOR, and HA-mTOR kinase dead (KD) were described previously (Dennis et al., 2001). Human CAD cloned into pCMV-SPORT6 was obtained from Open Biosystems (accession# BC065510). CAD-Ser-1859-Ala, HA-mTOR Ser-2481-Ala, and HA-mTOR Ser-2481-Asp were produced via site-directed mutagenesis and verified by DNA sequencing.

Quantification and statistics: Quantification of immunoblot signals was performed with ImageQuant v7 .0 using a STORM scanner and ECL Plus (from Amersham) or ^{32}P-ATP via PhosphorScreens (Molecular Dynamics). Phosphospecific signals were normalized to the total amount of the corresponding protein. Statistical significance was determined using a Student's t-Test. Data is presented as the mean ± standard deviation.

TiO2 phosphopeptide enrichment: 0.40mg TiO2 spheres were used per 1.00mg total peptides. TiO2 beads were primed with 100% acentronitrile (AcCN). TiO2 beads and total peptides were then combined in binding buffer (80% AcCN, 5% TFA, 1M Glycolic Acid), and incubated for 30min. TiO2 beads were then washed 1x binding buffer, and 2x with washing buffer (80% AcCN, 1% TFA). Phosphopeptides were eluted with 30% AcCN, 300mM NH4OH.

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Michael Hall proposed the project, and Aaron M. Robitaille designed the experimental setup. Aaron M. Robitaille and Luca Fava performed the peptide spotting. Stefan Christen carried out the metabolic measurements. Mitsugu Shimobayashi created CAD point mutation. Marion Cornu generated L-TSC1 KO mice. Cristina Prescianotto-Baschong performed immunoelectron microscopy. Additional experiments and data analysis by Aaron M. Robitaille. Paul Jenoe and Suzette Moes maintained the nano-LC-MS/MS Orbitrap. Michael Hall, Paul Jenoe, and Uwe Sauer supervised the research.

8.0: References

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Table 1: ***mTOR regulated phosphorylations identified by mass spectrometry.***

An excel version of the mTOR regulated phosphorylations is available online at: edoc.unibas.ch

Uniprot	Modified Sequence	M/L Ratio	H/L Ratio	H/M Ratio	Experiment	iRapKO/Control	iRicKO/Control	iRicKO/iRapKO	Peptide array +
Q3TIY5	AAAQYSS(ph)QKS(ph)VEER	-1.0208	-2.4435	-1.3823	SILAC 1 / Biological 1	Raptor down	Rictor down	H/M down	
Q3TIY5	AAAQYSS(ph)QKS(ph)VEER	-1.0208	-2.4435	-1.3823	SILAC 1 / Biological 1	Raptor down	Rictor down	H/M down	
Q9QX47	ASES(ph)S(ph)SEEKDDYEIFVK	-1.3058	-2.3894	-0.9600	SILAC 1 / Biological 1	Raptor down	Rictor down	H/M down	
Q9QX47	ASES(ph)SS(ph)EEKDDYEIFVK	-1.3385	-2.2782	-0.9944	SILAC 1 / Biological 1	Raptor down	Rictor down	H/M down	
Q9QX47	ASES(ph)SS(ph)EEKDDYEIFVK	-1.3385	-2.2782	-0.9944	SILAC 1 / Biological 1	Raptor down	Rictor down	H/M down	
Q71FD5	AYS(ph)GSDLPSGTGSGGGGADGAR	-1.2952	-1.6083	-1.2142	SILAC 1 / Biological 1	Raptor down	Rictor down	H/M down	
Q71FD5	AYS(ph)GSDLPSGTGSGGGGADGAR	-1.4600	-1.6083	-1.2126	SILAC 1 / Biological 1	Raptor down	Rictor down	H/M down	
Q8VDN3	GGVT(ph)GSPEAS(ph)ISGSK	-6.3497	-14.0059	-6.1954	SILAC 1 / Biological 1	Raptor down	Rictor down	H/M down	
Q6ZPJ3	LIHGEDS(ph)DS(ph)EGDDDGR	-1.3288	-2.4551	-2.0838	SILAC 1 / Biological 1	Raptor down	Rictor down	H/M down	
Q6ZPJ3	LIHGEDS(ph)DS(ph)EGDDDGR	-1.3288	-2.4551	-2.0838	SILAC 1 / Biological 1	Raptor down	Rictor down	H/M down	
Q6ZPJ3	LIHGEDS(ph)DS(ph)EGDDDGR	-1.3288	-2.4551	-2.0838	SILAC 1 / Biological 1	Raptor down	Rictor down	H/M down	
Q6ZPJ3	LIHGEDS(ph)DS(ph)EGDDDGR	-1.3288	-2.4551	-2.0838	SILAC 1 / Biological 1	Raptor down	Rictor down	H/M down	
Q9Z248	LSPLS(ph)PGS(ph)PGPAAR	-1.4753	-2.5471	-0.9978	SILAC 1 / Biological 1	Raptor down	Rictor down	H/M down	
Q9Z248	LSPLS(ph)PGS(ph)PGPAAR	-1.4753	-2.5471	-0.9978	SILAC 1 / Biological 1	Raptor down	Rictor down	H/M down	
Q9Z248	LSPLS(ph)PGS(ph)PGPAAR	-1.4701	-2.5471	-0.9978	SILAC 1 / Biological 1	Raptor down	Rictor down	H/M down	
Q9Z248	LSPLS(ph)PGS(ph)PGPAAR	-1.4701	-2.5471	-0.9978	SILAC 1 / Biological 1	Raptor down	Rictor down	H/M down	
Q09XV5	TAS(ph)PS(ph)PLRPDAPVEK	-1.7390	-2.1830	-1.0616	SILAC 1 / Biological 1	Raptor down	Rictor down	H/M down	
Q09XV5	TAS(ph)PS(ph)PLRPDAPVEK	-1.7390	-2.1830	-1.0616	SILAC 1 / Biological 1	Raptor down	Rictor down	H/M down	
P70698	DTYSDRS(ph)GS(ph)SSPDSEITELK	-2.0318	-2.0049	-1.1737	SILAC 1 / Biological 2	Raptor down	Rictor down	H/M down	
Q6PAM1	EQGVESPGAQPASS(ph)PR	-1.0412	-1.1477	-1.3190	SILAC 1 / Biological 2	Raptor down	Rictor down	H/M down	
Q99LL5	GLSVS(ph)GPCGSRSPQQTPMES	-1.1057	-1.8854	-1.1905	SILAC 1 / Biological 2	Raptor down	Rictor down	H/M down	
A2BH40	GPS(ph)PSPVGS(ph)PASVAQSR	-1.2125	-2.2311	-1.0687	SILAC 1 / Biological 2	Raptor down	Rictor down	H/M down	
Q6ZPH4	ILDPNSGEPAPVLSS(ph)PTPTDLSTFLSFPS(ph)PEK	-1.4845	-2.1561	-1.0041	SILAC 1 / Biological 2	Raptor down	Rictor down	H/M down	
Q6A006	LSTT(ph)PS(ph)PT(ph)NSLHEDGVDDFRR	-1.2757	-2.5851	-1.1479	SILAC 1 / Biological 2	Raptor down	Rictor down	H/M down	
Q0VAV8	NNPS(ph)PPPDSDLER	-2.1403	-1.9313	-8.7199	SILAC 1 / Biological 2	Raptor down	Rictor down	H/M down	
Q62433	LNIT(ph)PNSGATGNNAGPK	-3.8290	-5.1105	-1.2929	SILAC 2 / Biological 3	Raptor down	Rictor down	H/M down	
P70698	DTY(ph)SDRS(ph)GSSS(ph)PDSEITELK	-1.3252	-1.4296	0.8984	SILAC 1 / Biological 1	Raptor down	Rictor down	H/M up	
P62754	LSSLRASTSKS(ph)ESSQK	-2.4280	-1.6802	1.6980	SILAC 1 / Biological 1	Raptor down	Rictor down	H/M up	
P62754	LSSLRASTSKS(ph)ESSQK	-2.4280	-1.6802	1.6980	SILAC 1 / Biological 1	Raptor down	Rictor down	H/M up	
Q8K4Q0	ILDTSSLTQS(ph)APAS(ph)PTNK	-2.2602	-1.1246	1.0442	SILAC 1 / Biological 2	Raptor down	Rictor down	H/M up	
Q0VAV8	NNPS(ph)PPPDSDLER	-2.4270	-1.9285	0.9745	SILAC 2 / Biological 3	Raptor down	Rictor down	H/M up	
P14873	ES(ph)SPLYS(ph)PGFSDSTSAAK	-1.4068	-1.9970	0.0463	SILAC 1 / Biological 1	Raptor down	Rictor down		+
P14873	ES(ph)SPLYS(ph)PGFSDSTSAAK	-1.4068	-1.9970	0.0463	SILAC 1 / Biological 1	Raptor down	Rictor down		+
B2RQC6	IHRAS(ph)DPGLPAEEPK	-1.8717	-1.1005	0.3325	SILAC 1 / Biological 2	Raptor down	Rictor down		+
Q4VAC9	RFS(ph)FSPSAVS(ph)PR	-1.5134	-1.3287	-0.6570	SILAC 1 / Biological 1	Raptor down	Rictor down		+
Q4VAC9	RFS(ph)FSPSAVS(ph)PR	-1.5134	-1.3243	-0.6570	SILAC 1 / Biological 1	Raptor down	Rictor down		+
Q4VAC9	RFSFS(ph)PSAVS(ph)PR	-2.7391	-1.4159	-0.6027	SILAC 1 / Biological 1	Raptor down	Rictor down		+
Q4VAC9	RFSFS(ph)PSAVS(ph)PR	-2.7427	-1.3971	-0.6009	SILAC 1 / Biological 1	Raptor down	Rictor down		+
P20152	SLYSSS(ph)PGGAYVTR	-1.3407	-1.7037	-0.3416	SILAC 1 / Biological 1	Raptor down	Rictor down		+
P20152	SLYSSS(ph)PGGAYVTR	-1.3760	-1.7586	-0.3318	SILAC 1 / Biological 1	Raptor down	Rictor down		+
Q7TPV4	(ac)AEMKSPTKAEPAT(ph)PAEAAQSDR	-1.7531	-1.6838	-0.0286	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q7TPV4	(ac)AEMKSPTKAEPAT(ph)PAEAAQSDR	-1.7171	-1.6838	-0.0286	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q7TPV4	(ac)AEMKSPTKAEPATPAEAAQS(ph)DR	-5.4894	-2.1025	-0.3886	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q99K70	(ac)S(ph)LQYGAEETPLAGSY(ph)GAADSFPK	-1.3038	-1.6038	-0.0949	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q99K70	(ac)S(ph)LQYGAEETPLAGSY(ph)GAADSFPK	-1.3038	-1.6038	-0.0949	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q99K70	(ac)S(ph)LQYGAEETPLAGSY(ph)GAADSFPK	-1.3830	-1.6058	-0.0378	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q99K70	(ac)S(ph)LQYGAEETPLAGSY(ph)GAADSFPK	-1.3830	-1.6058	-0.0378	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q99K70	(ac)S(ph)LQYGAEETPLAGSYGAADS(ph)FPK	-1.3038	-1.6038	-0.0949	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q99K70	(ac)S(ph)LQYGAEETPLAGSYGAADS(ph)FPK	-1.3038	-1.6038	-0.0949	SILAC 1 / Biological 1	Raptor down	Rictor down		
P43274	(ac)SETAPAAPAAPAPAEKT(ph)PVK	-1.2670	-1.2922	0.0142	SILAC 1 / Biological 1	Raptor down	Rictor down		
P43274	(ac)SETAPAAPAAPAPAEKT(ph)PVK	-1.2928	-1.1871	0.0286	SILAC 1 / Biological 1	Raptor down	Rictor down		
P43277	(ac)SETAPAAPAAPAPVEKT(ph)PVK	-1.5823	-1.3274	0.1609	SILAC 1 / Biological 1	Raptor down	Rictor down		
P43277	(ac)SETAPAAPAAPAPVEKT(ph)PVK	-1.6449	-1.2357	0.1965	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q99K70	(ac)SLQY(ph)GAEETPLAGS(ph)YGAADSFPK	-1.3686	-1.7550	-0.4296	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q99K70	(ac)SLQY(ph)GAEETPLAGS(ph)YGAADSFPK	-1.3686	-1.7550	-0.4296	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q99K70	(ac)SLQY(ph)GAEETPLAGS(ph)YGAADSFPK	-1.3242	-1.7147	-0.4252	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q99K70	(ac)SLQY(ph)GAEETPLAGS(ph)YGAADSFPK	-1.3242	-1.7147	-0.4252	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q9ERU9	ANT(ph)S(ph)SDLEKDDDAYK	-1.3904	-1.1052	0.0193	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q9ERU9	ANT(ph)S(ph)SDLEKDDDAYK	-1.3904	-1.1052	0.0193	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q9QX47	ASES(ph)S(ph)SEEKDDYEIFVK	-1.2731	-2.5007	-0.9257	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q9QX47	ASES(ph)S(ph)SEEKDDYEIFVK	-1.3058	-2.3894	-0.8688	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q9QX47	ASES(ph)S(ph)SEEKDDYEIFVK	-1.2731	-2.5007	-0.7432	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q68FG5	ATAPQT(ph)QHVSPM(ox)R	-1.3847	-1.3766	-0.0445	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q68FG5	ATAPQT(ph)QHVSPM(ox)R	-1.3703	-1.4140	0.0000	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q68FG5	ATAPQTQHVS(ph)PMR	-1.5757	-1.4973	0.0004	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q68FG5	ATAPQTQHVS(ph)PMR	-1.5701	-1.4621	0.0012	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q80XU3	ATVT(ph)PS(ph)PVKGK	-1.9394	-1.8396	0.2152	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q80XU3	ATVT(ph)PS(ph)PVKGK	-1.9525	-1.8432	0.2193	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q7TPV4	DIPSDT(ph)QSPVSTK	-2.5724	-2.3683	-0.1291	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q7TPV4	DIPSDT(ph)QSPVSTK	-2.9066	-2.3760	-0.1150	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q8BTI8	DKFSPTQDRPESS(ph)TVLK	-3.8443	-2.8118	-0.4546	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q8BTI8	DKFSPTQDRPESS(ph)TVLK	-3.8443	-2.8250	-0.4523	SILAC 1 / Biological 1	Raptor down	Rictor down		
P70698	DTYSDRS(ph)GS(ph)SSPDSEITELK	-1.2843	-1.7695	-0.3905	SILAC 1 / Biological 1	Raptor down	Rictor down		
P70698	DTYSDRS(ph)GS(ph)SSPDSEITELK	-1.5271	-1.7717	-0.3666	SILAC 1 / Biological 1	Raptor down	Rictor down		
P70698	DTYSDRS(ph)GS(ph)SSPDSEITELK	-1.2530	-1.6272	-0.2432	SILAC 1 / Biological 1	Raptor down	Rictor down		
P70698	DTYSDRS(ph)GS(ph)SSPDSEITELK	-1.2032	-1.4203	-0.2224	SILAC 1 / Biological 1	Raptor down	Rictor down		
P13864	EADDDEEADDDVSEMPS(ph)PK	-1.6517	-1.1035	0.0638	SILAC 1 / Biological 1	Raptor down	Rictor down		
P13864	EADDDEEADDDVSEMPS(ph)PK	-1.6517	-1.1015	0.0723	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q99NH0	EHYPVS(ph)SPSS(ph)PSPPAQPGGVSR	-1.7719	-1.7854	-0.4115	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q99NH0	EHYPVS(ph)SPSS(ph)PSPPAQPGGVSR	-1.7719	-1.7758	-0.4115	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q8BP27	ENPPS(ph)PPT(ph)SPAAPQPR	-2.2444	-2.3596	-0.2269	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q8BP27	ENPPS(ph)PPT(ph)SPAAPQPR	-2.2496	-2.3687	-0.2145	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q8BP27	ENPPS(ph)PPT(ph)SPAAPQPR	-1.1809	-1.2699	-0.0911	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q8BP27	ENPPS(ph)PPT(ph)SPAAPQPR	-1.2326	-1.3131	-0.0667	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q8BP27	ENPPS(ph)PPTS(ph)PAAPQPR	-1.1292	-1.2266	-0.1154	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q6PAM1	EQGVESPGAQPAS(ph)SPR	-1.7594	-1.1115	-0.4826	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q6PAM1	EQGVESPGAQPAS(ph)SPR	-1.7541	-1.0906	-0.4462	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q6PAM1	EQGVESPGAQPASS(ph)PR	-1.3066	-1.0687	-0.0787	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q62261	ESS(ph)PVPS(ph)PTLDR	-1.3178	-1.6312	-0.2389	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q62261	ESS(ph)PVPS(ph)PTLDR	-1.3178	-1.6312	-0.2389	SILAC 1 / Biological 1	Raptor down	Rictor down		
B2RUB9	GPPDFS(ph)S(ph)DEEREPTPVLGSGASVGR	-2.1577	-1.9798	-0.3201	SILAC 1 / Biological 1	Raptor down	Rictor down		
B2RUB9	GPPDFS(ph)S(ph)DEEREPTPVLGSGASVGR	-2.1577	-1.9798	-0.3201	SILAC 1 / Biological 1	Raptor down	Rictor down		
B2RUB9	GPPDFS(ph)S(ph)DEEREPTPVLGSGASVGR	-2.1354	-1.9814	-0.2983	SILAC 1 / Biological 1	Raptor down	Rictor down		
B2RUB9	GPPDFS(ph)S(ph)DEEREPTPVLGSGASVGR	-2.1354	-1.9814	-0.2800	SILAC 1 / Biological 1	Raptor down	Rictor down		
B2RUB9	GPPDFS(ph)SDEEREPTPVLGS(ph)GASVGR	-3.3970	-2.2233	-0.4160	SILAC 1 / Biological 1	Raptor down	Rictor down		
B2RUB9	GPPDFS(ph)SDEEREPTPVLGS(ph)GASVGR	-3.3970	-2.2233	-0.4160	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q9ESV0	KAQAVS(ph)EEEEEEEGQSSS(ph)PK	-1.7200	-1.5679	0.1735	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q9ESV0	KAQAVS(ph)EEEEEEEGQSSS(ph)PK	-1.7200	-1.5679	0.1735	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q9ESV0	KAQAVS(ph)EEEEEEEGQSSS(ph)PK	-1.7063	-1.5679	0.2009	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q9ESV0	KAQAVS(ph)EEEEEEEGQSSS(ph)PK	-1.7063	-1.5679	0.2009	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q6ZPH4	KILDPNSGEPAPVLSS(ph)PTPTDLSTFLSFPS(ph)PEK	-1.8564	-2.1857	-0.1584	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q6ZPH4	KILDPNSGEPAPVLSS(ph)PTPTDLSTFLSFPS(ph)PEK	-1.8564	-2.1857	-0.1443	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q6ZPH4	KILDPNSGEPAPVLSS(ph)PTPTDLSTFLSFPS(ph)PEK	-1.8938	-2.4445	-0.1211	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q6ZPH4	KILDPNSGEPAPVLSS(ph)PTPTDLSTFLSFPS(ph)PEK	-1.8938	-2.4445	-0.0930	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q52KI8	KPPAPPS(ph)PVQS(ph)QS(ph)PSTNWSPAVPAK	-1.1642	-1.1553	0.3125	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q52KI8	KPPAPPS(ph)PVQS(ph)QS(ph)PSTNWSPAVPAK	-1.1642	-1.1553	0.4950	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q52KI8	KPPAPPS(ph)PVQSQS(ph)PSTNWS(ph)PAVPAK	-1.1412	-1.3577	0.4378	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q52KI8	KPPAPPS(ph)PVQSQS(ph)PSTNWS(ph)PAVPAK	-1.1412	-1.3577	0.4378	SILAC 1 / Biological 1	Raptor down	Rictor down		
O88379	KRQS(ph)TES(ph)SPVPLNR	-2.2271	-1.2854	-0.3048	SILAC 1 / Biological 1	Raptor down	Rictor down		
O88379	KRQS(ph)TES(ph)SPVPLNR	-2.2271	-1.2854	-0.2980	SILAC 1 / Biological 1	Raptor down	Rictor down		
A2RSX9	KWS(ph)LNTYK	-2.2451	-1.4787	0.4208	SILAC 1 / Biological 1	Raptor down	Rictor down		
P48678	LRLSPS(ph)PTSQR	-2.1351	-2.1629	-0.0024	SILAC 1 / Biological 1	Raptor down	Rictor down		
P48678	LRLSPS(ph)PTSQR	-2.1066	-2.1190	0.0852	SILAC 1 / Biological 1	Raptor down	Rictor down		
P20152	MFGGS(ph)GTSSRPSSNR	-1.8489	-1.7250	-0.1068	SILAC 1 / Biological 1	Raptor down	Rictor down		
P20152	MFGGS(ph)GTSSRPSSNR	-1.8204	-1.7250	-0.0954	SILAC 1 / Biological 1	Raptor down	Rictor down		

Uniprot	Modified Sequence	M/L Ratio	H/L Ratio	H/M Ratio	Experiment	iRapKO/Control	iRicKO/Control	iRicKO/iRapKO	Peptide array +
Q6ZPJ3	NMTVEQLLTGS(ph)PT(ph)SPTVEPEKPTR	-1.4182	-2.2210	-0.5973	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q6ZPJ3	NMTVEQLLTGS(ph)PT(ph)SPTVEPEKPTR	-1.4179	-2.2261	-0.5908	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q6ZPJ3	NMTVEQLLTGS(ph)PTS(ph)PTVEPEKPTR	-1.5780	-2.3971	-0.6898	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q6ZPJ3	NMTVEQLLTGS(ph)PTS(ph)PTVEPEKPTR	-1.5780	-2.3971	-0.6898	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q6ZPJ3	NMTVEQLLTGS(ph)PTS(ph)PTVEPEKPTR	-1.4981	-2.3090	-0.6436	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q6ZPJ3	NMTVEQLLTGS(ph)PTS(ph)PTVEPEKPTR	-1.4979	-2.3116	-0.6403	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q0VAV8	NNPS(ph)PPPDSDLER	-1.5170	-1.8763	0.1276	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q0VAV8	NNPS(ph)PPPDSDLER	-1.5250	-1.8077	0.1474	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q61234	NSAGGTSVGWDS(ph)PPAS(ph)PLQR	-1.4830	-1.1411	0.1535	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q61234	NSAGGTSVGWDS(ph)PPAS(ph)PLQR	-1.4830	-1.1411	0.1535	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q61234	NSAGGTSVGWDS(ph)PPAS(ph)PLQR	-1.4830	-1.1411	0.1658	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q61234	NSAGGTSVGWDS(ph)PPAS(ph)PLQR	-1.4830	-1.1411	0.1658	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q9Z277	RDS(ph)SSLSS(ph)PLNPK	-1.7719	-2.2856	-0.5820	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q9Z277	RDS(ph)SSLSS(ph)PLNPK	-1.7719	-2.2856	-0.5820	SILAC 1 / Biological 1	Raptor down	Rictor down		
P97496	RKPS(ph)PSPPPPTATES(ph)R	-1.3043	-1.1455	-0.7488	SILAC 1 / Biological 1	Raptor down	Rictor down		
P97496	RKPS(ph)PSPPPPTATES(ph)R	-1.3043	-1.1455	-0.7488	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q3TIY5	RLEIS(ph)PDS(ph)SPER	-1.1571	-1.8649	-0.3022	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q3TIY5	RLEIS(ph)PDS(ph)SPER	-1.1571	-1.8614	-0.3015	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q9JJZ4	RPS(ph)TSPDVLQGQPPR	-1.2746	-1.1853	-0.0072	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q9JJZ4	RPS(ph)TSPDVLQGQPPR	-1.2746	-1.1379	-0.0072	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q4VAC9	RS(ph)S(ph)LAIEDGK	-1.7097	-1.4793	-0.2996	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q4VAC9	RS(ph)S(ph)LAIEDGK	-1.7097	-1.4793	-0.2996	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q4VAC9	RS(ph)S(ph)LAIEDGK	-1.7097	-1.4793	-0.2996	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q4VAC9	RS(ph)S(ph)LAIEDGK	-1.7097	-1.4793	-0.2996	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q9WU62	RTS(ph)S(ph)AVWNS(ph)PPLK	-1.4518	-2.4221	-0.8667	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q9WU62	RTS(ph)S(ph)AVWNS(ph)PPLK	-1.4518	-2.4221	-0.8667	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q9WU62	RTS(ph)S(ph)AVWNS(ph)PPLK	-1.4518	-2.4221	-0.8667	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q9WU62	RTS(ph)S(ph)AVWNS(ph)PPLK	-1.4518	-2.4221	-0.8667	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q9WU62	RTS(ph)S(ph)AVWNS(ph)PPLK	-1.4518	-2.4221	-0.8667	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q9WU62	RTS(ph)S(ph)AVWNS(ph)PPLK	-1.4518	-2.4221	-0.8667	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q5SSI6	RTSS(ph)DDES(ph)EEDEDDLLQR	-1.3066	-1.1204	-0.2750	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q5SSI6	RTSS(ph)DDES(ph)EEDEDDLLQR	-1.2496	-1.1204	-0.2522	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q7TPV4	S(ph)EGTTPEKNAASQQDAVTEGAMPAATGK	-1.0014	-1.3611	-0.3876	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q7TPV4	S(ph)EGTTPEKNAASQQDAVTEGAMPAATGK	-1.0014	-1.3611	-0.3876	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q9QXS1	S(ph)SSVGSSS(ph)SYPISSAGPR	-1.2222	-1.5649	-0.2019	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q9QXS1	S(ph)SSVGSSS(ph)SYPISSAGPR	-1.2222	-1.5552	-0.2019	SILAC 1 / Biological 1	Raptor down	Rictor down		
P43276	SETAPAET(ph)AAPAPVEKSPAKK	-2.1406	-1.3635	-0.1432	SILAC 1 / Biological 1	Raptor down	Rictor down		
P43276	SETAPAET(ph)AAPAPVEKSPAKK	-2.1406	-1.3635	-0.1432	SILAC 1 / Biological 1	Raptor down	Rictor down		
P48678	SGAQASST(ph)PLSPT(ph)R	-1.6801	-1.3909	-0.0564	SILAC 1 / Biological 1	Raptor down	Rictor down		
P48678	SGAQASST(ph)PLSPT(ph)R	-1.6801	-1.3909	-0.0069	SILAC 1 / Biological 1	Raptor down	Rictor down		
P48678	SGAQASSTPLS(ph)PTR	-1.9304	-2.0748	-0.3348	SILAC 1 / Biological 1	Raptor down	Rictor down		
P48678	SGAQASSTPLS(ph)PTR	-1.9304	-2.0748	-0.3348	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q99L45	SGDEM(ox)IFDPTMS(ph)K	-1.3521	-1.1090	0.2504	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q99L45	SGDEM(ox)IFDPTMS(ph)K	-1.3586	-1.1107	0.2524	SILAC 1 / Biological 1	Raptor down	Rictor down		
O70310	SGLS(ph)PANDTGAK	-1.2357	-1.5624	-0.1658	SILAC 1 / Biological 1	Raptor down	Rictor down		
O70310	SGLS(ph)PANDTGAK	-1.3317	-1.5203	0.0124	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q7TPV4	SPAPSNPT(ph)LSPSTPAK	-3.4423	-2.9839	0.3659	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q7TPV4	SPAPSNPT(ph)LSPSTPAK	-3.1742	-2.4928	0.4877	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q7TPV4	SPAPSNPTLSPS(ph)TPAK	-2.2764	-2.0548	0.2665	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q7TPV4	SPAPSNPTLSPS(ph)TPAK	-2.2764	-2.0548	0.2665	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q7TPV4	SPAPSNPTLSPST(ph)PAK	-3.3990	-2.6348	-0.3990	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q7TPV4	SPAPSNPTLSPST(ph)PAK	-3.3942	-2.7300	-0.2717	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q64337	SRLT(ph)PTT(ph)PESSSTGTEDK	-2.1821	-1.6472	-0.0194	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q64337	SRLTPT(ph)T(ph)PESSSTGTEDK	-1.9882	-1.5303	0.0093	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q9QYG0	SRT(ph)AS(ph)LTSAASIDGSR	-0.9994	-1.7238	-0.7768	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q9QYG0	SRT(ph)AS(ph)LTSAASIDGSR	-0.9994	-1.7238	-0.7768	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q9QYG0	SRT(ph)AS(ph)LTSAASIDGSR	-1.2912	-1.4822	-0.7332	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q9QYG0	SRT(ph)AS(ph)LTSAASIDGSR	-1.2912	-1.4822	-0.7332	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q8VCV2	SRT(ph)HS(ph)TSSSIGSGESPFSR	-1.2770	-1.2237	-0.4068	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q8VCV2	SRT(ph)HS(ph)TSSSIGSGESPFSR	-1.2770	-1.2237	-0.4068	SILAC 1 / Biological 1	Raptor down	Rictor down		
P26231	SRTS(ph)VQT(ph)EDDQLIAGQSAR	-1.5235	-1.7041	-0.2995	SILAC 1 / Biological 1	Raptor down	Rictor down		
P26231	SRTS(ph)VQT(ph)EDDQLIAGQSAR	-1.5235	-1.7041	-0.2995	SILAC 1 / Biological 1	Raptor down	Rictor down		
P26231	SRTS(ph)VQT(ph)EDDQLIAGQSAR	-1.4353	-1.7041	-0.0809	SILAC 1 / Biological 1	Raptor down	Rictor down		
P26231	SRTS(ph)VQT(ph)EDDQLIAGQSAR	-1.4353	-1.7041	-0.0809	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q8BTI8	SSS(ph)PVTELTARS(ph)PVK	-1.2129	-1.1554	0.5848	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q09XV5	T(ph)ASPS(ph)PLRPDAPVEK	-1.0960	-1.7757	-0.4142	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q09XV5	T(ph)ASPS(ph)PLRPDAPVEK	-1.0960	-1.7459	-0.4142	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q80YV2	T(ph)WGSVVRSPEGT(ph)PQK	-4.4457	-1.2636	-0.0153	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q80YV2	T(ph)WGSVVRSPEGT(ph)PQK	-4.3911	-1.2567	-0.0022	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q09XV5	TAS(ph)PS(ph)PLRPDAPVEK	-1.3285	-1.8399	-0.4830	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q09XV5	TAS(ph)PS(ph)PLRPDAPVEK	-1.3285	-1.8548	-0.4783	SILAC 1 / Biological 1	Raptor down	Rictor down		
B2RT41	TSSSS(ph)PANS(ph)DVEMDGIGR	-3.8809	-1.6616	-0.2912	SILAC 1 / Biological 1	Raptor down	Rictor down		
B2RT41	TSSSS(ph)PANS(ph)DVEMDGIGR	-3.8809	-1.6616	-0.2912	SILAC 1 / Biological 1	Raptor down	Rictor down		
B2RT41	TSSSS(ph)PANS(ph)DVEMDGIGR	-3.8809	-1.6519	-0.2912	SILAC 1 / Biological 1	Raptor down	Rictor down		
B2RT41	TSSSS(ph)PANS(ph)DVEMDGIGR	-3.8809	-1.6519	-0.2912	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q4JIM5	TVS(ph)TSS(ph)QPEENVDR	-2.8967	-1.3384	0.1638	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q4JIM5	TVS(ph)TSS(ph)QPEENVDR	-2.8967	-1.3384	0.1638	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q4JIM5	TVS(ph)TSS(ph)QPEENVDR	-2.8845	-1.3384	0.1707	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q4JIM5	TVS(ph)TSS(ph)QPEENVDR	-2.8845	-1.3384	0.1707	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q921K9	VDSSTNSSPS(ph)PQQSESLSPAHTS(ph)DFR	-3.1617	-2.1517	0.2994	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q921K9	VDSSTNSSPS(ph)PQQSESLSPAHTS(ph)DFR	-3.1617	-2.1517	0.2994	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q921K9	VDSSTNSSPS(ph)PQQSESLSPAHTS(ph)DFR	-3.2573	-2.1534	0.4034	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q921K9	VDSSTNSSPS(ph)PQQSESLSPAHTS(ph)DFR	-3.2573	-2.1534	0.4034	SILAC 1 / Biological 1	Raptor down	Rictor down		
O88792	VIYSQPS(ph)T(ph)RSEGEFK	-1.6996	-1.5759	-0.2401	SILAC 1 / Biological 1	Raptor down	Rictor down		
O88792	VIYSQPS(ph)T(ph)RSEGEFK	-1.7408	-1.6366	-0.2399	SILAC 1 / Biological 1	Raptor down	Rictor down		
O88792	VIYSQPS(ph)TRS(ph)EGEFK	-1.4110	-2.2099	-0.3085	SILAC 1 / Biological 1	Raptor down	Rictor down		
O88792	VIYSQPS(ph)TRS(ph)EGEFK	-1.4110	-2.2072	-0.3085	SILAC 1 / Biological 1	Raptor down	Rictor down		
O88792	VIYSQPS(ph)TRS(ph)EGEFK	-1.5168	-1.9212	-0.2808	SILAC 1 / Biological 1	Raptor down	Rictor down		
O88792	VIYSQPS(ph)TRS(ph)EGEFK	-1.5126	-1.9212	-0.2808	SILAC 1 / Biological 1	Raptor down	Rictor down		
Q8BTI8	AQSGTDS(ph)S(ph)PEHKIPAPR	-1.6663	-1.0702	-0.5927	SILAC 1 / Biological 2	Raptor down	Rictor down		
Q7TPV4	ARLS(ph)LVSRS(ph)PS(ph)LLQSGVK	-1.9154	-2.7675	-0.4854	SILAC 1 / Biological 2	Raptor down	Rictor down		
Q7TPV4	DIPSDT(ph)QSPVSTK	-2.0056	-1.7452	-0.3245	SILAC 1 / Biological 2	Raptor down	Rictor down		
Q7TPV4	DIPSDTQS(ph)PVSTK	-1.6784	-1.5943	-0.0815	SILAC 1 / Biological 2	Raptor down	Rictor down		
P70698	DTYSDRS(ph)GS(ph)SSPDSEITELK	-1.6887	-1.7155	-0.6943	SILAC 1 / Biological 2	Raptor down	Rictor down		
Q61687	EQLAVNQVNS(ph)ES(ph)DS(ph)DSEESKKPR	-1.1744	-1.1631	-0.5906	SILAC 1 / Biological 2	Raptor down	Rictor down		
Q61687	EQLAVNQVNS(ph)ES(ph)DS(ph)DSEESKKPR	-1.1744	-1.1631	-0.5906	SILAC 1 / Biological 2	Raptor down	Rictor down		
Q61687	EQLAVNQVNS(ph)ES(ph)DS(ph)DSEESKKPR	-1.1744	-1.1631	-0.5906	SILAC 1 / Biological 2	Raptor down	Rictor down		
Q3UHX0	FQDSS(ph)S(ph)EEEDIAEEADHS(ph)KPSPGEAVPENEAIR	-2.8238	-1.0673	0.0164	SILAC 1 / Biological 2	Raptor down	Rictor down		
A2BH40	GPS(ph)PSPVGS(ph)PASVAQSR	-1.1975	-2.1966	-0.9280	SILAC 1 / Biological 2	Raptor down	Rictor down		
Q64337	IALESVGQPEEQM(ox)ESGNCSGGDDDWT(ph)HLSSK	-1.3213	-1.2917	0.0744	SILAC 1 / Biological 2	Raptor down	Rictor down		
Q6ZPH4	KILDPNSGEPAPVLS(ph)SPTPTDLSTFLSFPS(ph)PEK	-1.3189	-2.1561	-0.5925	SILAC 1 / Biological 2	Raptor down	Rictor down		
Q6ZPJ3	NMTVEQLLTGS(ph)PTS(ph)PTVEPEKPTR	-1.0648	-2.1352	-0.9279	SILAC 1 / Biological 2	Raptor down	Rictor down		
P97496	RKPS(ph)PSPPPPT(ph)ATESR	-1.3333	-1.8731	-0.4831	SILAC 1 / Biological 2	Raptor down	Rictor down		
Q80V30	RRS(ph)S(ph)TLAPAQPDGTESEWTDVETR	-1.4411	-2.0960	-0.8788	SILAC 1 / Biological 2	Raptor down	Rictor down		
Q80V30	RRS(ph)S(ph)TLAPAQPDGTESEWTDVETR	-1.4411	-2.0960	-0.8788	SILAC 1 / Biological 2	Raptor down	Rictor down		
Q7TPV4	S(ph)PSLLQS(ph)GVK	-1.8072	-1.4743	-0.1512	SILAC 1 / Biological 2	Raptor down	Rictor down		
Q99K70	SCSHQT(ph)SAPSLK	-1.0506	-1.5572	-0.4472	SILAC 1 / Biological 2	Raptor down	Rictor down		
Q7TPV4	SPAPSNPT(ph)LSPSTPAK	-1.7662	-1.9940	0.2804	SILAC 1 / Biological 2	Raptor down	Rictor down		
Q7TPV4	SPAPSNPTLS(ph)PS(ph)TPAK	-1.9774	-1.8247	0.2295	SILAC 1 / Biological 2	Raptor down	Rictor down		
Q7TPV4	SPAPSNPTLS(ph)PST(ph)PAK	-1.8267	-1.4232	0.2113	SILAC 1 / Biological 2	Raptor down	Rictor down		
Q7TPV4	SPAPSNPTLSPST(ph)PAKT(ph)PK	-1.9700	-1.7445	-0.3353	SILAC 1 / Biological 2	Raptor down	Rictor down		
Q8K2D3	SQDVAISPQQQQCSKS(ph)Y(ph)VDR	-4.1726	-1.8244	0.3744	SILAC 1 / Biological 2	Raptor down	Rictor down		
O08582	SRS(ph)PVDSPVPASMFAPEPSS(ph)PGAAR	-1.4421	-1.3662	-0.4334	SILAC 1 / Biological 2	Raptor down	Rictor down		
B2RWS6	TDGKEEEEQPSTSATQSS(ph)PAPGQSK	-1.0391	-1.5543	-0.3796	SILAC 1 / Biological 2	Raptor down	Rictor down		
Q9QWY8	TLS(ph)DPPS(ph)PLPHGPPNK	-0.9997	-1.2212	-0.3388	SILAC 1 / Biological 2	Raptor down	Rictor down		

Uniprot	Modified Sequence	M/L Ratio	H/L Ratio	H/M Ratio	Experiment	iRapKO/Control	iRicKO/Control	iRicKO/iRapKO	Peptide array +
Q6ZQ58	VEPAWHDQDETS(ph)SVKSDGAGGAR	-1.2710	-1.2034	-0.0910	SILAC 1 / Biological 2	Raptor down	Rictor down		
Q8BRB8	LPSGSGPASPTTGS(ph)AVDIR	-1.2917	-1.6384	-0.7607	SILAC 2 / Biological 3	Raptor down	Rictor down		
Q6ZPJ3	NMTVEQLLTGSPTS(ph)PTVEPEKPTR	-1.7222	-1.1166	0.5952	SILAC 2 / Biological 3	Raptor down	Rictor down		
Q8C1D8	RLS(ph)STGGQTPR	-1.5340	-1.2621	0.4308	SILAC 2 / Biological 3	Raptor down	Rictor down		
Q8C1D8	RLS(ph)STGGQTPR	-1.5340	-1.2621	0.4308	SILAC 2 / Biological 3	Raptor down	Rictor down		
Q64337	SRLT(ph)PTT(ph)PESSSTGTEDK	-1.5096	-1.1779	0.1344	SILAC 2 / Biological 3	Raptor down	Rictor down		
Q6P9R2	TEDGGWEWS(ph)DDEFDEESEEGR	-1.1166	-1.2850	-0.3453	SILAC 2 / Biological 3	Raptor down	Rictor down		
Q6PAM1	EQGVES(ph)PGAQPASS(ph)PR	-1.0430	-1.0779	-0.5360	SILAC 3 / Biological 4	Raptor down	Rictor down		
Q9ESL4	NFSS(ph)LNLSSR	-1.2187	-1.0739	0.0485	SILAC 3 / Biological 4	Raptor down	Rictor down		
Q6ZPJ3	NMTVEQLLTGSPTSPT(ph)VEPEKPTR	-1.4983	-1.0981	0.2703	SILAC 3 / Biological 4	Raptor down	Rictor down		
P52293	NVS(ph)SFPDDATSPLQENR	-1.0461	-1.7328	-0.3149	SILAC 3 / Biological 4	Raptor down	Rictor down		
P52293	NVS(ph)SFPDDATSPLQENR	-1.0461	-1.7328	-0.3149	SILAC 3 / Biological 4	Raptor down	Rictor down		
Q9JIK5	S(ph)NSSDAPGEES(ph)SSETEKEIPVEQK	-1.9674	-1.3842	0.5995	SILAC 3 / Biological 4	Raptor down	Rictor down		
P97825	S(ph)NSSEASSGDFLDLK	-1.3346	-1.3024	0.3219	SILAC 3 / Biological 4	Raptor down	Rictor down		
Q71FD5	AY(ph)SGSDLPSGT(ph)GSGGGGADGARAAR	-2.5113	4.9569	5.4858	SILAC 1 / Biological 1	Raptor down	Rictor up	H/M up	
Q99P31	LLQTCFSS(ph)PTDDSM(ox)DR	-1.1476	1.2658	2.6584	SILAC 2 / Biological 3	Raptor down	Rictor up	H/M up	
O08784	ASAVS(ph)PEKAPMTSK	-1.0616	0.8497	2.3783	SILAC 3 / Biological 4	Raptor down	Rictor up	H/M up	
Q61892	GGDYALAPGSQSS(ph)EMS(ph)LR	-7.4230	1.7893	3.5858	SILAC 3 / Biological 4	Raptor down	Rictor up	H/M up	
Q61892	GGDYALAPGSQSS(ph)EMS(ph)LR	-7.4230	1.7893	3.5858	SILAC 3 / Biological 4	Raptor down	Rictor up	H/M up	
P52293	RNVSSFPDDAT(ph)SPLQENR	-1.2570	-0.3598	-1.5897	SILAC 1 / Biological 2	Raptor down		H/M down	
Q80U93	STQTAPSSAPS(ph)TGQKSPR	-1.1887	-1.0647	-1.8365	SILAC 1 / Biological 2	Raptor down		H/M down	
B2RT41	TSS(ph)SSPANS(ph)DVEMDGIGR	-1.0474	-0.7850	-2.8847	SILAC 1 / Biological 2	Raptor down		H/M down	
B2RQC6	IHRAS(ph)DPGLPAEEPK	-1.7037	-0.9627	0.9493	SILAC 2 / Biological 3	Raptor down		H/M up	+
B2RQC6	IHRAS(ph)DPGLPAEEPK	-1.4514	-0.5579	0.9843	SILAC 3 / Biological 4	Raptor down		H/M up	+
P43274	(ac)SETAPAAPAAPAPAEKT(ph)PVK	-1.3114	-0.3112	1.2136	SILAC 1 / Biological 1	Raptor down		H/M up	
P43277	(ac)SETAPAAPAAPAPVEKT(ph)PVK	-1.2643	-0.2017	1.2677	SILAC 1 / Biological 1	Raptor down		H/M up	
Q8BX17	APS(ph)QPPSPT(ph)EER	-1.3355	-0.9756	1.0834	SILAC 1 / Biological 1	Raptor down		H/M up	
Q8BX17	APS(ph)QPPSPT(ph)EER	-1.3355	-0.9756	1.0834	SILAC 1 / Biological 1	Raptor down		H/M up	
Q7TPV4	DIPSDTQS(ph)PVSTK	-1.0487	-0.4267	0.7564	SILAC 1 / Biological 1	Raptor down		H/M up	
Q3UGP0	DLYRPLS(ph)SDDLDS(ph)VGDSV	-1.0266	0.5716	0.9443	SILAC 1 / Biological 1	Raptor down		H/M up	
Q3UGP0	DLYRPLS(ph)SDDLDS(ph)VGDSV	-1.0266	0.5716	0.9443	SILAC 1 / Biological 1	Raptor down		H/M up	
Q3UGP0	DLYRPLS(ph)SDDLDS(ph)VGDSV	-1.0759	0.5890	0.9540	SILAC 1 / Biological 1	Raptor down		H/M up	
Q3UGP0	DLYRPLS(ph)SDDLDS(ph)VGDSV	-1.0759	0.5890	0.9540	SILAC 1 / Biological 1	Raptor down		H/M up	
P70698	DTY(ph)SDRS(ph)GSSS(ph)PDSEITELK	-1.3252	-1.0159	0.8984	SILAC 1 / Biological 1	Raptor down		H/M up	
Q9QXS1	GYYSPY(ph)SVSGSGS(ph)TAGSR	-1.0829	-0.0088	1.2185	SILAC 1 / Biological 1	Raptor down		H/M up	
Q9QXS1	GYYSPY(ph)SVSGSGS(ph)TAGSR	-1.0829	-0.0088	1.2185	SILAC 1 / Biological 1	Raptor down		H/M up	
Q9QXS1	GYYSPY(ph)SVSGSGS(ph)TAGSR	-1.0829	0.0009	1.2185	SILAC 1 / Biological 1	Raptor down		H/M up	
Q9QXS1	GYYSPY(ph)SVSGSGS(ph)TAGSR	-1.0829	0.0009	1.2185	SILAC 1 / Biological 1	Raptor down		H/M up	
Q8K4Q0	ILDTSSLTQS(ph)APAS(ph)PTNK	-2.0257	-0.4242	1.4214	SILAC 1 / Biological 1	Raptor down		H/M up	
Q8K4Q0	ILDTSSLTQS(ph)APAS(ph)PTNK	-2.0476	-0.4242	1.4225	SILAC 1 / Biological 1	Raptor down		H/M up	
Q52KI8	KPPAPPS(ph)PVQS(ph)QSPST(ph)NWSPAVPAK	-1.2771	-0.6614	0.9900	SILAC 1 / Biological 1	Raptor down		H/M up	
Q52KI8	KPPAPPS(ph)PVQS(ph)QSPST(ph)NWSPAVPAK	-1.2567	-0.6074	1.0081	SILAC 1 / Biological 1	Raptor down		H/M up	
P20152	LRSS(ph)VPGVR	-1.4467	-1.0186	0.7796	SILAC 1 / Biological 1	Raptor down		H/M up	
P20152	LRSS(ph)VPGVR	-1.4467	-1.0186	0.7821	SILAC 1 / Biological 1	Raptor down		H/M up	
P62754	LSSLRAST(ph)SKSESS(ph)QK	-1.0284	-0.1108	1.2598	SILAC 1 / Biological 1	Raptor down		H/M up	
P62754	LSSLRAST(ph)SKSESS(ph)QK	-1.0284	-0.1108	1.2598	SILAC 1 / Biological 1	Raptor down		H/M up	
P14404	NFIGNSNHGSQS(ph)PR	-1.8254	0.1349	2.5021	SILAC 1 / Biological 1	Raptor down		H/M up	
P14404	NFIGNSNHGSQS(ph)PR	-1.8254	0.1349	2.5021	SILAC 1 / Biological 1	Raptor down		H/M up	
Q8K019	NTPS(ph)QHSHSIQHS(ph)PER	-1.4011	-0.5820	0.8882	SILAC 1 / Biological 1	Raptor down		H/M up	
Q8K019	NTPS(ph)QHSHSIQHS(ph)PER	-1.4011	-0.5820	0.8882	SILAC 1 / Biological 1	Raptor down		H/M up	
Q6NS46	QES(ph)ESEQELVNK	-1.0622	-0.1720	0.8331	SILAC 1 / Biological 1	Raptor down		H/M up	
Q6NS46	QES(ph)ESEQELVNK	-1.0622	-0.2099	0.8425	SILAC 1 / Biological 1	Raptor down		H/M up	
O35130	RFS(ph)VQEQDWETT(ph)PPKK	-1.4961	-0.5209	1.0294	SILAC 1 / Biological 1	Raptor down		H/M up	
O35130	RFS(ph)VQEQDWETT(ph)PPKK	-1.5025	-0.5209	1.0378	SILAC 1 / Biological 1	Raptor down		H/M up	
Q8CI59	RLVDS(ph)DGS(ph)LAEVPK	-1.7651	0.5896	2.0451	SILAC 1 / Biological 1	Raptor down		H/M up	
Q8CI59	RLVDS(ph)DGS(ph)LAEVPK	-1.7651	0.5896	2.0451	SILAC 1 / Biological 1	Raptor down		H/M up	
Q8CI59	RLVDS(ph)DGS(ph)LAEVPK	-1.7718	0.6481	2.0451	SILAC 1 / Biological 1	Raptor down		H/M up	
Q8CI59	RLVDS(ph)DGS(ph)LAEVPK	-1.7718	0.6481	2.0451	SILAC 1 / Biological 1	Raptor down		H/M up	
Q8K3X4	RNSSS(ph)PVS(ph)PASVPGQR	-1.1324	-0.0650	0.8989	SILAC 1 / Biological 1	Raptor down		H/M up	
Q8K3X4	RNSSS(ph)PVS(ph)PASVPGQR	-1.1324	-0.0671	1.0397	SILAC 1 / Biological 1	Raptor down		H/M up	
Q3UGP0	S(ph)GKSPSPSPT(ph)SPGSLR	-1.1628	0.5785	1.2862	SILAC 1 / Biological 1	Raptor down		H/M up	
Q3UGP0	S(ph)GKSPSPSPT(ph)SPGSLR	-1.1628	0.5785	1.2862	SILAC 1 / Biological 1	Raptor down		H/M up	
P31750	S(ph)GSPSDNSGAEEMEVSLAKPK	-1.3492	0.5463	1.3840	SILAC 1 / Biological 1	Raptor down		H/M up	
P31750	S(ph)GSPSDNSGAEEMEVSLAKPK	-1.3492	0.5463	1.3840	SILAC 1 / Biological 1	Raptor down		H/M up	
P31750	SGS(ph)PSDNS(ph)GAEEMEVSLAKPK	-1.3354	0.5453	1.0685	SILAC 1 / Biological 1	Raptor down		H/M up	
P31750	SGS(ph)PSDNS(ph)GAEEMEVSLAKPK	-1.3354	0.5453	1.0685	SILAC 1 / Biological 1	Raptor down		H/M up	
Q8BTI8	SMLQT(ph)PPDQNLSGS(ph)KSPCPQK	-1.3245	-0.2164	0.9470	SILAC 1 / Biological 1	Raptor down		H/M up	
Q8BTI8	SMLQT(ph)PPDQNLSGS(ph)KSPCPQK	-1.3156	-0.2721	0.9561	SILAC 1 / Biological 1	Raptor down		H/M up	
Q8BTI8	SMLQT(ph)PPDQNLSGSKS(ph)PCPQK	-1.4783	-0.1167	0.8714	SILAC 1 / Biological 1	Raptor down		H/M up	
Q8BTI8	SMLQT(ph)PPDQNLSGSKS(ph)PCPQK	-1.4757	-0.1155	0.8714	SILAC 1 / Biological 1	Raptor down		H/M up	
Q7TNL7	SNIS(ph)PNFNFMGQLLDFER	-1.6747	-0.2397	0.7924	SILAC 1 / Biological 1	Raptor down		H/M up	
Q7TNL7	SNIS(ph)PNFNFMGQLLDFER	-1.5082	-0.2537	0.7949	SILAC 1 / Biological 1	Raptor down		H/M up	
Q9EPU0	SQIDVALS(ph)QDS(ph)TYQGER	-1.5644	-0.4083	1.0495	SILAC 1 / Biological 1	Raptor down		H/M up	
Q9EPU0	SQIDVALS(ph)QDS(ph)TYQGER	-1.5592	-0.5792	1.0530	SILAC 1 / Biological 1	Raptor down		H/M up	
Q4VAC9	SSS(ph)VLS(ph)LEGSDK	-1.5433	-0.4693	0.8899	SILAC 1 / Biological 1	Raptor down		H/M up	
Q4VAC9	SSS(ph)VLS(ph)LEGSDK	-1.5433	-0.4693	0.8899	SILAC 1 / Biological 1	Raptor down		H/M up	
Q4VAC9	SSS(ph)VLS(ph)LEGSDK	-1.4044	-0.4661	0.8926	SILAC 1 / Biological 1	Raptor down		H/M up	
Q4VAC9	SSS(ph)VLS(ph)LEGSDK	-1.4044	-0.4661	0.8926	SILAC 1 / Biological 1	Raptor down		H/M up	
Q80X50	STSAPQMSPGS(ph)SDNQSSSPQPAQQK	-1.4897	-0.6635	0.7946	SILAC 1 / Biological 1	Raptor down		H/M up	
Q80X50	STSAPQMSPGS(ph)SDNQSSSPQPAQQK	-1.5073	-0.6635	0.8057	SILAC 1 / Biological 1	Raptor down		H/M up	
Q05D44	SVPTVDS(ph)GNEDDDSSFK	-1.6196	-0.2193	0.9385	SILAC 1 / Biological 1	Raptor down		H/M up	
Q05D44	SVPTVDS(ph)GNEDDDSSFK	-1.6370	-0.2047	0.9644	SILAC 1 / Biological 1	Raptor down		H/M up	
Q02248	T(ph)SMGGTQQQFVEGVR	-1.0759	0.1367	1.2013	SILAC 1 / Biological 1	Raptor down		H/M up	
Q02248	T(ph)SMGGTQQQFVEGVR	-1.0759	0.1367	1.2013	SILAC 1 / Biological 1	Raptor down		H/M up	
P49586	T(ph)SPSSS(ph)PASLSR	-1.4725	-0.3417	0.8213	SILAC 1 / Biological 1	Raptor down		H/M up	
Q05D44	TARPNSEAPLS(ph)GS(ph)EDADDSNKLSK	-3.6244	0.3873	2.4337	SILAC 1 / Biological 1	Raptor down		H/M up	
Q05D44	TARPNSEAPLS(ph)GS(ph)EDADDSNKLSK	-3.6244	0.3873	2.4337	SILAC 1 / Biological 1	Raptor down		H/M up	
P70255	TEMDKS(ph)PFNSPSPQDS(ph)PR	-1.1442	-0.7933	0.7586	SILAC 1 / Biological 1	Raptor down		H/M up	
P70255	TEMDKS(ph)PFNSPSPQDS(ph)PR	-1.0895	-0.7863	0.7717	SILAC 1 / Biological 1	Raptor down		H/M up	
Q5NCR9	VLQKPSVFGS(ph)DSDDDETS(ph)VSESLQR	-1.0121	-0.2641	1.6889	SILAC 1 / Biological 1	Raptor down		H/M up	
Q5NCR9	VLQKPSVFGS(ph)DSDDDETS(ph)VSESLQR	-1.0121	0.1496	1.6889	SILAC 1 / Biological 1	Raptor down		H/M up	
Q6NS46	ERQES(ph)ESEQELVNK	-1.6654	-0.7673	0.9625	SILAC 1 / Biological 2	Raptor down		H/M up	
Q8K4Q0	ILDTSSLTQS(ph)APAS(ph)PTNK	-2.5867	-0.3083	2.0880	SILAC 1 / Biological 2	Raptor down		H/M up	
Q9ESV0	KAQAVS(ph)EEEEEEEGQSS(ph)SPK	-1.2551	-0.1690	0.8016	SILAC 1 / Biological 2	Raptor down		H/M up	
P62754	LSS(ph)LRAST(ph)SK	-2.0054	0.0081	2.2572	SILAC 1 / Biological 2	Raptor down		H/M up	
Q8BGD9	RES(ph)EKS(ph)LENETLNK	-1.5509	-0.2064	0.7954	SILAC 1 / Biological 2	Raptor down		H/M up	
Q8BGD9	RES(ph)EKS(ph)LENETLNK	-1.4798	-0.3377	1.0169	SILAC 1 / Biological 2	Raptor down		H/M up	
Q8BGD9	RES(ph)EKSLENET(ph)LNK	-2.0600	-0.2064	0.7815	SILAC 1 / Biological 2	Raptor down		H/M up	
Q61083	RGS(ph)DIDNPTLTVTDISPPSRS(ph)PR	-1.2190	-0.1638	1.0338	SILAC 1 / Biological 2	Raptor down		H/M up	
Q61083	RGS(ph)DIDNPTLTVTDISPPSRS(ph)PR	-1.2190	-0.1638	1.0338	SILAC 1 / Biological 2	Raptor down		H/M up	
Q80V17	RKT(ph)VS(ph)FSAAEEAPVPEPSTAAPLQAK	-1.4593	0.2202	1.1709	SILAC 1 / Biological 2	Raptor down		H/M up	
P62754	RLSS(ph)LRAS(ph)TSK	-1.8269	-0.0945	1.9960	SILAC 1 / Biological 2	Raptor down		H/M up	
P62754	RRLS(ph)S(ph)LR	-2.1369	-0.3083	1.8083	SILAC 1 / Biological 2	Raptor down		H/M up	
P62754	RRLS(ph)S(ph)LR	-1.8373	-0.0430	1.8974	SILAC 1 / Biological 2	Raptor down		H/M up	
Q6NZJ6	S(ph)FSKEVEERS(ph)R	-1.3236	-0.0408	1.3112	SILAC 1 / Biological 2	Raptor down		H/M up	
Q64337	S(ph)RLTPTT(ph)PESSSTGTEDK	-1.5842	0.5629	1.7705	SILAC 1 / Biological 2	Raptor down		H/M up	
Q64337	SRLT(ph)PTT(ph)PESSSTGTEDK	-1.8296	0.3203	1.8054	SILAC 1 / Biological 2	Raptor down		H/M up	
Q64337	SRLT(ph)PTTPES(ph)SSTGTEDK	-1.5884	-0.1149	1.8425	SILAC 1 / Biological 2	Raptor down		H/M up	
Q64337	SRLT(ph)PTTPESS(ph)STGTEDK	-1.4931	0.3128	1.8619	SILAC 1 / Biological 2	Raptor down		H/M up	
Q64337	SRLTPT(ph)T(ph)PESSSTGTEDK	-2.4720	-1.0354	1.2383	SILAC 1 / Biological 2	Raptor down		H/M up	
Q64337	SRLTPT(ph)T(ph)PESSSTGTEDK	-1.7525	0.4930	1.4868	SILAC 1 / Biological 2	Raptor down		H/M up	
Q60875	EAQELGS(ph)PEDR	-1.1584	0.3655	1.7557	SILAC 2 / Biological 3	Raptor down		H/M up	
Q58A65	ERPIS(ph)LGIFPLPAGDGLLT(ph)PDTQK	-1.3753	0.0937	1.6573	SILAC 2 / Biological 3	Raptor down		H/M up	
Q58A65	ERPIS(ph)LGIFPLPAGDGLLT(ph)PDTQK	-1.3753	0.0937	1.6573	SILAC 2 / Biological 3	Raptor down		H/M up	
Q6NS46	ERQES(ph)ESEQELVNK	-1.6859	-0.9569	0.9172	SILAC 2 / Biological 3	Raptor down		H/M up	

Uniprot	Modified Sequence	M/L Ratio	H/L Ratio	H/M Ratio	Experiment	iRapKO/Control	iRicKO/Control	iRicKO/iRapKO	Peptide array +
Q3TUQ5	GFS(ph)DSGGGPPAK	-1.0228	-0.0781	1.2068	SILAC 2 / Biological 3	Raptor down		H/M up	
Q4VA53	GRTAS(ph)DSDEQQWPEEK	-1.6809	-0.0808	1.0018	SILAC 2 / Biological 3	Raptor down		H/M up	
Q8K4Q0	ILDTSSLTQS(ph)APAS(ph)PTNK	-2.1617	-0.4751	1.5640	SILAC 2 / Biological 3	Raptor down		H/M up	
Q8K4Q0	ILDTSSLTQS(ph)APAS(ph)PTNK	-2.2461	-0.4625	1.8610	SILAC 2 / Biological 3	Raptor down		H/M up	
P09405	KEDS(ph)DEDEDEEDEDDS(ph)DEDEDDEEEDEFEPPIVK	-1.2894	-0.8222	0.9409	SILAC 2 / Biological 3	Raptor down		H/M up	
P09405	KEDS(ph)DEDEDEEDEDDS(ph)DEDEDDEEEDEFEPPIVK	-1.2894	-0.8222	0.9409	SILAC 2 / Biological 3	Raptor down		H/M up	
Q78WZ7	KHS(ph)EEANFES(ph)PK	-1.1718	-0.3619	0.8207	SILAC 2 / Biological 3	Raptor down		H/M up	
Q78WZ7	KHS(ph)EEANFES(ph)PK	-1.1718	-0.3619	0.8207	SILAC 2 / Biological 3	Raptor down		H/M up	
Q6NS46	KSGAAEEDDS(ph)GVEVYYR	-1.0396	-0.1168	0.9163	SILAC 2 / Biological 3	Raptor down		H/M up	
Q8R1A4	MSS(ph)HTETSSFLQTLTGR	-1.3905	-0.3514	0.8825	SILAC 2 / Biological 3	Raptor down		H/M up	
Q6ZQ61	RDS(ph)FDDRGPSLNPVLDYDHGSR	-1.0379	0.0010	1.8104	SILAC 2 / Biological 3	Raptor down		H/M up	
Q6ZQ61	RDSFDDRGPS(ph)LNPVLDYDHGSR	-1.3222	-0.6460	0.9216	SILAC 2 / Biological 3	Raptor down		H/M up	
Q80V17	RKT(ph)VS(ph)FSAAEEAPVPEPSTAAPLQAK	-1.5239	-0.2853	1.5848	SILAC 2 / Biological 3	Raptor down		H/M up	
Q80V17	RKT(ph)VS(ph)FSAAEEAPVPEPSTAAPLQAK	-1.4020	0.1829	1.7584	SILAC 2 / Biological 3	Raptor down		H/M up	
P62754	RLSS(ph)LRAST(ph)SK	-2.8225	-0.8700	2.6290	SILAC 2 / Biological 3	Raptor down		H/M up	
P62754	RRLS(ph)S(ph)LR	-2.7225	-0.7373	2.3364	SILAC 2 / Biological 3	Raptor down		H/M up	
P62754	RRLS(ph)S(ph)LR	-3.2167	-0.7580	2.7071	SILAC 2 / Biological 3	Raptor down		H/M up	
Q6NZJ6	S(ph)FSKEVEERS(ph)R	-2.0383	-0.6345	0.8465	SILAC 2 / Biological 3	Raptor down		H/M up	
Q7TNL7	SNIS(ph)PNFNFMGQLLDFER	-1.2540	-0.4902	0.9667	SILAC 2 / Biological 3	Raptor down		H/M up	
Q9JIK5	SNSSDAPGEES(ph)SSETEKEIPVEQK	-1.0071	-0.6198	0.9212	SILAC 2 / Biological 3	Raptor down		H/M up	
Q7TPV4	SPS(ph)LLQSGVK	-1.2562	-0.7663	0.7777	SILAC 2 / Biological 3	Raptor down		H/M up	
Q64337	SRLT(ph)PTTPES(ph)SSTGTEDK	-1.5971	-0.9126	0.7978	SILAC 2 / Biological 3	Raptor down		H/M up	
Q64337	SRLTPT(ph)TPES(ph)SSTGTEDK	-1.6332	-0.8015	1.0754	SILAC 2 / Biological 3	Raptor down		H/M up	
Q3UMF0	T(ph)LS(ph)SPTGTETNPPKAPR	-1.6083	0.7887	2.4277	SILAC 2 / Biological 3	Raptor down		H/M up	
Q3UMF0	T(ph)LSSPTGTET(ph)NPPKAPR	-1.1552	-0.2944	0.9358	SILAC 2 / Biological 3	Raptor down		H/M up	
Q8BT07	VKAT(ph)SPKS(ph)PSAALNDSLVECPK	-1.1399	0.3483	1.9089	SILAC 2 / Biological 3	Raptor down		H/M up	
Q7TPV4	(ac)AEM(ox)KSPT(ph)KAEPATPAEAAQSDR	-1.1612	0.0955	1.0591	SILAC 3 / Biological 4	Raptor down		H/M up	
Q7TPV4	(ac)AEM(ox)KSPTKAEPAT(ph)PAEAAQSDR	-1.0882	-0.1585	0.8468	SILAC 3 / Biological 4	Raptor down		H/M up	
Q8BX17	APS(ph)QPPSPT(ph)EER	-1.1503	-0.0605	1.2653	SILAC 3 / Biological 4	Raptor down		H/M up	
P27546	DMS(ph)PSAETEAPLAK	-1.0284	0.1922	1.1627	SILAC 3 / Biological 4	Raptor down		H/M up	
Q9D1F4	EDEEEDEDEPTETETS(ph)GER	-1.5365	-0.0402	1.5813	SILAC 3 / Biological 4	Raptor down		H/M up	
Q9JIK5	EIITEEPS(ph)EEEADM(ox)PKPK	-1.2601	0.1656	1.5098	SILAC 3 / Biological 4	Raptor down		H/M up	
Q6NS46	ERQES(ph)ESEQELVNK	-1.7747	-0.6957	0.9368	SILAC 3 / Biological 4	Raptor down		H/M up	
Q99P72	ES(ph)ETFS(ph)DSSPIEIIDEFPTFVSAK	-1.0267	-0.2564	0.9316	SILAC 3 / Biological 4	Raptor down		H/M up	
Q6ZQ58	ES(ph)PRPPAAAEAPAGSDGEDGGRR	-1.7201	-0.1962	1.2691	SILAC 3 / Biological 4	Raptor down		H/M up	
Q99P72	ESETFS(ph)DS(ph)SPIEIIDEFPTFVSAK	-1.1033	-0.1358	0.9316	SILAC 3 / Biological 4	Raptor down		H/M up	
Q99P72	ESETFSDS(ph)S(ph)PIEIIDEFPTFVSAK	-1.1438	-0.0786	0.9328	SILAC 3 / Biological 4	Raptor down		H/M up	
Q3UMF0	EVQRDPQLS(ph)PEQHPSSLSER	-1.5167	-0.0816	1.4031	SILAC 3 / Biological 4	Raptor down		H/M up	
Q8BTM8	FNEEHIPDSPFVVPVAS(ph)PSGDAR	-0.9970	-0.2598	0.9142	SILAC 3 / Biological 4	Raptor down		H/M up	
Q5F2E7	GADNDGSGS(ph)ESGYTTPK	-1.0222	0.1284	0.9845	SILAC 3 / Biological 4	Raptor down		H/M up	
O08539	GNKS(ph)PSPPPDGSPAATPEIR	-2.1786	0.0382	1.9648	SILAC 3 / Biological 4	Raptor down		H/M up	
O08539	GNKSPS(ph)PPPDGSPAATPEIR	-1.4336	0.2227	1.8893	SILAC 3 / Biological 4	Raptor down		H/M up	
Q8C2Q7	HTGPNS(ph)PDTANDGFVR	-1.1118	-0.0962	1.0791	SILAC 3 / Biological 4	Raptor down		H/M up	
Q8C2Q7	HTGPNSPDT(ph)ANDGFVR	-1.4794	0.1442	1.5274	SILAC 3 / Biological 4	Raptor down		H/M up	
Q78WZ7	KHS(ph)EEANFES(ph)PK	-1.8123	-0.7128	1.0233	SILAC 3 / Biological 4	Raptor down		H/M up	
Q78WZ7	KHS(ph)EEANFES(ph)PK	-1.8123	-0.7128	1.0233	SILAC 3 / Biological 4	Raptor down		H/M up	
Q8R1Q8	KPASVS(ph)PTT(ph)PTSPTEGEAS	-1.2687	-0.1049	1.6443	SILAC 3 / Biological 4	Raptor down		H/M up	
Q8R1Q8	KPASVSPTTPTS(ph)PTEGEAS	-1.0440	0.3046	1.6068	SILAC 3 / Biological 4	Raptor down		H/M up	
Q52KI8	KPPAPPS(ph)PVQSQSPS(ph)TNWSPAVPAKK	-1.0498	0.3970	1.1421	SILAC 3 / Biological 4	Raptor down		H/M up	
Q52KI8	KPPAPPS(ph)PVQSQSPST(ph)NWSPAVPAKK	-1.3520	0.0712	0.8752	SILAC 3 / Biological 4	Raptor down		H/M up	
Q99P31	LLQTCFSS(ph)PTDDSM(ox)DR	-1.7566	0.6013	2.4466	SILAC 3 / Biological 4	Raptor down		H/M up	
Q3UQN2	LSGINEIPRPFS(ph)PPVTSNT(ph)SPPPTAPLAR	-1.2324	0.6131	1.6629	SILAC 3 / Biological 4	Raptor down		H/M up	
P62754	LSS(ph)LRAS(ph)TSK	-1.9155	-0.4387	1.4212	SILAC 3 / Biological 4	Raptor down		H/M up	
P16951	NDSVIVADQT(ph)PTPT(ph)R	-1.2739	0.5304	1.4583	SILAC 3 / Biological 4	Raptor down		H/M up	
Q8R2M2	NMPNVSDSETYNS(ph)DFDDSSPR	-2.4061	0.1393	1.2484	SILAC 3 / Biological 4	Raptor down		H/M up	
P28028	NNPKS(ph)PQKPIVR	-1.0008	0.1938	1.1835	SILAC 3 / Biological 4	Raptor down		H/M up	
A2BH40	NPQMPQYTSPQPGS(ph)ALSPR	-1.6090	-0.0757	1.0013	SILAC 3 / Biological 4	Raptor down		H/M up	
Q6ZQ61	RDS(ph)FDDRGPSLNPVLDYDHGSR	-1.4214	-0.3700	0.8486	SILAC 3 / Biological 4	Raptor down		H/M up	
Q8BGD9	RES(ph)EKSLENET(ph)LNK	-1.3050	-0.2476	1.2878	SILAC 3 / Biological 4	Raptor down		H/M up	
Q8BGD9	RES(ph)EKSLENET(ph)LNK	-1.3050	-0.2476	1.2878	SILAC 3 / Biological 4	Raptor down		H/M up	
Q80V17	RKT(ph)VS(ph)FSAAEEAPVPEPSTAAPLQAK	-1.7637	0.0887	2.4362	SILAC 3 / Biological 4	Raptor down		H/M up	
Q9JJZ4	RPS(ph)TSPDVLQGQPPR	-1.0616	0.3192	1.1693	SILAC 3 / Biological 4	Raptor down		H/M up	
P62754	RRLS(ph)S(ph)LR	-2.5771	-0.7352	1.6375	SILAC 3 / Biological 4	Raptor down		H/M up	
P62754	RRLS(ph)S(ph)LR	-2.2363	-0.7420	1.6509	SILAC 3 / Biological 4	Raptor down		H/M up	
A2A6P4	RS(ph)PS(ph)PAAMSER	-1.3479	-0.0063	1.2103	SILAC 3 / Biological 4	Raptor down		H/M up	
A2A6P4	RS(ph)PS(ph)PAAMSER	-1.3479	-0.0063	1.2103	SILAC 3 / Biological 4	Raptor down		H/M up	
Q3U6N9	S(ph)AS(ph)GASEPPLR	-1.4089	-0.2586	1.0591	SILAC 3 / Biological 4	Raptor down		H/M up	
Q3U6N9	S(ph)ASGASEPPLR	-1.4089	-0.2586	1.0591	SILAC 3 / Biological 4	Raptor down		H/M up	
Q64337	S(ph)RLTPTTPES(ph)SSTGTEDK	-1.7364	-0.2703	1.9186	SILAC 3 / Biological 4	Raptor down		H/M up	
Q9Z2B9	S(ph)S(ph)PPLRTPDVLESSGPAVR	-1.2118	-0.2974	0.8358	SILAC 3 / Biological 4	Raptor down		H/M up	
Q9Z2B9	S(ph)S(ph)PPLRTPDVLESSGPAVR	-1.2118	-0.2974	0.8358	SILAC 3 / Biological 4	Raptor down		H/M up	
Q9D1F4	S(ph)SDEENGPPSS(ph)PDLDR	-0.9968	0.1280	0.9961	SILAC 3 / Biological 4	Raptor down		H/M up	
Q9JIK5	SNSSDAPGEESS(ph)S(ph)ETEKEIPVEQK	-1.0621	-0.1021	0.8766	SILAC 3 / Biological 4	Raptor down		H/M up	
Q7TPV4	SPAPSNPTLS(ph)PS(ph)TPAKTPK	-1.1420	-0.1806	1.0310	SILAC 3 / Biological 4	Raptor down		H/M up	
Q64337	SRLT(ph)PTT(ph)PESSSTGTEDK	-1.8917	-0.5883	1.4039	SILAC 3 / Biological 4	Raptor down		H/M up	
Q64337	SRLT(ph)PTT(ph)PESSSTGTEDK	-1.9121	-0.5312	1.4974	SILAC 3 / Biological 4	Raptor down		H/M up	
Q64337	SRLT(ph)PTTPES(ph)SSTGTEDK	-2.0834	-0.4740	1.6482	SILAC 3 / Biological 4	Raptor down		H/M up	
O08784	STSS(ph)SPAPTQTLPNSITQR	-1.6442	0.6044	2.1529	SILAC 3 / Biological 4	Raptor down		H/M up	
O08784	STSSS(ph)PAPTQTLPNSITQR	-1.6793	0.6846	2.4327	SILAC 3 / Biological 4	Raptor down		H/M up	
Q3UMF0	T(ph)LSS(ph)PTGTETNPPK	-1.4205	-0.6717	1.0042	SILAC 3 / Biological 4	Raptor down		H/M up	
Q3UMF0	T(ph)LSSPT(ph)GTETNPPKAPR	-2.0392	-0.4695	1.4844	SILAC 3 / Biological 4	Raptor down		H/M up	
Q80YV2	TRS(ph)WES(ph)SSPVDRPELEAASPTTR	-1.0736	-0.0535	0.9810	SILAC 3 / Biological 4	Raptor down		H/M up	
Q80YV2	TRS(ph)WESS(ph)SPVDRPELEAASPTTR	-1.0511	0.0088	0.9647	SILAC 3 / Biological 4	Raptor down		H/M up	
Q80YV2	TRS(ph)WESS(ph)SPVDRPELEAASPTTR	-1.0623	-0.0224	0.9728	SILAC 3 / Biological 4	Raptor down		H/M up	
Q8BT07	VKAT(ph)SPKSPS(ph)AALNDSLVECPK	-1.8560	-0.5075	1.4937	SILAC 3 / Biological 4	Raptor down		H/M up	
Q8BT07	VKATS(ph)PKSPS(ph)AALNDSLVECPK	-2.0289	-0.2575	1.5887	SILAC 3 / Biological 4	Raptor down		H/M up	
B2RQC6	IHRAS(ph)DPGLPAEEPK	-1.0570	-0.6052	0.4149	SILAC 1 / Biological 1	Raptor down			+
B2RQC6	IHRAS(ph)DPGLPAEEPK	-1.0542	-0.6022	0.4273	SILAC 1 / Biological 1	Raptor down			+
Q8BTI8	RSS(ph)SELS(ph)PEVVEK	-1.1313	-0.6669	0.0183	SILAC 1 / Biological 1	Raptor down			+
Q8BTI8	RSS(ph)SELS(ph)PEVVEK	-1.4118	-0.5687	0.0896	SILAC 1 / Biological 1	Raptor down			+
Q8BTI8	RSS(ph)SELS(ph)PEVVEK	-1.6924	-0.3753	0.4047	SILAC 1 / Biological 1	Raptor down			+
Q8BTI8	RSS(ph)SELS(ph)PEVVEK	-1.8064	-0.3546	0.5994	SILAC 1 / Biological 1	Raptor down			+
Q5NCR9	VLQKPSVFGS(ph)DS(ph)DDDETSVSESLQR	-1.5567	-1.0142	0.7036	SILAC 1 / Biological 1	Raptor down			+
Q5NCR9	VLQKPSVFGS(ph)DS(ph)DDDETSVSESLQR	-1.5567	-1.0142	0.7036	SILAC 1 / Biological 1	Raptor down			+
Q5NCR9	VLQKPSVFGS(ph)DS(ph)DDDETSVSESLQR	-1.5068	-0.8074	0.7244	SILAC 1 / Biological 1	Raptor down			+
Q5NCR9	VLQKPSVFGS(ph)DS(ph)DDDETSVSESLQR	-1.5068	-0.8074	0.7244	SILAC 1 / Biological 1	Raptor down			+
Q3UJN1	(ac)AESSESLSAS(ph)S(ph)PAR	-1.0005	-0.8200	-0.8685	SILAC 1 / Biological 1	Raptor down			
Q99P72	(ac)MEDIDQSSLVSSSADS(ph)PPRPPPAFK	-2.2388	-1.0360	-0.2650	SILAC 1 / Biological 1	Raptor down			
Q99P72	(ac)MEDIDQSSLVSSSADS(ph)PPRPPPAFK	-2.2503	-1.0042	-0.2650	SILAC 1 / Biological 1	Raptor down			
Q80ZA1	ALPT(ph)CTSASPPQK	-1.1822	-0.5445	0.1412	SILAC 1 / Biological 1	Raptor down			
Q9ERU9	ANTS(ph)S(ph)DLEKDDDAYK	-1.6802	-1.0517	-0.0582	SILAC 1 / Biological 1	Raptor down			
Q9ERU9	ANTS(ph)S(ph)DLEKDDDAYK	-1.6510	-1.0047	0.0039	SILAC 1 / Biological 1	Raptor down			
Q9ERU9	ANTS(ph)S(ph)DLEKDDDAYK	-1.9701	-0.9507	0.5449	SILAC 1 / Biological 1	Raptor down			
Q9ERU9	ANTS(ph)S(ph)DLEKDDDAYK	-1.9116	-0.8566	0.6692	SILAC 1 / Biological 1	Raptor down			
Q8VDN3	ASLGS(ph)LEGEVEAEAS(ph)SPK	-8.5396	0.2490	-0.5802	SILAC 1 / Biological 1	Raptor down			
Q8VDN3	ASLGS(ph)LEGEVEAEAS(ph)SPK	-8.5396	0.2490	-0.5802	SILAC 1 / Biological 1	Raptor down			
Q9JKV1	DKKDEEEDMS(ph)LD	-1.2507	-0.9776	0.0344	SILAC 1 / Biological 1	Raptor down			
Q9JKV1	DKKDEEEDMS(ph)LD	-1.2507	-0.9776	0.0384	SILAC 1 / Biological 1	Raptor down			
P46467	EEQSGPVDEKGNDS(ph)DGEAESDDPEKK	-1.0342	-0.6029	0.2231	SILAC 1 / Biological 1	Raptor down			
P46467	EEQSGPVDEKGNDS(ph)DGEAESDDPEKK	-1.0342	-0.6029	0.2231	SILAC 1 / Biological 1	Raptor down			
Q6PAM1	EQGVESPGAQPASS(ph)PR	-1.2697	-1.0596	-0.0171	SILAC 1 / Biological 1	Raptor down			
Q6ZQH8	GAPS(ph)SPAAGVLPS(ph)PQGK	-1.2859	-0.5492	0.4793	SILAC 1 / Biological 1	Raptor down			
Q6ZQH8	GAPS(ph)SPAAGVLPS(ph)PQGK	-1.2968	-0.5419	0.4804	SILAC 1 / Biological 1	Raptor down			
Q6ZQH8	GAPSS(ph)PAAGVLPS(ph)PQGK	-1.2966	-0.4969	0.4513	SILAC 1 / Biological 1	Raptor down			
Q6ZQH8	GAPSS(ph)PAAGVLPS(ph)PQGK	-1.2997	-0.4953	0.4527	SILAC 1 / Biological 1	Raptor down			

Uniprot	Modified Sequence	M/L Ratio	H/L Ratio	H/M Ratio	Experiment	iRapKO/Control	iRicKO/Control	iRicKO/iRapKO	Peptide array +
Q99LL5	GKLQEEGGS(ph)EEEEAGNPSEDGMQSGPTQAPPR	-1.0563	-0.9830	0.3843	SILAC 1 / Biological 1	Raptor down			
Q99LL5	GKLQEEGGS(ph)EEEEAGNPSEDGMQSGPTQAPPR	-1.0563	-0.5693	0.3843	SILAC 1 / Biological 1	Raptor down			
Q52KE7	GLNLDGT(ph)PALSTLGGFSPASKPS(ph)SPR	-1.0786	-0.5367	0.2552	SILAC 1 / Biological 1	Raptor down			
Q52KE7	GLNLDGT(ph)PALSTLGGFSPASKPS(ph)SPR	-1.0512	-0.7401	0.2617	SILAC 1 / Biological 1	Raptor down			
Q52KE7	GLNLDGTPALSTLGGFSPASKPS(ph)S(ph)PR	-1.0910	-0.9356	0.1503	SILAC 1 / Biological 1	Raptor down			
Q52KE7	GLNLDGTPALSTLGGFSPASKPS(ph)S(ph)PR	-1.0910	-0.5219	0.1503	SILAC 1 / Biological 1	Raptor down			
Q99LL5	GLSVSGPCGSRS(ph)PQQTPM(ox)ES	-1.0675	-0.8982	0.1824	SILAC 1 / Biological 1	Raptor down			
O08539	GNKS(ph)PS(ph)PPPDGSPAATPEIR	-1.3755	-0.6965	0.4333	SILAC 1 / Biological 1	Raptor down			
O08539	GNKS(ph)PS(ph)PPPDGSPAATPEIR	-1.3749	-0.6965	0.4639	SILAC 1 / Biological 1	Raptor down			
O08539	GNKS(ph)PS(ph)PPPDGSPAATPEIR	-1.5394	-0.7094	0.5887	SILAC 1 / Biological 1	Raptor down			
O08539	GNKS(ph)PS(ph)PPPDGSPAATPEIR	-1.5394	-0.7094	0.6629	SILAC 1 / Biological 1	Raptor down			
O08539	GNKS(ph)PSPPPDGS(ph)PAATPEIR	-0.9985	-0.6033	0.2648	SILAC 1 / Biological 1	Raptor down			
O08539	GNKSPS(ph)PPPDGSPAATPEIR	-1.6762	-0.2933	0.2999	SILAC 1 / Biological 1	Raptor down			
A2BH40	GPS(ph)PS(ph)PVGSPASVAQSR	-1.0954	-0.5318	0.1731	SILAC 1 / Biological 1	Raptor down			
A2BH40	GPS(ph)PSPVGS(ph)PASVAQSR	-1.0954	-0.5318	0.1731	SILAC 1 / Biological 1	Raptor down			
Q3THK3	GTS(ph)RPGT(ph)PSAEAASTSSTLR	-1.1742	-0.5198	0.0596	SILAC 1 / Biological 1	Raptor down			
Q3THK3	GTS(ph)RPGT(ph)PSAEAASTSSTLR	-1.1742	-0.5198	0.0596	SILAC 1 / Biological 1	Raptor down			
Q8R457	HLLTDLPLPPELPGGDPS(ph)PPDS(ph)PEPK	-1.3146	-0.4914	0.4127	SILAC 1 / Biological 1	Raptor down			
Q8R457	HLLTDLPLPPELPGGDPS(ph)PPDS(ph)PEPK	-1.3146	-0.4914	0.4127	SILAC 1 / Biological 1	Raptor down			
Q8R457	HLLTDLPLPPELPGGDPS(ph)PPDS(ph)PEPK	-1.3146	-0.4914	0.4127	SILAC 1 / Biological 1	Raptor down			
Q8R457	HLLTDLPLPPELPGGDPS(ph)PPDS(ph)PEPK	-1.3146	-0.4914	0.4127	SILAC 1 / Biological 1	Raptor down			
Q52KI8	KPPAPPS(ph)PVQSQS(ph)PSTNWSPAVPAK	-1.1412	-0.8509	0.2904	SILAC 1 / Biological 1	Raptor down			
Q52KI8	KPPAPPS(ph)PVQSQS(ph)PSTNWSPAVPAK	-1.1412	-0.8509	0.2904	SILAC 1 / Biological 1	Raptor down			
Q60598	KQT(ph)PPASPSPQPIEDRPPS(ph)SPIYEDAAPFK	-1.1264	-0.0548	0.6567	SILAC 1 / Biological 1	Raptor down			
Q60598	KQT(ph)PPASPSPQPIEDRPPS(ph)SPIYEDAAPFK	-1.1264	-0.0548	0.6567	SILAC 1 / Biological 1	Raptor down			
O88379	KRQS(ph)TESS(ph)PVPLNR	-1.1512	-0.9839	-0.1524	SILAC 1 / Biological 1	Raptor down			
O88379	KRQS(ph)TESS(ph)PVPLNR	-1.1512	-0.9839	-0.1490	SILAC 1 / Biological 1	Raptor down			
Q64337	LTPTTPESS(ph)STGTEDK	-1.1219	-0.1608	0.2738	SILAC 1 / Biological 1	Raptor down			
Q64337	LTPTTPESS(ph)STGTEDK	-1.1219	-0.1633	0.2805	SILAC 1 / Biological 1	Raptor down			
Q8R457	NNS(ph)PAPPQPAPVK	-1.0148	-0.7411	0.1342	SILAC 1 / Biological 1	Raptor down			
Q8R457	NNS(ph)PAPPQPAPVK	-1.0296	-0.7430	0.1577	SILAC 1 / Biological 1	Raptor down			
Q3UK83	NQGGYGGSSSSS(ph)SYGSGR	-1.2273	-0.2790	0.3898	SILAC 1 / Biological 1	Raptor down			
Q3UK83	NQGGYGGSSSSS(ph)SYGSGR	-1.2313	-0.2266	0.3988	SILAC 1 / Biological 1	Raptor down			
Q571F6	NTETQPT(ph)SPQLGTK	-2.4909	-0.6939	0.2051	SILAC 1 / Biological 1	Raptor down			
Q571F6	NTETQPT(ph)SPQLGTK	-2.4909	-0.6939	0.2051	SILAC 1 / Biological 1	Raptor down			
P24788	RDS(ph)LEEGELR	-1.1242	-0.4698	0.2995	SILAC 1 / Biological 1	Raptor down			
P24788	RDS(ph)LEEGELR	-1.0787	-0.4673	0.3135	SILAC 1 / Biological 1	Raptor down			
O35130	RFS(ph)VQEQDWET(ph)TPPK	-1.7674	-0.3557	0.6845	SILAC 1 / Biological 1	Raptor down			
O35130	RFS(ph)VQEQDWET(ph)TPPK	-1.6226	-0.3518	0.7420	SILAC 1 / Biological 1	Raptor down			
Q5SSI6	RTSS(ph)DDES(ph)EEDEDDLLQR	-1.4072	-0.9225	-0.1027	SILAC 1 / Biological 1	Raptor down			
Q5SSI6	RTSS(ph)DDES(ph)EEDEDDLLQR	-1.3787	-0.9225	-0.0913	SILAC 1 / Biological 1	Raptor down			
Q8BTI8	S(ph)GTPPRPGSVTNMQADECTAT(ph)PQR	-1.2648	-1.0047	-0.0955	SILAC 1 / Biological 1	Raptor down			
Q8BTI8	S(ph)GTPPRPGSVTNMQADECTAT(ph)PQR	-1.2648	-1.0047	-0.0955	SILAC 1 / Biological 1	Raptor down			
Q52KI8	S(ph)PS(ph)PAPPPPPPPPPR	-1.0113	-0.8095	-0.0068	SILAC 1 / Biological 1	Raptor down			
Q52KI8	S(ph)PS(ph)PAPPPPPPPPPR	-1.0113	-0.8095	-0.0068	SILAC 1 / Biological 1	Raptor down			
Q64337	S(ph)RLTPTTPESSSTGTEDK	-1.9392	-0.8649	0.6237	SILAC 1 / Biological 1	Raptor down			
Q9QZQ1	S(ph)SPNVANQPPS(ph)PGGK	-1.3425	-0.3977	0.3970	SILAC 1 / Biological 1	Raptor down			
Q9QZQ1	S(ph)SPNVANQPPS(ph)PGGK	-1.3720	-0.3977	0.4438	SILAC 1 / Biological 1	Raptor down			
Q6AW69	S(ph)YGSQPNSPT(ph)SEDLAK	-1.0652	-0.4720	0.0104	SILAC 1 / Biological 1	Raptor down			
Q6AW69	S(ph)YGSQPNSPT(ph)SEDLAK	-1.0652	-0.4555	0.0104	SILAC 1 / Biological 1	Raptor down			
P70255	SGSMEEDVDTS(ph)PGGDYYTSPNS(ph)PTSSSR	-1.1958	-0.6522	0.5237	SILAC 1 / Biological 1	Raptor down			
P70255	SGSMEEDVDTS(ph)PGGDYYTSPNS(ph)PTSSSR	-1.1994	-0.6242	0.5237	SILAC 1 / Biological 1	Raptor down			
P70255	SGSMEEDVDTSPGGDY(ph)YTSPNSPTS(ph)SSR	-1.1958	-0.6522	0.5237	SILAC 1 / Biological 1	Raptor down			
P70255	SGSMEEDVDTSPGGDY(ph)YTSPNSPTS(ph)SSR	-1.1958	-0.6522	0.5237	SILAC 1 / Biological 1	Raptor down			
P70255	SGSMEEDVDTSPGGDY(ph)YTSPNSPTS(ph)SSR	-1.1994	-0.6242	0.5237	SILAC 1 / Biological 1	Raptor down			
P70255	SGSMEEDVDTSPGGDY(ph)YTSPNSPTS(ph)SSR	-1.1994	-0.6242	0.5237	SILAC 1 / Biological 1	Raptor down			
Q8BTI8	SMLQT(ph)PPDQNLSGSKS(ph)PCPQK	-1.5833	-0.1174	0.6721	SILAC 1 / Biological 1	Raptor down			
Q8BTI8	SMLQT(ph)PPDQNLSGSKS(ph)PCPQK	-1.5833	-0.1170	0.6939	SILAC 1 / Biological 1	Raptor down			
Q80WJ7	SQEPISNDQKVS(ph)DDDKEK	-1.2670	-0.4556	0.6216	SILAC 1 / Biological 1	Raptor down			
Q80WJ7	SQEPISNDQKVS(ph)DDDKEK	-1.2670	-0.4556	0.6216	SILAC 1 / Biological 1	Raptor down			
Q9EPU0	SQIDVALS(ph)QDS(ph)TYQGER	-1.1484	-0.4241	0.7272	SILAC 1 / Biological 1	Raptor down			
Q9EPU0	SQIDVALS(ph)QDS(ph)TYQGER	-1.1484	-0.3925	0.7272	SILAC 1 / Biological 1	Raptor down			
Q68FE6	SQS(ph)FAGVLGSHER	-1.1756	-0.2180	-0.3636	SILAC 1 / Biological 1	Raptor down			
Q05D44	SRVNS(ph)S(ph)GES(ph)GGESDEFLQSR	-2.5406	-0.8387	0.5435	SILAC 1 / Biological 1	Raptor down			
Q05D44	SRVNS(ph)S(ph)GES(ph)GGESDEFLQSR	-2.5406	-0.8387	0.5435	SILAC 1 / Biological 1	Raptor down			
Q05D44	SRVNS(ph)S(ph)GES(ph)GGESDEFLQSR	-2.5406	-0.8387	0.5435	SILAC 1 / Biological 1	Raptor down			
Q05D44	SRVNS(ph)S(ph)GES(ph)GGESDEFLQSR	-2.5370	-0.8387	0.5435	SILAC 1 / Biological 1	Raptor down			
Q05D44	SRVNS(ph)S(ph)GES(ph)GGESDEFLQSR	-2.5370	-0.8387	0.5435	SILAC 1 / Biological 1	Raptor down			
Q05D44	SRVNS(ph)S(ph)GES(ph)GGESDEFLQSR	-2.5370	-0.8387	0.5435	SILAC 1 / Biological 1	Raptor down			
Q9D1F4	SS(ph)DEENGPPS(ph)SPDLDR	-0.9979	-0.2495	0.4649	SILAC 1 / Biological 1	Raptor down			
Q9D1F4	SS(ph)DEENGPPS(ph)SPDLDR	-0.9979	-0.2495	0.4649	SILAC 1 / Biological 1	Raptor down			
Q8BTI8	SSS(ph)PVTELTARS(ph)PVK	-1.4224	-1.0670	0.4308	SILAC 1 / Biological 1	Raptor down			
Q8BTI8	SSS(ph)PVTELTARS(ph)PVK	-1.2315	-0.9866	0.4374	SILAC 1 / Biological 1	Raptor down			
Q8BTI8	SSS(ph)PVTELTARS(ph)PVK	-1.1248	-0.9269	0.4439	SILAC 1 / Biological 1	Raptor down			
Q6ZPE9	SSSDS(ph)VEEETVDS(ph)DTPPVLEK	-1.0961	-0.9546	-0.0129	SILAC 1 / Biological 1	Raptor down			
Q6ZPE9	SSSDS(ph)VEEETVDS(ph)DTPPVLEK	-1.0961	-0.9546	-0.0129	SILAC 1 / Biological 1	Raptor down			
Q6ZPE9	SSSDS(ph)VEEETVDS(ph)DTPPVLEK	-1.3157	-0.7731	0.1683	SILAC 1 / Biological 1	Raptor down			
Q6ZPE9	SSSDS(ph)VEEETVDS(ph)DTPPVLEK	-1.3305	-0.7750	0.1917	SILAC 1 / Biological 1	Raptor down			
Q8BTI8	SSSPVT(ph)ELTARS(ph)PVKQDK	-1.1248	-0.5591	0.4439	SILAC 1 / Biological 1	Raptor down			
Q8BTI8	SSSPVT(ph)ELTARS(ph)PVKQDK	-1.1248	-0.5591	0.4439	SILAC 1 / Biological 1	Raptor down			
Q80U93	STQTAPSSAPSTGQKS(ph)PR	-1.1150	-0.7479	0.3733	SILAC 1 / Biological 1	Raptor down			
Q80U93	STQTAPSSAPSTGQKS(ph)PR	-1.1017	-0.8254	0.3802	SILAC 1 / Biological 1	Raptor down			
Q8CD14	T(ph)GAS(ph)QGRDSDSDDGEFEIQAEDDAR	-1.0061	-0.5663	0.1391	SILAC 1 / Biological 1	Raptor down			
Q8CD14	T(ph)GAS(ph)QGRDSDSDDGEFEIQAEDDAR	-1.0061	-0.5663	0.1391	SILAC 1 / Biological 1	Raptor down			
Q8CD14	T(ph)GAS(ph)QGRDSDSDDGEFEIQAEDDAR	-1.0061	-0.5663	0.1391	SILAC 1 / Biological 1	Raptor down			
Q8CD14	T(ph)GAS(ph)QGRDSDSDDGEFEIQAEDDAR	-1.0061	-0.5663	0.1391	SILAC 1 / Biological 1	Raptor down			
P49586	T(ph)SPSSS(ph)PASLSR	-1.3147	-0.5974	0.6067	SILAC 1 / Biological 1	Raptor down			
Q05D44	TARPNS(ph)EAPLS(ph)GSEDADDSNKLSK	-3.0078	0.2536	0.6944	SILAC 1 / Biological 1	Raptor down			
Q05D44	TARPNS(ph)EAPLS(ph)GSEDADDSNKLSK	-3.0078	0.2536	0.6944	SILAC 1 / Biological 1	Raptor down			
P70255	TEMDKS(ph)PFNSPSPQDS(ph)PR	-1.0733	-0.8945	0.2812	SILAC 1 / Biological 1	Raptor down			
P70255	TEMDKS(ph)PFNSPSPQDS(ph)PR	-1.0539	-0.8908	0.3317	SILAC 1 / Biological 1	Raptor down			
Q8CD14	TGASQGRDS(ph)DS(ph)DDGEFEIQAEDDAR	-1.2277	-0.6845	0.0566	SILAC 1 / Biological 1	Raptor down			
Q8CD14	TGASQGRDS(ph)DS(ph)DDGEFEIQAEDDAR	-1.2277	-0.6845	0.0566	SILAC 1 / Biological 1	Raptor down			
Q8CD14	TGASQGRDS(ph)DS(ph)DDGEFEIQAEDDAR	-1.2277	-0.6845	0.0566	SILAC 1 / Biological 1	Raptor down			
Q8CD14	TGASQGRDS(ph)DS(ph)DDGEFEIQAEDDAR	-1.2277	-0.6845	0.0566	SILAC 1 / Biological 1	Raptor down			
Q03141	TPVAS(ph)THS(ph)ISSATTPDR	-1.1883	-0.6449	0.4524	SILAC 1 / Biological 1	Raptor down			
Q03141	TPVAS(ph)THS(ph)ISSATTPDR	-1.1883	-0.6449	0.4524	SILAC 1 / Biological 1	Raptor down			
Q03141	TPVAS(ph)THS(ph)ISSATTPDR	-1.1883	-0.6449	0.4527	SILAC 1 / Biological 1	Raptor down			
Q03141	TPVAS(ph)THS(ph)ISSATTPDR	-1.1883	-0.6449	0.4527	SILAC 1 / Biological 1	Raptor down			
Q03141	TPVAS(ph)THSIS(ph)SATTPDR	-1.6968	-0.5844	0.3436	SILAC 1 / Biological 1	Raptor down			
Q03141	TPVAS(ph)THSIS(ph)SATTPDR	-1.6968	-0.5844	0.3436	SILAC 1 / Biological 1	Raptor down			
P49586	TSPSSS(ph)PAS(ph)LSR	-1.2191	-0.5958	-0.0418	SILAC 1 / Biological 1	Raptor down			
P49586	TSPSSS(ph)PAS(ph)LSR	-1.3147	-0.5974	0.0621	SILAC 1 / Biological 1	Raptor down			
Q9ESX5	TVLES(ph)GGETGDGDNDTTK	-1.0860	-0.9023	0.1197	SILAC 1 / Biological 1	Raptor down			
Q9ESX5	TVLES(ph)GGETGDGDNDTTK	-1.0846	-0.8109	0.1197	SILAC 1 / Biological 1	Raptor down			
Q80YV2	TWGSVVRS(ph)PEGT(ph)PQK	-1.8677	-0.5361	-0.3340	SILAC 1 / Biological 1	Raptor down			
Q80YV2	TWGSVVRS(ph)PEGT(ph)PQK	-3.1040	-0.8964	-0.1681	SILAC 1 / Biological 1	Raptor down			
Q80YV2	TWGSVVRS(ph)PEGT(ph)PQK	-2.4570	-0.4120	-0.1383	SILAC 1 / Biological 1	Raptor down			
Q80YV2	TWGSVVRS(ph)PEGT(ph)PQK	-4.3403	-0.5361	-0.0153	SILAC 1 / Biological 1	Raptor down			
P49586	WPFSGKT(ph)SPSSS(ph)PASLSR	-1.7529	-0.9566	0.4637	SILAC 1 / Biological 1	Raptor down			
P49586	WPFSGKT(ph)SPSSS(ph)PASLSR	-1.2407	-0.5980	0.5353	SILAC 1 / Biological 1	Raptor down			
P35822	YLCEGT(ph)ESPYQT(ph)GQLHPAIR	-1.3581	-0.9693	0.0875	SILAC 1 / Biological 1	Raptor down			
P35822	YLCEGT(ph)ESPYQT(ph)GQLHPAIR	-1.3826	-0.9665	0.0880	SILAC 1 / Biological 1	Raptor down			
P35822	YLCEGTES(ph)PYQT(ph)GQLHPAIR	-1.3772	-0.9052	0.1045	SILAC 1 / Biological 1	Raptor down			
P35822	YLCEGTES(ph)PYQT(ph)GQLHPAIR	-1.3894	-0.9038	0.1049	SILAC 1 / Biological 1	Raptor down			

Uniprot	Modified Sequence	M/L Ratio	H/L Ratio	H/M Ratio	Experiment	iRapKO/Control	iRicKO/Control	iRicKO/iRapKO	Peptide array +
Q7TPV4	(ac)AEM(ox)KS(ph)PTKAEPATPAEAAQSDR	-1.6759	-0.4963	0.4274	SILAC 1 / Biological 2	Raptor down			
P43276	(ac)SETAPAETAAPAPVEKS(ph)PAK	-0.9964	-0.4514	0.3590	SILAC 1 / Biological 2	Raptor down			
Q3V1V3	ALAEEDS(ph)EDELPS(ph)DVDFNDPYFAEEVKK	-1.2488	-0.8622	0.2183	SILAC 1 / Biological 2	Raptor down			
Q3V1V3	ALAEEDS(ph)EDELPS(ph)DVDFNDPYFAEEVKK	-1.2488	-0.8622	0.2183	SILAC 1 / Biological 2	Raptor down			
Q71FD5	AYS(ph)GSDLPSGTGSGGGGADGAR	-1.0607	-0.3580	0.3391	SILAC 1 / Biological 2	Raptor down			
Q8K019	GRADGDWDDQEVLDYFSDKES(ph)AK	-1.1523	0.0751	-0.0033	SILAC 1 / Biological 2	Raptor down			
Q76KJ5	KGTDASS(ph)DTQEAVNR	-1.1874	-0.6906	0.5966	SILAC 1 / Biological 2	Raptor down			
Q8R1Q8	KPASVS(ph)PTTPT(ph)SPTEGEAS	-1.0287	-1.0275	0.0414	SILAC 1 / Biological 2	Raptor down			
Q6ZPJ3	LIHGEDS(ph)DS(ph)EGDDDGR	-1.1731	-0.8702	0.0138	SILAC 1 / Biological 2	Raptor down			
Q6ZPJ3	LIHGEDS(ph)DS(ph)EGDDDGR	-1.1731	-0.8702	0.0138	SILAC 1 / Biological 2	Raptor down			
Q6ZPE9	RETVVESQS(ph)SQSPS(ph)PK	-1.2767	-0.0569	-0.7487	SILAC 1 / Biological 2	Raptor down			
Q9Z248	RGSLEMS(ph)S(ph)DGEPLSR	-1.1945	0.0862	0.5769	SILAC 1 / Biological 2	Raptor down			
Q9Z248	RGSLEMS(ph)S(ph)DGEPLSR	-1.1945	0.0862	0.5769	SILAC 1 / Biological 2	Raptor down			
Q80V17	RKT(ph)VS(ph)FSAAEEAPVPEPSTAAPLQAK	-1.6147	-0.5721	0.6509	SILAC 1 / Biological 2	Raptor down			
Q80V17	RKT(ph)VSFS(ph)AAEEAPVPEPSTAAPLQAK	-1.6361	-0.6438	0.6781	SILAC 1 / Biological 2	Raptor down			
A2A6P4	RS(ph)PS(ph)PAAMSER	-1.1047	-0.6951	0.7011	SILAC 1 / Biological 2	Raptor down			
A2A6P4	RS(ph)PS(ph)PAAMSER	-1.1047	-0.6951	0.7011	SILAC 1 / Biological 2	Raptor down			
Q3U6N9	S(ph)ASGASEPPLR	-1.3692	-0.0600	-0.4126	SILAC 1 / Biological 2	Raptor down			
Q8R1A4	SNS(ph)WVNTGPK	-1.2645	-0.7868	-0.1356	SILAC 1 / Biological 2	Raptor down			
O08582	SRS(ph)PVDSPVPASMFAPEPSS(ph)PGAAR	-1.1453	-0.3944	0.5134	SILAC 1 / Biological 2	Raptor down			
Q6P5B5	T(ph)DGS(ph)ISGDRQPVTVADYISR	-0.9961	-1.0045	-0.5435	SILAC 1 / Biological 2	Raptor down			
Q68EF0	TLVLSSS(ph)PTS(ph)PTQEPLAAAK	-1.1149	-0.7533	0.0101	SILAC 1 / Biological 2	Raptor down			
Q68EF0	TLVLSSS(ph)PTS(ph)PTQEPLAAAK	-1.0345	-0.5381	0.1027	SILAC 1 / Biological 2	Raptor down			
Q3U6N9	S(ph)AS(ph)GASEPPLR	-1.0389	-0.5219	0.4978	SILAC 2 / Biological 3	Raptor down			
Q99LH1	S(ph)DSITEKEPEGDCSQDR	-1.1478	-0.5564	0.1098	SILAC 2 / Biological 3	Raptor down			
Q7TNL7	S(ph)NISPNFNFMGQLLDFER	-1.1804	-0.8599	0.1855	SILAC 2 / Biological 3	Raptor down			
P58871	SLS(ph)SGFSPEEAQQQDEEFEKK	-1.2089	-0.6332	0.1909	SILAC 2 / Biological 3	Raptor down			
Q64337	SRLT(ph)PTTPES(ph)SSTGTEDK	-1.5410	-1.0238	0.5201	SILAC 2 / Biological 3	Raptor down			
Q9CXF4	DDSPTQTLAS(ph)PNACR	-1.0462	-0.1629	0.7205	SILAC 3 / Biological 4	Raptor down			
O88379	DLDPDVVT(ph)EDEDDPGSHKR	-1.1044	-0.3794	0.6839	SILAC 3 / Biological 4	Raptor down			
Q6PAM1	EQGVESPGAQPAS(ph)SPR	-1.0892	-0.9432	-0.0422	SILAC 3 / Biological 4	Raptor down			
Q6PAM1	EQGVESPGAQPASS(ph)PR	-1.0063	-0.7846	0.1412	SILAC 3 / Biological 4	Raptor down			
Q6NS46	ERQES(ph)ESEQELVNK	-1.6293	-0.5860	0.6986	SILAC 3 / Biological 4	Raptor down			
Q99P72	ESETFSDS(ph)S(ph)PIEIIDEFPTFVSAK	-1.1843	-0.1358	0.4522	SILAC 3 / Biological 4	Raptor down			
A2BH40	GPS(ph)PSPVGS(ph)PASVAQSR	-1.6096	-0.8180	0.5669	SILAC 3 / Biological 4	Raptor down			
A2BH40	GPS(ph)PSPVGS(ph)PASVAQSR	-1.6096	-0.8180	0.5669	SILAC 3 / Biological 4	Raptor down			
Q6NS46	KSGAAEEDDS(ph)GVEVYYR	-1.2533	-0.4689	0.6812	SILAC 3 / Biological 4	Raptor down			
Q80Y32	KSS(ph)PQS(ph)PDTAMDLLK	-4.7353	0.4020	0.5947	SILAC 3 / Biological 4	Raptor down			
Q80Y32	KSS(ph)PQS(ph)PDTAMDLLK	-4.7353	0.4020	0.5947	SILAC 3 / Biological 4	Raptor down			
P14404	NFIGNSNHGSQS(ph)PR	-1.1355	-0.2552	0.6318	SILAC 3 / Biological 4	Raptor down			
Q571F6	NTETQPT(ph)SPQLGTK	-1.0832	-0.4668	0.6810	SILAC 3 / Biological 4	Raptor down			
Q6ZQK6	RAS(ph)S(ph)PFRR	-1.4974	-0.9069	0.4377	SILAC 3 / Biological 4	Raptor down			
Q6ZQ61	RDSFDDRGPS(ph)LNPVLDYDHGSR	-1.2925	-0.7288	0.3661	SILAC 3 / Biological 4	Raptor down			
Q61083	RGS(ph)DIDNPTLTVTDISPPSRS(ph)PR	-1.0409	-0.3917	0.3970	SILAC 3 / Biological 4	Raptor down			
Q61083	RGS(ph)DIDNPTLTVTDISPPSRS(ph)PR	-1.0409	-0.3917	0.3970	SILAC 3 / Biological 4	Raptor down			
Q80V17	RKT(ph)VS(ph)FSAAEEAPVPEPSTAAPLQAK	-1.7637	-0.9819	0.5447	SILAC 3 / Biological 4	Raptor down			
Q99LH1	S(ph)DSITEKEPEGDCSQDR	-1.3487	-0.6608	0.3612	SILAC 3 / Biological 4	Raptor down			
P70698	S(ph)GS(ph)SSPDSEITELKFPSISQD	-1.2231	-0.9352	0.5223	SILAC 3 / Biological 4	Raptor down			
Q05A74	S(ph)PLIESTANMENNQPQK	-1.1850	-0.1592	0.6707	SILAC 3 / Biological 4	Raptor down			
Q8BT07	S(ph)PSAALNDSLVECPK	-1.0305	-0.0007	0.7495	SILAC 3 / Biological 4	Raptor down			
Q9QWY8	SHTGDLS(ph)PNVQSR	-1.0030	-0.8318	0.5718	SILAC 3 / Biological 4	Raptor down			
P97825	SNS(ph)SEASSGDFLDLK	-1.0174	-0.6773	0.2852	SILAC 3 / Biological 4	Raptor down			
Q3UMF0	T(ph)LS(ph)SPTGTETNPPKAPR	-1.2474	-0.7398	0.3792	SILAC 3 / Biological 4	Raptor down			
Q8K3Z9	T(ph)SSVS(ph)SLASACTGGIPSSSR	-1.1420	-0.1896	0.6845	SILAC 3 / Biological 4	Raptor down			
Q8K3Z9	T(ph)SSVS(ph)SLASACTGGIPSSSR	-1.1420	-0.1896	0.6845	SILAC 3 / Biological 4	Raptor down			
Q80U72	TTEAPCS(ph)PGSQQPPS(ph)PDELPANVK	-1.2772	-0.7606	0.6842	SILAC 3 / Biological 4	Raptor down			
Q6ZQ58	VEPAWHDQDETSSVKS(ph)DGAGGAR	-1.0359	-0.4040	0.6377	SILAC 3 / Biological 4	Raptor down			
Q62433	TASGS(ph)SVT(ph)SLEGTR	1.2023	-1.1253	-2.3064	SILAC 1 / Biological 1	Raptor up	Rictor down	H/M down	
Q62433	TASGS(ph)SVT(ph)SLEGTR	1.2023	-1.1253	-2.3064	SILAC 1 / Biological 1	Raptor up	Rictor down	H/M down	
Q62433	TASGS(ph)SVT(ph)SLEGTR	1.2023	-1.1239	-2.3064	SILAC 1 / Biological 1	Raptor up	Rictor down	H/M down	
Q62433	TASGS(ph)SVT(ph)SLEGTR	1.2023	-1.1239	-2.3064	SILAC 1 / Biological 1	Raptor up	Rictor down	H/M down	
Q9WTQ5	QAQS(ph)STEIPLQAESGQGTEEEAAKDGEENR	1.3542	-2.1083	-2.7074	SILAC 1 / Biological 2	Raptor up	Rictor down	H/M down	
Q62433	TAS(ph)GSSVTS(ph)LEGTR	1.2629	-1.1389	-2.6397	SILAC 1 / Biological 2	Raptor up	Rictor down	H/M down	
Q6Y7W8	ALSSGGS(ph)ITSPPLS(ph)PALPK	1.4616	-1.0739	-2.3876	SILAC 2 / Biological 3	Raptor up	Rictor down	H/M down	
Q8BK67	CSSSS(ph)GGGS(ph)SGDEDGPELDGAPGGGKR	1.0888	-1.1157	-2.0780	SILAC 2 / Biological 3	Raptor up	Rictor down	H/M down	
Q9WTQ5	QAQS(ph)STEIPLQAESGQGTEEEAAKDGEENR	1.3535	-1.3818	-3.1059	SILAC 2 / Biological 3	Raptor up	Rictor down	H/M down	
B2RUR8	S(ph)TPES(ph)GES(ph)DKESVGS(ph)S(ph)S(ph)LGNEGS(ph)R	4.4281	1.8675	-3.4847	SILAC 1 / Biological 1	Raptor up	Rictor up	H/M down	
B2RUR8	S(ph)TPES(ph)GES(ph)DKESVGS(ph)S(ph)S(ph)LGNEGS(ph)R	4.4281	1.8675	-3.4847	SILAC 1 / Biological 1	Raptor up	Rictor up	H/M down	
B2RUR8	S(ph)TPES(ph)GES(ph)DKESVGS(ph)S(ph)S(ph)LGNEGS(ph)R	4.4281	1.8675	-3.4847	SILAC 1 / Biological 1	Raptor up	Rictor up	H/M down	
B2RUR8	S(ph)TPES(ph)GES(ph)DKESVGS(ph)S(ph)S(ph)LGNEGS(ph)R	4.4281	1.8675	-3.4847	SILAC 1 / Biological 1	Raptor up	Rictor up	H/M down	
B2RUR8	S(ph)TPES(ph)GES(ph)DKESVGS(ph)S(ph)S(ph)LGNEGS(ph)R	4.4281	1.8675	-3.4847	SILAC 1 / Biological 1	Raptor up	Rictor up	H/M down	
P10923	ISHELESS(ph)SSEVN	3.1262	1.0308	-1.6529	SILAC 3 / Biological 4	Raptor up	Rictor up	H/M down	
Q6NZJ6	ITKPGS(ph)IDSNNQLFAPGGR	1.9968	1.1495	-1.1532	SILAC 3 / Biological 4	Raptor up	Rictor up	H/M down	
Q8BHS6	RAS(ph)PNSDDTVLSPQELQK	2.3339	0.9020	-1.2567	SILAC 3 / Biological 4	Raptor up	Rictor up	H/M down	
P10711	KKEPAIS(ph)SQNSPEAR	1.0859	2.8614	1.3761	SILAC 2 / Biological 3	Raptor up	Rictor up	H/M up	+
Q8BTI8	RSS(ph)SELS(ph)PEVVEK	1.2323	2.1405	0.9247	SILAC 1 / Biological 2	Raptor up	Rictor up	H/M up	+
Q8BTI8	RSS(ph)SELS(ph)PEVVEK	1.2323	2.1405	0.9247	SILAC 1 / Biological 2	Raptor up	Rictor up	H/M up	+
Q9JIX8	SQS(ph)PS(ph)PPPLPEDLEK	1.0768	1.9974	0.9988	SILAC 2 / Biological 3	Raptor up	Rictor up	H/M up	+
Q3TZZ7	DLGRS(ph)S(ph)SSLLASPSHIAAK	1.1073	1.6943	1.0992	SILAC 1 / Biological 1	Raptor up	Rictor up	H/M up	
Q3TZZ7	DLGRS(ph)S(ph)SSLLASPSHIAAK	1.1073	1.8189	1.0992	SILAC 1 / Biological 1	Raptor up	Rictor up	H/M up	
Q64511	VKAS(ph)PITNDGEDEFVPS(ph)DGLDKDEYAFSSGK	1.7073	0.8656	0.9615	SILAC 1 / Biological 1	Raptor up	Rictor up	H/M up	
Q69ZN8	KQETAAVCGET(ph)DEEAGES(ph)GGEGIFR	1.4164	1.4221	0.7801	SILAC 1 / Biological 2	Raptor up	Rictor up	H/M up	
Q69ZN8	KQETAAVCGET(ph)DEEAGES(ph)GGEGIFR	1.4164	1.4221	0.7801	SILAC 1 / Biological 2	Raptor up	Rictor up	H/M up	
Q3UJN1	RADALTS(ph)SPGR	1.1191	2.2712	0.8801	SILAC 1 / Biological 2	Raptor up	Rictor up	H/M up	
Q63918	RGNNS(ph)AVGS(ph)NADLT(ph)IEEDEEEEPVALQQAQQVR	1.5310	2.8320	1.7972	SILAC 1 / Biological 2	Raptor up	Rictor up	H/M up	
Q8BTI8	RS(ph)S(ph)SELS(ph)PEVVEK	1.0078	2.2006	0.8597	SILAC 1 / Biological 2	Raptor up	Rictor up	H/M up	
Q58A65	SAS(ph)QSS(ph)LDKLDQELKEQQK	0.9783	2.2779	0.9100	SILAC 1 / Biological 2	Raptor up	Rictor up	H/M up	
Q61206	(ac)S(ph)QGDSNPAAIPHAAEDIQGDDR	1.1507	2.9543	1.8669	SILAC 2 / Biological 3	Raptor up	Rictor up	H/M up	
O08784	ASAVS(ph)PEKAPMTSK	1.2313	1.8892	0.7857	SILAC 2 / Biological 3	Raptor up	Rictor up	H/M up	
Q9D6Z1	KS(ph)SPKEEVAS(ph)EPEEAASPTTPK	1.0220	1.4860	1.2461	SILAC 2 / Biological 3	Raptor up	Rictor up	H/M up	
Q9JIX8	S(ph)QSPS(ph)PPPLPEDLEK	1.0805	2.2622	1.0775	SILAC 2 / Biological 3	Raptor up	Rictor up	H/M up	
P97311	FNGS(ph)S(ph)EDAS(ph)QETVSKPSLR	2.2253	3.0771	1.3233	SILAC 3 / Biological 4	Raptor up	Rictor up	H/M up	
Q8VE94	ENFSAGS(ph)DCVTLK	1.0053	1.0625	0.2789	SILAC 2 / Biological 3	Raptor up	Rictor up		+
Q3TUD7	KAENAEGQTPAIGPDGEPLDETS(ph)QMS(ph)DLPVK	2.5541	2.6164	0.0846	SILAC 1 / Biological 1	Raptor up	Rictor up		+
Q3TUD7	KAENAEGQTPAIGPDGEPLDETS(ph)QMS(ph)DLPVK	2.5541	2.6164	0.0846	SILAC 1 / Biological 1	Raptor up	Rictor up		+
Q3TUD7	KAENAEGQTPAIGPDGEPLDETS(ph)QMS(ph)DLPVK	2.5541	2.6164	0.2671	SILAC 1 / Biological 1	Raptor up	Rictor up		+
Q3TUD7	KAENAEGQTPAIGPDGEPLDETS(ph)QMS(ph)DLPVK	2.5541	2.6164	0.2671	SILAC 1 / Biological 1	Raptor up	Rictor up		+
Q8R1A4	S(ph)RSLS(ph)NSNPDISGTPTSPDDEVR	2.2928	1.5509	-0.8701	SILAC 3 / Biological 4	Raptor up	Rictor up		+
P43276	(ac)S(ph)ETAPAETAAPAPVEK	1.6427	1.7866	0.0625	SILAC 1 / Biological 1	Raptor up	Rictor up		
P43276	(ac)S(ph)ETAPAETAAPAPVEK	1.6427	1.7866	0.0625	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q8VDN3	AS(ph)LGS(ph)LEGEVEAEASSPK	0.9551	1.6385	0.1703	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q8VDN3	AS(ph)LGS(ph)LEGEVEAEASSPK	0.9551	1.6385	0.1703	SILAC 1 / Biological 1	Raptor up	Rictor up		
O54724	ATEEPS(ph)GTGSDELIK	1.2914	0.8306	-0.3345	SILAC 1 / Biological 1	Raptor up	Rictor up		
O54724	ATEEPS(ph)GTGSDELIK	1.2914	0.8281	-0.3278	SILAC 1 / Biological 1	Raptor up	Rictor up		
O54988	ATLEQPETDEVEQVS(ph)ESNS(ph)IEELER	1.7321	1.0678	-0.1241	SILAC 1 / Biological 1	Raptor up	Rictor up		
O54988	ATLEQPETDEVEQVS(ph)ESNS(ph)IEELER	1.7321	1.0678	-0.1241	SILAC 1 / Biological 1	Raptor up	Rictor up		
O54988	ATLEQPETDEVEQVS(ph)ESNS(ph)IEELER	1.7321	1.0687	-0.1241	SILAC 1 / Biological 1	Raptor up	Rictor up		
O54988	ATLEQPETDEVEQVS(ph)ESNS(ph)IEELER	1.7321	1.0687	-0.1241	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q8R5F7	DSGTMGS(ph)DSDESVIQTK	1.1844	1.3297	0.5642	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q8R5F7	DSGTMGS(ph)DSDESVIQTK	1.1844	1.3297	0.5642	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q9ERU9	EDALDDSVS(ph)SSSVHAS(ph)PLASS(ph)PVRK	1.9948	1.9415	0.1555	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q9ERU9	EDALDDSVS(ph)SSSVHAS(ph)PLASS(ph)PVRK	1.9948	1.9415	0.1555	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q9ERU9	EDALDDSVSSS(ph)SVHAS(ph)PLASS(ph)PVRK	2.4042	1.6001	-0.4181	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q9ERU9	EDALDDSVSSS(ph)SVHAS(ph)PLASS(ph)PVRK	2.4042	1.6001	-0.4135	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q9ERU9	EDALDDSVSSS(ph)SVHAS(ph)PLASS(ph)PVRK	1.9948	1.9415	0.1555	SILAC 1 / Biological 1	Raptor up	Rictor up		

Uniprot	Modified Sequence	M/L Ratio	H/L Ratio	H/M Ratio	Experiment	iRapKO/Control	iRicKO/Control	iRicKO/iRapKO	Peptide array +
Q9ERU9	EDALDDSVSSS(ph)SVHAS(ph)PLASS(ph)PVRK	1.9948	1.9415	0.1555	SILAC 1 / Biological 1	Raptor up	Rictor up		
P53986	EGKEDEAST(ph)DVDEKPK	1.4814	1.5512	0.0980	SILAC 1 / Biological 1	Raptor up	Rictor up		
P53986	EGKEDEAST(ph)DVDEKPK	1.4634	1.5159	0.2079	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q3UMF0	EQT(ph)ASAPATPLVS(ph)K	3.4182	2.4464	-0.6522	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q3UMF0	EQT(ph)ASAPATPLVS(ph)K	3.4182	2.4464	-0.6522	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q99JF8	ET(ph)NVSKEDTDQEEKAS(ph)NEDVTK	1.6427	1.9218	0.4652	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q99JF8	ET(ph)NVSKEDTDQEEKAS(ph)NEDVTK	1.6427	1.9218	0.4652	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q99JF8	ETNVSKEDT(ph)DQEEKAS(ph)NEDVTK	1.4159	1.3219	-0.0580	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q99JF8	ETNVSKEDT(ph)DQEEKAS(ph)NEDVTK	1.4159	1.3219	-0.0580	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q99JF8	ETNVSKEDT(ph)DQEEKAS(ph)NEDVTK	1.5636	1.9041	0.4066	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q99JF8	ETNVSKEDT(ph)DQEEKAS(ph)NEDVTK	1.5636	1.9691	0.4066	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q04692	GDRGEES(ph)NES(ph)AEASSNWEK	1.7577	2.3142	0.4634	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q04692	GDRGEES(ph)NES(ph)AEASSNWEK	1.7577	2.3142	0.4634	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q04692	GDRGEES(ph)NES(ph)AEASSNWEK	1.7577	2.3142	0.4634	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q04692	GDRGEES(ph)NES(ph)AEASSNWEK	1.7577	2.3142	0.4634	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q3TUD7	KAENAEGQTPAIGPDGEPLDET(ph)S(ph)QMSDLPVK	2.0897	3.0763	0.5896	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q3TUD7	KAENAEGQTPAIGPDGEPLDET(ph)S(ph)QMSDLPVK	2.0897	3.0763	0.5896	SILAC 1 / Biological 1	Raptor up	Rictor up		
P43277	KAS(ph)GPPVSELITK	1.0424	1.2124	-0.0497	SILAC 1 / Biological 1	Raptor up	Rictor up		
P43277	KAS(ph)GPPVSELITK	1.0465	1.2593	-0.0497	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q9D6Z1	KS(ph)SPKEEVAS(ph)EPEEAASPTTPK	2.1319	1.8929	-0.1376	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q9D6Z1	KS(ph)SPKEEVAS(ph)EPEEAASPTTPK	2.1258	1.9071	-0.1306	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q9D6Z1	KSS(ph)PKEEVAS(ph)EPEEAASPTTPK	2.1892	1.8929	-0.2933	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q9D6Z1	KSS(ph)PKEEVAS(ph)EPEEAASPTTPK	2.1832	1.9070	-0.2864	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q80Y32	KSS(ph)PQS(ph)PDTAMDLLK	1.9427	1.1367	-0.1602	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q80Y32	KSS(ph)PQS(ph)PDTAMDLLK	1.9427	1.1367	-0.1602	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q80Y32	KSS(ph)PQS(ph)PDTAMDLLK	1.9307	1.1588	-0.0750	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q80Y32	KSS(ph)PQS(ph)PDTAMDLLK	1.9307	1.1588	-0.0750	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q8VDN3	LQGS(ph)GVS(ph)LASK	1.1289	1.0356	0.3042	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q8VDN3	LQGS(ph)GVS(ph)LASK	1.1289	1.0356	0.3042	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q8VDN3	LQGS(ph)GVS(ph)LASK	1.1289	1.0356	0.3042	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q8VDN3	LQGS(ph)GVS(ph)LASK	1.1289	1.0356	0.3042	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q9D4H9	NSADDEELT(ph)NDS(ph)LTLSQSK	1.0228	1.2771	-0.1668	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q9D4H9	NSADDEELT(ph)NDS(ph)LTLSQSK	1.0228	1.2771	-0.1668	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q9D4H9	NSADDEELT(ph)NDS(ph)LTLSQSK	1.1616	1.2804	-0.1641	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q9D4H9	NSADDEELT(ph)NDS(ph)LTLSQSK	1.1616	1.2804	-0.1641	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q9WV92	QLEYQQFEDDKLS(ph)QR	1.7011	1.0621	-0.5710	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q9WV92	QLEYQQFEDDKLS(ph)QR	1.7120	1.0691	-0.5710	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q3UH59	QLHIEGAS(ph)LELS(ph)DDDTESK	1.0835	0.9678	-0.3981	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q3UH59	QLHIEGAS(ph)LELS(ph)DDDTESK	1.1130	0.9678	-0.3981	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q99JF8	QSNAS(ph)SDVEVEEK	1.0862	0.9958	0.1230	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q99JF8	QSNAS(ph)SDVEVEEK	1.0989	1.0006	0.1258	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q6P4S8	RDS(ph)TEAPKPESS(ph)PEPPPGQGR	1.7212	0.8460	-0.1838	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q6P4S8	RDS(ph)TEAPKPESS(ph)PEPPPGQGR	1.7212	0.8460	-0.1838	SILAC 1 / Biological 1	Raptor up	Rictor up		
O70475	RIPYT(ph)PGEIPK	1.5772	1.8788	0.4074	SILAC 1 / Biological 1	Raptor up	Rictor up		
O70475	RIPYT(ph)PGEIPK	1.5772	1.8788	0.4074	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q04692	RNDS(ph)S(ph)ELEDLSELEDLKDAK	1.5396	1.1021	0.0266	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q04692	RNDS(ph)S(ph)ELEDLSELEDLKDAK	1.5396	1.1021	0.0266	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q04692	RNDS(ph)S(ph)ELEDLSELEDLKDAK	1.3967	1.1372	0.0266	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q04692	RNDS(ph)S(ph)ELEDLSELEDLKDAK	1.3967	1.1372	0.0266	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q9Z277	RQS(ph)LELQK	1.0572	0.8411	-0.1313	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q9Z277	RQS(ph)LELQK	1.0572	0.8416	-0.1313	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q3UK83	S(ph)ESPKEPEQLR	1.0211	0.8303	0.0386	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q62318	SRS(ph)GEGEVSGLLR	1.6115	2.0591	0.4813	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q62318	SRS(ph)GEGEVSGLLR	1.5990	2.0628	0.4813	SILAC 1 / Biological 1	Raptor up	Rictor up		
B2RUB9	SSTPLPT(ph)VSSSAENTR	1.4738	1.5350	0.1477	SILAC 1 / Biological 1	Raptor up	Rictor up		
B2RUB9	SSTPLPT(ph)VSSSAENTR	1.4548	1.5369	0.1538	SILAC 1 / Biological 1	Raptor up	Rictor up		
B2RUB9	SSTPLPT(ph)VSSSAENTR	1.3935	1.4560	0.1570	SILAC 1 / Biological 1	Raptor up	Rictor up		
B2RUB9	SSTPLPT(ph)VSSSAENTR	1.3900	1.4839	0.1570	SILAC 1 / Biological 1	Raptor up	Rictor up		
B2RUB9	SSTPLPTVSSS(ph)AENTR	1.3550	1.4080	0.1268	SILAC 1 / Biological 1	Raptor up	Rictor up		
B2RUB9	SSTPLPTVSSS(ph)AENTR	1.2593	1.4080	0.2051	SILAC 1 / Biological 1	Raptor up	Rictor up		
P35486	Y(ph)HGHSMSDPGVS(ph)YR	1.8680	1.1117	-0.5506	SILAC 1 / Biological 1	Raptor up	Rictor up		
P35486	Y(ph)HGHSMSDPGVS(ph)YR	1.8677	1.1466	-0.5365	SILAC 1 / Biological 1	Raptor up	Rictor up		
P35486	YHGHS(ph)MSDPGVSYR	1.1140	1.3004	-0.3974	SILAC 1 / Biological 1	Raptor up	Rictor up		
P35486	YHGHS(ph)MSDPGVSYR	1.1219	1.3017	-0.3974	SILAC 1 / Biological 1	Raptor up	Rictor up		
Q8VDN3	AS(ph)LGS(ph)LEGEVEAEASSPK	1.5418	1.1890	-0.8507	SILAC 1 / Biological 2	Raptor up	Rictor up		
P14873	ASLS(ph)PMDEPVPDSES(ph)PVEK	0.9517	1.9436	0.5759	SILAC 1 / Biological 2	Raptor up	Rictor up		
Q3TZZ7	DLGRS(ph)SS(ph)SLLASPSHIAAK	1.1272	1.6804	0.5602	SILAC 1 / Biological 2	Raptor up	Rictor up		
Q3UMF0	ITVEKDPDSALGIS(ph)DGETSPS(ph)SK	0.9593	1.1835	0.3465	SILAC 1 / Biological 2	Raptor up	Rictor up		
Q6P9Q4	KPVS(ph)PPS(ph)PK	0.9807	0.8662	0.5674	SILAC 1 / Biological 2	Raptor up	Rictor up		
Q6P9Q4	KPVS(ph)PPS(ph)PK	0.9807	0.8662	0.5674	SILAC 1 / Biological 2	Raptor up	Rictor up		
Q3U4X8	KQS(ph)QIQNQQSS(ph)DLDSDVEDY	1.2738	1.4284	0.1437	SILAC 1 / Biological 2	Raptor up	Rictor up		
Q3U4X8	KQSQIQNQQSS(ph)DLDS(ph)DVEDY	1.1911	0.9739	-0.0343	SILAC 1 / Biological 2	Raptor up	Rictor up		
Q3U4X8	KQSQIQNQQSS(ph)DLDS(ph)DVEDY	1.2337	1.2003	0.0443	SILAC 1 / Biological 2	Raptor up	Rictor up		
Q9D6Z1	KS(ph)SPKEEVAS(ph)EPEEAASPTTPK	1.4938	1.4392	0.2407	SILAC 1 / Biological 2	Raptor up	Rictor up		
Q9D6Z1	KSS(ph)PKEEVAS(ph)EPEEAASPTTPK	1.4322	1.0405	0.1668	SILAC 1 / Biological 2	Raptor up	Rictor up		
Q5U3K5	NIS(ph)LSS(ph)EEEAEGLAGHPR	1.3504	1.0927	-0.3883	SILAC 1 / Biological 2	Raptor up	Rictor up		
Q3UJN1	RADALTSS(ph)PGR	1.9490	2.7297	0.3902	SILAC 1 / Biological 2	Raptor up	Rictor up		
Q63918	RGNNS(ph)AVGS(ph)NADLTIEEDEEEEPVALQQAQQVR	1.0743	1.6475	0.5996	SILAC 1 / Biological 2	Raptor up	Rictor up		
Q63918	RGNNS(ph)AVGS(ph)NADLTIEEDEEEEPVALQQAQQVR	1.0743	1.6475	0.5996	SILAC 1 / Biological 2	Raptor up	Rictor up		
Q9CT10	SAGSSS(ph)PEAGEDS(ph)DHEDGNYCPPVKR	0.9449	1.6851	0.6997	SILAC 1 / Biological 2	Raptor up	Rictor up		
Q6A065	TEEDSKS(ph)IKS(ph)DVPVYLK	2.1318	1.3417	0.0537	SILAC 1 / Biological 2	Raptor up	Rictor up		
Q6A065	TEEDSKS(ph)IKS(ph)DVPVYLK	2.1318	1.3417	0.0537	SILAC 1 / Biological 2	Raptor up	Rictor up		
Q4VA53	AES(ph)PETSAVES(ph)TQS(ph)TPQK	0.9836	1.0733	-0.4172	SILAC 2 / Biological 3	Raptor up	Rictor up		
Q8VDN3	AS(ph)LGS(ph)LEGEVEAEASSPK	1.3114	1.0238	-0.2315	SILAC 2 / Biological 3	Raptor up	Rictor up		
Q8BP27	ENPPSPPT(ph)SPAAPQPR	1.0161	1.0304	-0.1078	SILAC 2 / Biological 3	Raptor up	Rictor up		
Q99JF8	ETNVSKEDTDQEEKASNEDVT(ph)K	1.1257	1.4422	-0.7881	SILAC 2 / Biological 3	Raptor up	Rictor up		
Q8CHU3	GS(ph)SQPNLSTSYSEQEYGK	1.1511	1.7862	0.6926	SILAC 2 / Biological 3	Raptor up	Rictor up		
Q8CHU3	GS(ph)SQPNLSTSYSEQEYGK	1.1511	1.7862	0.6926	SILAC 2 / Biological 3	Raptor up	Rictor up		
Q8K1N2	KYS(ph)GSSLSNMGAYSR	1.9824	1.8591	0.0858	SILAC 2 / Biological 3	Raptor up	Rictor up		
Q05A74	LAS(ph)TSDIEEKENR	1.5569	0.8752	-0.0332	SILAC 2 / Biological 3	Raptor up	Rictor up		
Q3UQN2	LSGINEIPRPFS(ph)PPVTSNT(ph)SPPPTAPLAR	1.1874	1.9954	0.6587	SILAC 2 / Biological 3	Raptor up	Rictor up		
Q3UQN2	LSGINEIPRPFS(ph)PPVTSNT(ph)SPPPTAPLAR	1.1061	1.5142	0.6661	SILAC 2 / Biological 3	Raptor up	Rictor up		
Q3THK3	MDTGPQS(ph)LS(ph)GKSTPSSGDVQVTEDAVR	1.8160	1.4428	-0.1409	SILAC 2 / Biological 3	Raptor up	Rictor up		
Q3THK3	MDTGPQSLS(ph)GKS(ph)TPSSGDVQVTEDAVR	1.6602	1.1871	-0.2909	SILAC 2 / Biological 3	Raptor up	Rictor up		
Q3THK3	MDTGPQSLS(ph)GKS(ph)TPSSGDVQVTEDAVR	1.6602	1.1871	-0.2909	SILAC 2 / Biological 3	Raptor up	Rictor up		
Q8K1N2	NFS(ph)CGS(ph)MELDDSDLESLR	1.5935	0.8705	-0.2811	SILAC 2 / Biological 3	Raptor up	Rictor up		
Q8K1N2	NFS(ph)CGS(ph)MELDDSDLESLR	1.5935	0.8705	-0.2811	SILAC 2 / Biological 3	Raptor up	Rictor up		
Q8BYC6	NGPLNES(ph)QEEEEDGEQGSNLNR	0.9501	1.1289	0.3103	SILAC 2 / Biological 3	Raptor up	Rictor up		
Q8CI95	S(ph)FSLASSGNSPISQR	1.0045	1.1072	0.3084	SILAC 2 / Biological 3	Raptor up	Rictor up		
O08784	STSS(ph)SPAPTQTLPNSITQR	1.8283	2.3423	0.4150	SILAC 2 / Biological 3	Raptor up	Rictor up		
Q8K1N2	T(ph)ASESNVYLNSFHYPDR	1.2541	1.3463	0.4672	SILAC 2 / Biological 3	Raptor up	Rictor up		
O55091	TEEVEVES(ph)EEDPILEHPPENPVK	1.6694	1.3399	-0.0622	SILAC 2 / Biological 3	Raptor up	Rictor up		
Q9QYB5	TEEVLSPDGS(ph)PSKS(ph)PSK	1.3259	1.1289	0.2024	SILAC 2 / Biological 3	Raptor up	Rictor up		
Q9QYB5	TEEVLSPDGS(ph)PSKS(ph)PSK	1.3259	1.1289	0.2024	SILAC 2 / Biological 3	Raptor up	Rictor up		
Q9WV92	VESTSVGSIS(ph)PGGAK	1.3211	0.9892	-0.3468	SILAC 2 / Biological 3	Raptor up	Rictor up		
Q68G59	YGLQDS(ph)DEEEEEHPPK	1.0401	2.1138	0.5482	SILAC 2 / Biological 3	Raptor up	Rictor up		
P08775	YSPTS(ph)PTY(ph)SPTTPK	1.8460	1.6107	-0.0144	SILAC 2 / Biological 3	Raptor up	Rictor up		
O54724	ATEEPS(ph)GT(ph)GSDELIK	1.2571	1.0316	-0.4853	SILAC 3 / Biological 4	Raptor up	Rictor up		
O54724	ATEEPSGTGS(ph)DELIK	1.4642	1.0732	-0.4203	SILAC 3 / Biological 4	Raptor up	Rictor up		
Q6PHZ2	ESTES(ph)SNT(ph)TIEDEDVK	0.9994	1.3369	0.1355	SILAC 3 / Biological 4	Raptor up	Rictor up		
Q6PHZ2	ESTES(ph)SNT(ph)TIEDEDVK	0.9994	1.3369	0.1355	SILAC 3 / Biological 4	Raptor up	Rictor up		
Q8BYJ6	HASAPS(ph)HVQPSDSEK	1.0575	0.8874	-0.3666	SILAC 3 / Biological 4	Raptor up	Rictor up		
Q6ZPV6	IKT(ph)EPS(ph)SPLSDPSDIIR	0.9755	0.9200	-0.1866	SILAC 3 / Biological 4	Raptor up	Rictor up		
Q6ZPV6	IKT(ph)EPS(ph)SPLSDPSDIIR	0.9695	0.9138	0.0293	SILAC 3 / Biological 4	Raptor up	Rictor up		
Q8K1N2	KSS(ph)IS(ph)SISGR	1.2993	0.9839	-0.2097	SILAC 3 / Biological 4	Raptor up	Rictor up		

Uniprot	Modified Sequence	M/L Ratio	H/L Ratio	H/M Ratio	Experiment	iRapKO/Control	iRicKO/Control	iRicKO/iRapKO	Peptide array +
Q8K1N2	KSS(ph)ISS(ph)ISGR	1.2186	0.9577	-0.4554	SILAC 3 / Biological 4	Raptor up	Rictor up		
Q8K1N2	KYS(ph)GSSLSNMGAYSR	0.9719	1.1522	-0.0223	SILAC 3 / Biological 4	Raptor up	Rictor up		
Q61687	LTPVS(ph)LSNS(ph)PIK	1.4571	1.1670	-0.4440	SILAC 3 / Biological 4	Raptor up	Rictor up		
Q61687	LTPVSLS(ph)NS(ph)PIK	2.2061	0.9761	-0.6679	SILAC 3 / Biological 4	Raptor up	Rictor up		
Q6DIC7	S(ph)NLDITVGSR	1.6315	1.2235	-0.7427	SILAC 3 / Biological 4	Raptor up	Rictor up		
Q3UHP6	SES(ph)LSNCSIGK	1.0122	0.9045	-0.5925	SILAC 3 / Biological 4	Raptor up	Rictor up		
Q8K2R0	SPDEATAADQES(ph)EDDLS(ph)AS(ph)RTSLER	1.3024	2.2134	0.3906	SILAC 3 / Biological 4	Raptor up	Rictor up		
Q8K2R0	SPDEATAADQES(ph)EDDLS(ph)ASRTS(ph)LER	1.3323	2.0393	0.4390	SILAC 3 / Biological 4	Raptor up	Rictor up		
Q9CQ20	T(ph)TPAPS(ph)PGSANESFFAPSR	1.0639	1.7173	0.5459	SILAC 3 / Biological 4	Raptor up	Rictor up		
Q9CQ20	T(ph)TPAPS(ph)PGSANESFFAPSR	1.0639	1.7173	0.5459	SILAC 3 / Biological 4	Raptor up	Rictor up		
Q9Z277	LADDEGDS(ph)DSES(ph)VGQSR	1.4127	-0.1407	-1.6659	SILAC 3 / Biological 4	Raptor up		H/M down	+
Q6NZJ6	S(ph)FSKEVEER	1.1093	0.1417	-1.6174	SILAC 2 / Biological 3	Raptor up		H/M down	+
Q6NZJ6	S(ph)FSKEVEER	1.4983	0.0013	-1.5476	SILAC 3 / Biological 4	Raptor up		H/M down	+
P20152	SLYSSS(ph)PGGAYVTR	1.3648	-1.0318	-2.4054	SILAC 3 / Biological 4	Raptor up		H/M down	+
Q62433	SRT(ph)AS(ph)GSSVTSLEGTR	1.1111	-0.4206	-1.5735	SILAC 1 / Biological 1	Raptor up		H/M down	+
Q62433	SRT(ph)AS(ph)GSSVTSLEGTR	1.1123	-0.4206	-1.5620	SILAC 1 / Biological 1	Raptor up		H/M down	+
Q61892	GGDYALAPGSQSS(ph)EMS(ph)LR	1.2061	-0.5857	-1.9813	SILAC 1 / Biological 1	Raptor up		H/M down	
Q61892	GGDYALAPGSQSS(ph)EMS(ph)LR	1.2599	-0.5865	-1.9293	SILAC 1 / Biological 1	Raptor up		H/M down	
Q61892	GGDYALAPGSQSS(ph)EMS(ph)LR	1.3327	-0.3776	-1.5728	SILAC 1 / Biological 1	Raptor up		H/M down	
Q61892	GGDYALAPGSQSS(ph)EMS(ph)LR	1.2370	-0.3792	-1.4689	SILAC 1 / Biological 1	Raptor up		H/M down	
Q9WTQ5	GPSEAPQEAEAEEGAT(ph)SDGEK	0.9630	-0.8121	-1.4206	SILAC 1 / Biological 1	Raptor up		H/M down	
B9EKC2	KENEEAEPST(ph)APGT(ph)PTLR	1.7267	0.2599	-1.3351	SILAC 1 / Biological 1	Raptor up		H/M down	
B9EKC2	KENEEAEPST(ph)APGT(ph)PTLR	1.7161	0.3377	-1.3351	SILAC 1 / Biological 1	Raptor up		H/M down	
Q60953	LAT(ph)S(ph)SPEQSWPSTFK	1.8623	0.5601	-1.0919	SILAC 1 / Biological 1	Raptor up		H/M down	
Q60953	LAT(ph)S(ph)SPEQSWPSTFK	1.8623	0.5767	-1.0919	SILAC 1 / Biological 1	Raptor up		H/M down	
Q9QZQ1	LDSDRVS(ph)S(ph)ASSTAER	1.6775	-0.8567	-2.5317	SILAC 1 / Biological 1	Raptor up		H/M down	
Q9QZQ1	LDSDRVS(ph)S(ph)ASSTAER	1.2428	-0.4428	-1.7716	SILAC 1 / Biological 1	Raptor up		H/M down	
P39447	S(ph)REDLSAQPVQTK	0.9695	0.2211	-1.1303	SILAC 1 / Biological 1	Raptor up		H/M down	
P39447	S(ph)REDLSAQPVQTK	0.9800	0.1435	-1.1234	SILAC 1 / Biological 1	Raptor up		H/M down	
Q9WTQ5	SATLSSTES(ph)TAS(ph)GMQDEVR	1.4330	-0.2014	-1.0825	SILAC 1 / Biological 1	Raptor up		H/M down	
Q9WTQ5	SATLSSTES(ph)TAS(ph)GMQDEVR	1.4330	-0.2014	-1.0825	SILAC 1 / Biological 1	Raptor up		H/M down	
Q9WTQ5	SATLSSTES(ph)TAS(ph)GMQDEVR	1.0799	-0.1686	-1.0825	SILAC 1 / Biological 1	Raptor up		H/M down	
Q9WTQ5	SATLSSTES(ph)TAS(ph)GMQDEVR	1.0799	-0.1686	-1.0825	SILAC 1 / Biological 1	Raptor up		H/M down	
P14873	SLMS(ph)S(ph)PEDLTKDFEELKAEEIDVAK	1.6442	-0.0287	-1.3435	SILAC 1 / Biological 1	Raptor up		H/M down	
P14873	SLMS(ph)S(ph)PEDLTKDFEELKAEEIDVAK	1.6442	-0.0287	-1.3435	SILAC 1 / Biological 1	Raptor up		H/M down	
Q62433	TASGSS(ph)VTS(ph)LEGTR	1.0494	-0.7012	-1.7608	SILAC 1 / Biological 1	Raptor up		H/M down	
Q62433	TASGSS(ph)VTS(ph)LEGTR	1.0494	-0.7313	-1.7535	SILAC 1 / Biological 1	Raptor up		H/M down	
Q62433	TASGSS(ph)VTS(ph)LEGTR	1.0479	-0.6071	-1.7461	SILAC 1 / Biological 1	Raptor up		H/M down	
Q62433	TASGSS(ph)VTS(ph)LEGTR	1.0944	-0.6079	-1.6941	SILAC 1 / Biological 1	Raptor up		H/M down	
Q8VDN3	AS(ph)LGS(ph)LEGEVEAEASSPK	1.4615	0.0875	-1.5858	SILAC 1 / Biological 2	Raptor up		H/M down	
Q8VDN3	ASLGS(ph)LEGEVEAEAS(ph)SPKGK	1.1557	-0.8363	-1.9782	SILAC 1 / Biological 2	Raptor up		H/M down	
Q61609	EVKSS(ph)PS(ph)ESPLMEK	2.0863	-0.2044	-2.0593	SILAC 1 / Biological 2	Raptor up		H/M down	
O55131	ILEQQNSSRT(ph)LEK	1.0542	-0.8268	-1.6570	SILAC 1 / Biological 2	Raptor up		H/M down	
Q6A065	LGS(ph)LSARS(ph)DSEATISR	1.0680	0.0000	-1.2175	SILAC 1 / Biological 2	Raptor up		H/M down	
Q6A065	LGS(ph)LSARS(ph)DSEATISR	1.1037	0.0845	-1.0730	SILAC 1 / Biological 2	Raptor up		H/M down	
Q99K70	M(ox)SPNETLFLES(ph)TNK	1.0892	-0.0002	-1.3642	SILAC 1 / Biological 2	Raptor up		H/M down	
O35144	NS(ph)PMTISR	1.1587	0.1090	-1.0260	SILAC 1 / Biological 2	Raptor up		H/M down	
Q6NZE7	RIDFTPVS(ph)PAPS(ph)PTR	2.2446	-0.2072	-1.7573	SILAC 1 / Biological 2	Raptor up		H/M down	
Q6NZE7	RIDFTPVS(ph)PAPS(ph)PTR	2.2446	-0.2072	-1.7573	SILAC 1 / Biological 2	Raptor up		H/M down	
Q99J21	SELQAYIEQCQDSPT(ph)SGK	1.4010	0.1177	-1.2767	SILAC 1 / Biological 2	Raptor up		H/M down	
Q9ET54	SRS(ph)RDS(ph)GDENEPIQER	1.4394	-0.2296	-1.4689	SILAC 1 / Biological 2	Raptor up		H/M down	
Q9ET54	SRS(ph)RDS(ph)GDENEPIQER	1.4394	-0.2296	-1.4689	SILAC 1 / Biological 2	Raptor up		H/M down	
Q62433	SRT(ph)AS(ph)GS(ph)SVTSLEGTR	1.2308	-0.9788	-1.9311	SILAC 1 / Biological 2	Raptor up		H/M down	
Q62433	TASGSS(ph)VTS(ph)LEGTR	1.0888	-0.1922	-0.9895	SILAC 1 / Biological 2	Raptor up		H/M down	
Q8BHS6	YNDWS(ph)DDDDDS(ph)NESK	2.3784	0.4139	-1.8850	SILAC 1 / Biological 2	Raptor up		H/M down	
Q8BTI8	AQSGT(ph)DSS(ph)PEHKIPAPR	1.5888	0.2357	-4.4392	SILAC 2 / Biological 3	Raptor up		H/M down	
Q8BTI8	AQSGTDS(ph)S(ph)PEHKIPAPR	1.2690	0.1949	-4.4475	SILAC 2 / Biological 3	Raptor up		H/M down	
Q8BTI8	AQSGTDS(ph)S(ph)PEHKIPAPR	1.2390	0.2418	-3.9531	SILAC 2 / Biological 3	Raptor up		H/M down	
Q8VDN3	ASLGS(ph)LEGEVEAEAS(ph)SPKGK	1.4220	0.1425	-1.2321	SILAC 2 / Biological 3	Raptor up		H/M down	
Q8VDN3	EFS(ph)APSTPTGT(ph)LEFAGGDAK	1.3621	-0.2182	-1.5484	SILAC 2 / Biological 3	Raptor up		H/M down	
Q8VDN3	EFS(ph)APSTPTGT(ph)LEFAGGDAK	1.3621	-0.2182	-1.5484	SILAC 2 / Biological 3	Raptor up		H/M down	
Q8VDN3	EFSAPS(ph)T(ph)PTGTLEFAGGDAK	1.2632	-0.4212	-3.0991	SILAC 2 / Biological 3	Raptor up		H/M down	
Q8VDN3	GGVTGSPEASISGS(ph)K	2.8236	0.3273	-2.3241	SILAC 2 / Biological 3	Raptor up		H/M down	
Q9ESL4	GSVSLNS(ph)SPK	1.2174	-0.3476	-1.0976	SILAC 2 / Biological 3	Raptor up		H/M down	
Q8R457	HSS(ph)IS(ph)PVRLPLNSSLGAELSR	0.9641	-0.0186	-1.5372	SILAC 2 / Biological 3	Raptor up		H/M down	
Q8R457	HSS(ph)IS(ph)PVRLPLNSSLGAELSR	0.9641	-0.0186	-1.5372	SILAC 2 / Biological 3	Raptor up		H/M down	
O55131	ILEQQNSSRT(ph)LEK	1.0593	-0.0096	-1.0042	SILAC 2 / Biological 3	Raptor up		H/M down	
Q6NZJ6	ITKPGS(ph)IDSNNQLFAPGGR	1.5985	0.5869	-0.9920	SILAC 2 / Biological 3	Raptor up		H/M down	
Q6NZJ6	ITKPGSIDSNNQLFAPGGRLS(ph)WGK	1.7651	-0.2260	-2.4539	SILAC 2 / Biological 3	Raptor up		H/M down	
Q6NZJ6	KAAS(ph)LTEDR	1.0273	-0.7671	-1.3234	SILAC 2 / Biological 3	Raptor up		H/M down	
B1AR17	KLDS(ph)EEEFGS(ph)ERDEYR	1.1929	0.1950	-1.1016	SILAC 2 / Biological 3	Raptor up		H/M down	
B1AR17	KLDS(ph)EEEFGS(ph)ERDEYR	1.1929	0.1950	-1.1016	SILAC 2 / Biological 3	Raptor up		H/M down	
P52927	KPAQETEETSSQES(ph)AEED	1.0155	-0.3158	-1.5340	SILAC 2 / Biological 3	Raptor up		H/M down	
Q6PHZ2	KPDGVKESTES(ph)SNTTIEDEDVK	1.1221	0.1539	-1.5106	SILAC 2 / Biological 3	Raptor up		H/M down	
Q923J1	KPSAVNTLSSS(ph)LPQGDR	0.9582	-0.0010	-1.0888	SILAC 2 / Biological 3	Raptor up		H/M down	
Q3U4X8	KQS(ph)QIQNQQSSDLDSDVEDY	1.0428	-0.4110	-1.5533	SILAC 2 / Biological 3	Raptor up		H/M down	
Q3U4X8	KQSQIQNQQSSDLDS(ph)DVEDY	1.0899	-0.0946	-1.3060	SILAC 2 / Biological 3	Raptor up		H/M down	
Q4VA53	LDS(ph)SEMDHS(ph)ENEDYTMSSPLPGK	1.2708	0.4889	-1.1729	SILAC 2 / Biological 3	Raptor up		H/M down	
P10923	LEHSKES(ph)QES(ph)ADQSDVIDSQASSK	1.3959	-0.5567	-2.0938	SILAC 2 / Biological 3	Raptor up		H/M down	
P10923	LEHSKES(ph)QES(ph)ADQSDVIDSQASSK	1.3959	-0.5567	-2.0938	SILAC 2 / Biological 3	Raptor up		H/M down	
P05627	LQALKEEPQTVPEMPGET(ph)PPLS(ph)PIDMESQER	1.8185	0.3884	-1.2192	SILAC 2 / Biological 3	Raptor up		H/M down	
P05627	LQALKEEPQTVPEMPGET(ph)PPLS(ph)PIDMESQER	1.8185	0.3884	-1.2192	SILAC 2 / Biological 3	Raptor up		H/M down	
Q8K2Z4	LQPLTS(ph)VDSDNDFVTPKPR	1.1608	-0.4040	-2.6178	SILAC 2 / Biological 3	Raptor up		H/M down	
Q99K70	M(ox)SPNETLFLES(ph)TNK	1.3395	0.7082	-1.1215	SILAC 2 / Biological 3	Raptor up		H/M down	
Q99K70	M(ox)SPNETLFLEST(ph)NK	1.0718	0.1376	-1.0585	SILAC 2 / Biological 3	Raptor up		H/M down	
P98203	NFDT(ph)LDLPK	0.9710	-0.9738	-2.0138	SILAC 2 / Biological 3	Raptor up		H/M down	
Q3U4X8	NQVVPESDS(ph)PVKR	0.9891	-0.7733	-1.5089	SILAC 2 / Biological 3	Raptor up		H/M down	
Q8BHS6	RAS(ph)PNSDDTVLSPQELQK	1.7677	-0.0530	-1.6795	SILAC 2 / Biological 3	Raptor up		H/M down	
Q8BHS6	RASPNS(ph)DDTVLSPQELQK	1.7792	0.1889	-1.5724	SILAC 2 / Biological 3	Raptor up		H/M down	
Q9Z277	RCDVQEDS(ph)EGS(ph)ETDDNKDSTPFEDNEVQDEFLEK	1.0062	-0.7057	-1.3149	SILAC 2 / Biological 3	Raptor up		H/M down	
Q6NZE7	RIDFTPVS(ph)PAPS(ph)PTR	1.8596	-0.0831	-2.4109	SILAC 2 / Biological 3	Raptor up		H/M down	
Q6NZE7	RIDFTPVS(ph)PAPS(ph)PTR	1.8596	-0.0831	-2.4109	SILAC 2 / Biological 3	Raptor up		H/M down	
Q8BTI8	RS(ph)S(ph)SELSPEVVEK	1.1626	-0.0035	-1.3200	SILAC 2 / Biological 3	Raptor up		H/M down	
Q8BTI8	S(ph)GSSQELDGKPSASPQER	1.4416	-0.6348	-1.2830	SILAC 2 / Biological 3	Raptor up		H/M down	
Q8BYJ6	S(ph)LTS(ph)SLENIFSR	1.3649	-0.1316	-2.1948	SILAC 2 / Biological 3	Raptor up		H/M down	
Q8BYJ6	S(ph)LTS(ph)SLENIFSR	1.3851	-0.1758	-1.9130	SILAC 2 / Biological 3	Raptor up		H/M down	
Q8BYJ6	S(ph)LTSS(ph)LENIFSR	1.4055	-0.2202	-1.6312	SILAC 2 / Biological 3	Raptor up		H/M down	
Q9R0L6	S(ph)NRPVSADGNYRPLAK	1.0529	-0.5111	-1.9519	SILAC 2 / Biological 3	Raptor up		H/M down	
Q8VDN3	S(ph)NSFSDEREFSAPS(ph)TPTGTLEFAGGDAK	1.1381	-0.3810	-1.8598	SILAC 2 / Biological 3	Raptor up		H/M down	
A2AI52	S(ph)YSSPDITQALQEEEKR	1.0789	-0.6785	-1.7067	SILAC 2 / Biological 3	Raptor up		H/M down	
Q99J21	SELQAYIEQCQDS(ph)PTSGK	1.2660	0.0343	-1.1188	SILAC 2 / Biological 3	Raptor up		H/M down	
Q3UHP6	SES(ph)LSNCSIGK	1.2144	-0.4473	-1.4783	SILAC 2 / Biological 3	Raptor up		H/M down	
Q9EPC1	SPLVPKS(ph)PT(ph)PKSPPSR	1.1404	-0.6923	-1.9805	SILAC 2 / Biological 3	Raptor up		H/M down	
Q9EPC1	SPLVPKS(ph)PT(ph)PKSPPSR	1.0262	-0.7561	-1.9764	SILAC 2 / Biological 3	Raptor up		H/M down	
Q9EPC1	SPTPKS(ph)PPSR	1.0637	0.4579	-1.0060	SILAC 2 / Biological 3	Raptor up		H/M down	
Q9CZJ2	SPVPS(ph)PPGS(ph)PR	1.0166	-0.4429	-1.6486	SILAC 2 / Biological 3	Raptor up		H/M down	
Q9CZJ2	SPVPS(ph)PPGS(ph)PR	1.0166	-0.4429	-1.6486	SILAC 2 / Biological 3	Raptor up		H/M down	
Q8R1A4	SRSLS(ph)NS(ph)NPDISGTPTSPDDEVR	1.8338	0.4733	-1.2260	SILAC 2 / Biological 3	Raptor up		H/M down	
Q80X50	STSAPQMS(ph)PGSSDNQSSS(ph)PQPAQQK	1.4036	-0.7651	-2.1139	SILAC 2 / Biological 3	Raptor up		H/M down	
Q80X50	STSAPQMSPGS(ph)SDNQSSS(ph)PQPAQQK	1.3423	-1.0393	-2.2776	SILAC 2 / Biological 3	Raptor up		H/M down	
Q5FWX6	SVFPATVSAVLPAPS(ph)PCS(ph)SPK	1.0286	-0.3914	-1.5776	SILAC 2 / Biological 3	Raptor up		H/M down	
Q5FWX6	SVFPATVSAVLPAPS(ph)PCSS(ph)PK	1.0147	-0.2796	-1.7325	SILAC 2 / Biological 3	Raptor up		H/M down	
Q6ZQ61	SYSPDGKES(ph)PSDKK	1.3428	-0.3811	-1.5578	SILAC 2 / Biological 3	Raptor up		H/M down	
Q6PDH0	T(ph)RSPS(ph)PTLGESLAPR	1.0206	-0.1180	-1.1786	SILAC 2 / Biological 3	Raptor up		H/M down	
Q6PDH0	T(ph)RSPSPT(ph)LGESLAPR	1.1965	-0.5591	-1.7324	SILAC 2 / Biological 3	Raptor up		H/M down	

Uniprot	Modified Sequence	M/L Ratio	H/L Ratio	H/M Ratio	Experiment	iRapKO/Control	iRicKO/Control	iRicKO/iRapKO	Peptide array +
P59808	TCS(ph)FGGFDLTNR	1.7255	-0.6500	-2.1416	SILAC 2 / Biological 3	Raptor up		H/M down	
Q3TYK4	TDSREDEIS(ph)PPPPNPVVK	1.1686	0.1777	-1.2012	SILAC 2 / Biological 3	Raptor up		H/M down	
Q9WU62	VLS(ph)PILLNNILPTTAKS(ph)PLGNIR	1.4005	0.6081	-1.3794	SILAC 2 / Biological 3	Raptor up		H/M down	
Q9WU62	VLS(ph)PILLNNILPTTAKS(ph)PLGNIR	1.4005	0.6081	-1.3794	SILAC 2 / Biological 3	Raptor up		H/M down	
Q8BTI8	VSSPVLETVQQRT(ph)PS(ph)RER	0.9431	-1.0014	-2.8966	SILAC 2 / Biological 3	Raptor up		H/M down	
Q3TIY5	AAAQYSS(ph)QKS(ph)VEER	1.3744	-0.9067	-2.1635	SILAC 3 / Biological 4	Raptor up		H/M down	
Q8VDN3	AS(ph)LGS(ph)LEGEVEAEASSPK	1.5314	0.1824	-1.3087	SILAC 3 / Biological 4	Raptor up		H/M down	
Q8VDN3	ASLGS(ph)LEGEVEAEASSPK	1.3078	0.1731	-1.1660	SILAC 3 / Biological 4	Raptor up		H/M down	
Q8BVR6	DDS(ph)GAEDNVDTHQQQAENSTVPTADSR	0.9514	-0.4679	-1.4195	SILAC 3 / Biological 4	Raptor up		H/M down	
Q8VDN3	EFS(ph)APST(ph)PTGTLEFAGGDAK	1.7792	-0.5075	-2.4034	SILAC 3 / Biological 4	Raptor up		H/M down	
Q8VDN3	EFS(ph)APST(ph)PTGTLEFAGGDAK	1.5600	-0.2612	-2.1172	SILAC 3 / Biological 4	Raptor up		H/M down	
Q8VDN3	EFS(ph)APSTPTGT(ph)LEFAGGDAK	2.0212	-0.9098	-2.6628	SILAC 3 / Biological 4	Raptor up		H/M down	
Q3UMF0	EQT(ph)ASAPAT(ph)PLVSK	1.3448	0.3922	-1.0964	SILAC 3 / Biological 4	Raptor up		H/M down	
Q3UMF0	EQTAS(ph)APAT(ph)PLVSK	1.3820	0.0653	-1.1597	SILAC 3 / Biological 4	Raptor up		H/M down	
Q3UMF0	EQTAS(ph)APAT(ph)PLVSK	1.3823	0.0281	-1.1573	SILAC 3 / Biological 4	Raptor up		H/M down	
Q8VDN3	FKAEAPLPS(ph)PK	1.2332	-0.6840	-1.8452	SILAC 3 / Biological 4	Raptor up		H/M down	
P10923	FRIS(ph)HELESS(ph)SSEVN	2.1796	0.7327	-1.5980	SILAC 3 / Biological 4	Raptor up		H/M down	
Q01320	FT(ph)VDLDS(ph)DEDFSGLDEKDEDEDFLPLDAT(ph)PPK	1.0188	0.1157	-1.0621	SILAC 3 / Biological 4	Raptor up		H/M down	
Q8VDN3	GDLGASS(ph)PSMK	2.0058	0.0796	-2.0789	SILAC 3 / Biological 4	Raptor up		H/M down	
Q8VDN3	GDLGASSPS(ph)MK	2.3393	0.0768	-2.4559	SILAC 3 / Biological 4	Raptor up		H/M down	
Q8VDN3	GGVTGS(ph)PEASIS(ph)GSKGDLK	3.3593	0.0524	-3.2963	SILAC 3 / Biological 4	Raptor up		H/M down	
Q8VDN3	GGVTGS(ph)PEASISGS(ph)KGDLK	3.2839	0.5007	-3.2737	SILAC 3 / Biological 4	Raptor up		H/M down	
Q8VDN3	GHYEVTGS(ph)DDEAGK	1.1595	-0.1253	-1.6330	SILAC 3 / Biological 4	Raptor up		H/M down	
Q9WTQ5	GPSEAPQEAEAEEGAT(ph)SDGEK	1.6075	-0.8866	-2.3635	SILAC 3 / Biological 4	Raptor up		H/M down	
Q9ESL4	GSVS(ph)LNSS(ph)PK	1.4175	-0.5454	-1.8885	SILAC 3 / Biological 4	Raptor up		H/M down	
Q9ESL4	GSVS(ph)LNSS(ph)PK	1.4175	-0.5454	-1.8885	SILAC 3 / Biological 4	Raptor up		H/M down	
Q8VDD5	GT(ph)GDCSDEEVDGKADGADAK	1.1925	-0.4283	-1.4174	SILAC 3 / Biological 4	Raptor up		H/M down	
Q61687	IKPVTENLVLPSHTGFCQS(ph)S(ph)GDEALSK	1.0664	-0.2610	-1.0526	SILAC 3 / Biological 4	Raptor up		H/M down	
Q61687	IKPVTENLVLPSHTGFCQS(ph)S(ph)GDEALSK	1.0664	-0.2610	-1.0526	SILAC 3 / Biological 4	Raptor up		H/M down	
Q8C1D8	IS(ph)DSES(ph)EELPKPR	2.5445	0.5147	-2.0644	SILAC 3 / Biological 4	Raptor up		H/M down	
P10923	ISHELES(ph)SS(ph)SEVN	2.0685	0.6219	-1.4107	SILAC 3 / Biological 4	Raptor up		H/M down	
P10923	ISHELESSS(ph)SEVN	2.4074	0.4347	-1.9308	SILAC 3 / Biological 4	Raptor up		H/M down	
Q6NZJ6	ITKPGSIDSNNQLFAPGGRLS(ph)WGK	2.4443	0.5222	-2.1859	SILAC 3 / Biological 4	Raptor up		H/M down	
Q6NZJ6	KAAS(ph)LTEDR	1.6783	-0.0651	-1.6782	SILAC 3 / Biological 4	Raptor up		H/M down	
P09405	KEDS(ph)DEDEDEEDEDDS(ph)DEDEDDEEEDEFEPPIVK	1.4757	-0.2905	-1.5710	SILAC 3 / Biological 4	Raptor up		H/M down	
P09405	KEDS(ph)DEDEDEEDEDDS(ph)DEDEDDEEEDEFEPPIVK	1.4757	-0.2905	-1.5710	SILAC 3 / Biological 4	Raptor up		H/M down	
Q64511	KIVETINS(ph)DS(ph)DSEFGIPK	1.2928	0.1836	-1.2327	SILAC 3 / Biological 4	Raptor up		H/M down	
P17095	KLEKEEEEGISQES(ph)S(ph)EEEQ	1.1576	-0.1237	-1.1601	SILAC 3 / Biological 4	Raptor up		H/M down	
P17095	KLEKEEEEGISQES(ph)S(ph)EEEQ	1.1068	-0.1237	-1.1463	SILAC 3 / Biological 4	Raptor up		H/M down	
P52927	KPAQETEETSSQES(ph)AEED	1.6141	0.1616	-1.5193	SILAC 3 / Biological 4	Raptor up		H/M down	
Q6PHZ2	KPDGVKES(ph)TESSNTT(ph)IEDEDVK	1.6793	0.6613	-1.4441	SILAC 3 / Biological 4	Raptor up		H/M down	
Q6PHZ2	KPDGVKES(ph)TESSNTT(ph)IEDEDVK	1.6793	0.6613	-1.4441	SILAC 3 / Biological 4	Raptor up		H/M down	
Q6PHZ2	KPDGVKESTES(ph)S(ph)NTTIEDEDVK	1.5706	0.6701	-1.3017	SILAC 3 / Biological 4	Raptor up		H/M down	
Q52KI8	KVELS(ph)ES(ph)EEDKGSK	1.1345	-0.1450	-1.3033	SILAC 3 / Biological 4	Raptor up		H/M down	
Q0P678	LGVSVS(ph)PSR	1.1528	-0.1386	-1.3883	SILAC 3 / Biological 4	Raptor up		H/M down	
Q8BRB8	LPSGS(ph)GPAS(ph)PTTGSAVDIR	1.2866	-0.0498	-1.2598	SILAC 3 / Biological 4	Raptor up		H/M down	
Q99K70	M(ox)SPNETLFLES(ph)TNK	1.5506	0.2242	-1.2202	SILAC 3 / Biological 4	Raptor up		H/M down	
P98203	NFDT(ph)LDLPK	1.5790	0.1395	-1.5527	SILAC 3 / Biological 4	Raptor up		H/M down	
Q69ZN8	NLETLPS(ph)FS(ph)SDEEDSVAK	0.9533	-0.3387	-1.3436	SILAC 3 / Biological 4	Raptor up		H/M down	
Q61687	QNYSESSNYDS(ph)ELER	1.2980	0.0708	-1.0693	SILAC 3 / Biological 4	Raptor up		H/M down	
Q3U4X8	QSQIQNQQS(ph)SDLDSDVEDY(ph)	1.3192	0.2929	-1.0935	SILAC 3 / Biological 4	Raptor up		H/M down	
Q6NZE7	RIDFTPVS(ph)PAPS(ph)PTR	1.4133	-0.3089	-1.6485	SILAC 3 / Biological 4	Raptor up		H/M down	
Q6NZE7	RIDFTPVS(ph)PAPSPT(ph)R	1.3016	-0.1915	-1.6440	SILAC 3 / Biological 4	Raptor up		H/M down	
Q6NZE7	RIDFTPVS(ph)PAPSPT(ph)R	1.3016	-0.1915	-1.5951	SILAC 3 / Biological 4	Raptor up		H/M down	
Q9Z0R4	S(ph)GSGMSVISSSSVDQR	1.0397	-0.6194	-2.1742	SILAC 3 / Biological 4	Raptor up		H/M down	
O08784	S(ph)T(ph)SSSPAPTQTLPNSITQR	0.9673	-0.3116	-1.3735	SILAC 3 / Biological 4	Raptor up		H/M down	
Q61127	SFS(ph)PKS(ph)PLELGEK	0.9996	0.1140	-1.2061	SILAC 3 / Biological 4	Raptor up		H/M down	
Q61127	SFS(ph)PKS(ph)PLELGEK	0.9996	0.1140	-1.2061	SILAC 3 / Biological 4	Raptor up		H/M down	
Q61823	SGVAVPT(ph)SPK	2.8611	-0.1578	-2.9481	SILAC 3 / Biological 4	Raptor up		H/M down	
Q8BYJ6	SLT(ph)SS(ph)LENIFSR	2.2631	-0.4157	-2.4795	SILAC 3 / Biological 4	Raptor up		H/M down	
Q8BYJ6	SLT(ph)SS(ph)LENIFSR	2.2631	-0.4157	-2.4795	SILAC 3 / Biological 4	Raptor up		H/M down	
Q8R1A4	SPSGSAFGS(ph)QENLR	1.6420	0.4705	-1.3774	SILAC 3 / Biological 4	Raptor up		H/M down	
Q9QYG0	SRT(ph)AS(ph)LTSAASIDGSR	6.1261	-0.7115	-6.8085	SILAC 3 / Biological 4	Raptor up		H/M down	
P26231	SRTS(ph)VQT(ph)EDDQLIAGQSAR	1.0253	0.0630	-1.0941	SILAC 3 / Biological 4	Raptor up		H/M down	
Q9QXS1	SSS(ph)VGSSSSYPISSAGPR	1.0696	-0.7074	-1.6728	SILAC 3 / Biological 4	Raptor up		H/M down	
Q9QYG0	T(ph)ASLTSAAS(ph)IDGSR	1.4608	0.3663	-1.3899	SILAC 3 / Biological 4	Raptor up		H/M down	
P59808	TCS(ph)FGGFDLTNR	1.9226	-0.0254	-2.1360	SILAC 3 / Biological 4	Raptor up		H/M down	
O88792	VIYSQPS(ph)TRS(ph)EGEFK	1.1793	0.0091	-1.2227	SILAC 3 / Biological 4	Raptor up		H/M down	
Q8BHS6	YNDWS(ph)DDDDDS(ph)NESK	1.9760	0.3744	-1.5891	SILAC 3 / Biological 4	Raptor up		H/M down	
Q8BHS6	YNDWS(ph)DDDDDS(ph)NESK	1.9760	0.3744	-1.5891	SILAC 3 / Biological 4	Raptor up		H/M down	
Q8R1A4	S(ph)RSLS(ph)NSNPDISGTPTSPDDEVR	1.0862	0.2424	-0.4929	SILAC 2 / Biological 3	Raptor up			+
Q8R1A4	S(ph)RSLS(ph)NSNPDISGTPTSPDDEVR	1.1285	0.3288	-0.4271	SILAC 2 / Biological 3	Raptor up			+
Q8VDN3	AS(ph)LGS(ph)LEGEVEAEASSPK	0.9450	0.3702	-0.4076	SILAC 1 / Biological 1	Raptor up			
Q8VDN3	AS(ph)LGS(ph)LEGEVEAEASSPK	0.9551	0.3702	-0.4076	SILAC 1 / Biological 1	Raptor up			
Q8BGU5	AS(ph)TIFLSKS(ph)QTDVR	1.0459	0.7560	-0.1234	SILAC 1 / Biological 1	Raptor up			
O54724	ATEEPSGTGS(ph)DELIK	1.3810	0.6183	-0.0372	SILAC 1 / Biological 1	Raptor up			
O54724	ATEEPSGTGS(ph)DELIK	1.3810	0.6183	-0.0372	SILAC 1 / Biological 1	Raptor up			
Q80YV2	DTAATFQSVDGS(ph)PQAEQSPLESTSK	0.9612	0.6481	0.0919	SILAC 1 / Biological 1	Raptor up			
Q80YV2	DTAATFQSVDGS(ph)PQAEQSPLESTSK	0.9612	0.6481	0.0919	SILAC 1 / Biological 1	Raptor up			
Q9D6Z1	EEVAS(ph)EPEEAASPTTPK	1.0432	0.2748	-0.4931	SILAC 1 / Biological 1	Raptor up			
Q9D6Z1	EEVAS(ph)EPEEAASPTTPK	1.0183	0.2420	-0.4667	SILAC 1 / Biological 1	Raptor up			
P47713	HIVSNDSS(ph)DSDDEAQGPK	0.9507	0.2045	-0.8425	SILAC 1 / Biological 1	Raptor up			
P47713	HIVSNDSS(ph)DSDDEAQGPK	0.9512	0.1995	-0.8074	SILAC 1 / Biological 1	Raptor up			
Q9ET54	IASDEEIQGT(ph)K	1.5475	0.7309	-0.3895	SILAC 1 / Biological 1	Raptor up			
Q5U4B1	KDS(ph)EEGEESFSSVQDDLSK	1.2136	0.6289	-0.7910	SILAC 1 / Biological 1	Raptor up			
Q5U4B1	KDS(ph)EEGEESFSSVQDDLSK	1.2340	0.6829	-0.7728	SILAC 1 / Biological 1	Raptor up			
Q9Z277	KSDGACDS(ph)PS(ph)SDKENSSQMAQDLQK	1.6696	0.0035	0.0772	SILAC 1 / Biological 1	Raptor up			
Q9Z277	KSDGACDS(ph)PS(ph)SDKENSSQMAQDLQK	1.6696	0.0035	0.0772	SILAC 1 / Biological 1	Raptor up			
Q9Z277	KSDGACDS(ph)PS(ph)SDKENSSQMAQDLQK	1.6696	0.0035	0.0772	SILAC 1 / Biological 1	Raptor up			
Q64511	KTSFDQDS(ph)DVDIFPSDFTSEPPALPR	1.0353	0.7987	0.0025	SILAC 1 / Biological 1	Raptor up			
Q60953	LATS(ph)S(ph)PEQSWPSTFK	1.4371	0.5730	-0.8491	SILAC 1 / Biological 1	Raptor up			
Q60953	LATS(ph)S(ph)PEQSWPSTFK	1.4232	0.5739	-0.8436	SILAC 1 / Biological 1	Raptor up			
Q60953	LATS(ph)S(ph)PEQSWPSTFK	1.4393	0.5998	-0.7794	SILAC 1 / Biological 1	Raptor up			
Q60953	LATS(ph)S(ph)PEQSWPSTFK	1.4410	0.5998	-0.7683	SILAC 1 / Biological 1	Raptor up			
Q8BRB8	LPSGSGPAS(ph)PTTGSAVDIR	1.3702	0.5839	-0.7964	SILAC 1 / Biological 1	Raptor up			
Q8BRB8	LPSGSGPAS(ph)PTTGSAVDIR	1.3702	0.5927	-0.7964	SILAC 1 / Biological 1	Raptor up			
Q8BRB8	LRS(ph)EDGVEGDLGETQSR	1.0805	0.5103	-0.5819	SILAC 1 / Biological 1	Raptor up			
Q8BRB8	LRS(ph)EDGVEGDLGETQSR	1.0775	0.3528	-0.5061	SILAC 1 / Biological 1	Raptor up			
Q4VA53	METVSNASSSS(ph)NPSS(ph)PGR	1.5274	0.4998	-0.6198	SILAC 1 / Biological 1	Raptor up			
Q4VA53	METVSNASSSS(ph)NPSS(ph)PGR	1.5274	0.4998	-0.6198	SILAC 1 / Biological 1	Raptor up			
Q9JMH9	NKLEGDS(ph)DVDS(ph)ELEDRVDGVK	0.9838	-0.1614	-0.9037	SILAC 1 / Biological 1	Raptor up			
Q9JMH9	NKLEGDS(ph)DVDS(ph)ELEDRVDGVK	0.9838	-0.1614	-0.9037	SILAC 1 / Biological 1	Raptor up			
Q8R2M2	NMPNVS(ph)DSETYNSDFDDSS(ph)PR	1.0130	0.1822	-0.1275	SILAC 1 / Biological 1	Raptor up			
Q8R2M2	NMPNVS(ph)DSETYNSDFDDSS(ph)PR	1.0130	0.1822	-0.1275	SILAC 1 / Biological 1	Raptor up			
Q8R2M2	NMPNVS(ph)DSETYNSDFDDSS(ph)PR	1.0130	0.1822	-0.1275	SILAC 1 / Biological 1	Raptor up			
Q8R2M2	NMPNVS(ph)DSETYNSDFDDSS(ph)PR	1.0130	0.1822	-0.1275	SILAC 1 / Biological 1	Raptor up			
Q9Z277	RCDVQEDS(ph)EGS(ph)ETDDNKDSTPFEDNEVQDEFLEK	1.1993	0.1384	-0.8392	SILAC 1 / Biological 1	Raptor up			
Q6P4S8	RDS(ph)TEAPKPESS(ph)PEPPPGQGR	1.0535	0.6838	-0.3615	SILAC 1 / Biological 1	Raptor up			
Q6P4S8	RDS(ph)TEAPKPESS(ph)PEPPPGQGR	1.0535	0.6838	-0.3546	SILAC 1 / Biological 1	Raptor up			
Q8BTI8	RVPS(ph)PTPVPK	1.0754	-0.2289	-0.9310	SILAC 1 / Biological 1	Raptor up			
Q8BTI8	RVPS(ph)PTPVPK	1.0754	-0.2289	-0.9309	SILAC 1 / Biological 1	Raptor up			
Q9Z277	S(ph)DGACDSPSSDKENSSQMAQDLQK	1.1826	0.2339	-0.4585	SILAC 1 / Biological 1	Raptor up			
Q9Z277	S(ph)DGACDSPSSDKENSSQMAQDLQK	1.1826	0.2339	-0.4585	SILAC 1 / Biological 1	Raptor up			
Q3UK83	S(ph)ESPKEPEQLR	1.0238	0.7668	0.0108	SILAC 1 / Biological 1	Raptor up			
Q8CI95	S(ph)FSLASS(ph)GNSPISQR	0.9645	0.4989	-0.5896	SILAC 1 / Biological 1	Raptor up			

Uniprot	Modified Sequence	M/L Ratio	H/L Ratio	H/M Ratio	Experiment	iRapKO/Control	iRicKO/Control	iRicKO/iRapKO	Peptide array +
Q8CI95	S(ph)FSLASS(ph)GNSPISQR	0.9645	0.4989	-0.5896	SILAC 1 / Biological 1	Raptor up			
Q8CI95	S(ph)FSLASS(ph)GNSPISQR	1.3538	-0.0921	-0.4994	SILAC 1 / Biological 1	Raptor up			
Q8CI95	S(ph)FSLASS(ph)GNSPISQR	1.3538	-0.0921	-0.4994	SILAC 1 / Biological 1	Raptor up			
Q69ZM0	S(ph)QSQAS(ph)LTGLAFMSPSNR	1.2938	0.4555	-0.7330	SILAC 1 / Biological 1	Raptor up			
Q69ZM0	S(ph)QSQAS(ph)LTGLAFMSPSNR	1.2938	0.4555	-0.7330	SILAC 1 / Biological 1	Raptor up			
Q8R1A4	S(ph)RSLSNS(ph)NPDISGTPTSPDDEVR	1.3435	0.7837	-0.4816	SILAC 1 / Biological 1	Raptor up			
Q8R1A4	S(ph)RSLSNS(ph)NPDISGTPTSPDDEVR	1.3435	0.7881	-0.4816	SILAC 1 / Biological 1	Raptor up			
P58871	S(ph)S(ph)GSLSPGLETEDPLEAR	0.9555	0.4438	-0.2451	SILAC 1 / Biological 1	Raptor up			
P58871	S(ph)S(ph)GSLSPGLETEDPLEAR	0.9615	0.4438	-0.2416	SILAC 1 / Biological 1	Raptor up			
Q8CI95	SFS(ph)LASSGNS(ph)PISQR	1.2588	0.5078	-0.8228	SILAC 1 / Biological 1	Raptor up			
Q8CI95	SFS(ph)LASSGNS(ph)PISQR	1.2466	0.5091	-0.8225	SILAC 1 / Biological 1	Raptor up			
Q8CI95	SFSLASSGNS(ph)PISQR	1.1702	0.7453	-0.3167	SILAC 1 / Biological 1	Raptor up			
Q8CI95	SFSLASSGNS(ph)PISQR	1.1752	0.7453	-0.3158	SILAC 1 / Biological 1	Raptor up			
Q9JIX8	SLSPLS(ph)GTTDTKAES(ph)PAGR	1.0322	0.7091	0.2501	SILAC 1 / Biological 1	Raptor up			
Q9JIX8	SLSPLS(ph)GTTDTKAES(ph)PAGR	1.0322	0.7096	0.2640	SILAC 1 / Biological 1	Raptor up			
Q8R1A4	SRS(ph)LS(ph)NSNPDISGTPTSPDDEVR	0.9859	0.5736	-0.2414	SILAC 1 / Biological 1	Raptor up			
Q8R1A4	SRS(ph)LS(ph)NSNPDISGTPTSPDDEVR	0.9859	0.5736	-0.2414	SILAC 1 / Biological 1	Raptor up			
Q9QXS1	SS(ph)SVGSSSSYPISSAGPR	0.9772	0.0000	-0.9199	SILAC 1 / Biological 1	Raptor up			
Q9QXS1	SS(ph)SVGSSSSYPISSAGPR	0.9772	0.0000	-0.9199	SILAC 1 / Biological 1	Raptor up			
P58871	SSGS(ph)LS(ph)PGLETEDPLEAR	1.1788	0.4099	-0.4469	SILAC 1 / Biological 1	Raptor up			
P58871	SSGS(ph)LS(ph)PGLETEDPLEAR	1.1788	0.4099	-0.4469	SILAC 1 / Biological 1	Raptor up			
P58871	SSGS(ph)LS(ph)PGLETEDPLEAR	0.9797	0.4867	-0.3803	SILAC 1 / Biological 1	Raptor up			
P58871	SSGS(ph)LS(ph)PGLETEDPLEAR	0.9797	0.4867	-0.3803	SILAC 1 / Biological 1	Raptor up			
A6X919	SSPPPLS(ph)GASEVDAGELGSER	1.0048	0.4754	0.0339	SILAC 1 / Biological 1	Raptor up			
A6X919	SSPPPLS(ph)GASEVDAGELGSER	0.9667	0.4791	0.0463	SILAC 1 / Biological 1	Raptor up			
Q64511	VKAS(ph)PITNDGEDEFVPS(ph)DGLDKDEYAFSSGK	1.1158	0.7917	0.5124	SILAC 1 / Biological 1	Raptor up			
Q0P678	VQSQEETRS(ph)DEEDRAS(ph)EPK	1.1266	0.3138	0.2349	SILAC 1 / Biological 1	Raptor up			
Q0P678	VQSQEETRS(ph)DEEDRAS(ph)EPK	1.1266	0.3138	0.2417	SILAC 1 / Biological 1	Raptor up			
Q60710	CDGS(ph)PRT(ph)PPS(ph)TPPATANLSADDDFQNTDLR	1.0845	0.6547	-0.2748	SILAC 1 / Biological 2	Raptor up			
Q60710	CDGS(ph)PRT(ph)PPS(ph)TPPATANLSADDDFQNTDLR	1.0845	0.6547	-0.2748	SILAC 1 / Biological 2	Raptor up			
Q3UMF0	ITVEKDPDSALGIS(ph)DGETS(ph)PSSK	1.0911	0.7205	0.0761	SILAC 1 / Biological 2	Raptor up			
Q3UMF0	ITVEKDPDSALGIS(ph)DGETSPS(ph)SK	0.9697	0.7375	0.1630	SILAC 1 / Biological 2	Raptor up			
Q6NZJ6	KAAS(ph)LTEDR	1.3844	0.3249	-0.6179	SILAC 1 / Biological 2	Raptor up			
B9EKC2	KENEEAEPS(ph)TAPGT(ph)PTLR	1.5609	-0.0011	-0.8269	SILAC 1 / Biological 2	Raptor up			
B9EKC2	KENEEAEPST(ph)APGT(ph)PTLR	0.9956	0.0926	-0.8291	SILAC 1 / Biological 2	Raptor up			
B9EKC2	KENEEAEPST(ph)APGT(ph)PTLR	1.1140	0.0367	-0.7785	SILAC 1 / Biological 2	Raptor up			
B2RUB9	LREQGTES(ph)RSS(ph)TPLPTVSSSAENTR	1.0441	0.6211	-0.1599	SILAC 1 / Biological 2	Raptor up			
B9EHJ7	LS(ph)TSPATRDEAAS(ph)PGAK	0.9410	0.7262	0.2482	SILAC 1 / Biological 2	Raptor up			
Q5U3K5	NISLS(ph)S(ph)EEEAEGLAGHPR	0.9917	0.4706	-0.4110	SILAC 1 / Biological 2	Raptor up			
Q5U3K5	NISLS(ph)S(ph)EEEAEGLAGHPR	0.9917	0.4706	-0.3883	SILAC 1 / Biological 2	Raptor up			
O70475	RIPYT(ph)PGEIPK	1.1099	-0.1938	-0.4202	SILAC 1 / Biological 2	Raptor up			
Q61823	SGVAVPT(ph)SPK	1.0513	-0.2061	-0.6524	SILAC 1 / Biological 2	Raptor up			
P14602	SPS(ph)WEPFR	1.2723	0.6509	-0.1950	SILAC 1 / Biological 2	Raptor up			
O54724	ATEEPSGTGS(ph)DELIK	1.1076	0.3103	-0.9017	SILAC 2 / Biological 3	Raptor up			
Q60953	ATS(ph)PPHLDGTSNPESTVPEKK	1.0151	0.6046	-0.3697	SILAC 2 / Biological 3	Raptor up			
Q99P72	ESET(ph)FSDSS(ph)PIEIIDEFPTFVSAK	0.9694	-0.2493	-0.8766	SILAC 2 / Biological 3	Raptor up			
P51859	GSAEGS(ph)SDEEGKLVIDEPAKEK	1.0956	0.4991	0.0693	SILAC 2 / Biological 3	Raptor up			
Q9WU62	ISVDDYGMDLNS(ph)DDS(ph)T(ph)DDESHPR	0.9998	0.3404	-0.5683	SILAC 2 / Biological 3	Raptor up			
Q9WU62	ISVDDYGMDLNS(ph)DDS(ph)T(ph)DDESHPR	0.9998	0.3404	-0.5683	SILAC 2 / Biological 3	Raptor up			
Q8R1Q8	KPASVS(ph)PTTPTSPTEGEAS	1.3076	0.5863	-0.3362	SILAC 2 / Biological 3	Raptor up			
Q9D6Z1	KSS(ph)PKEEVASEPEEAAS(ph)PTTPK	1.0726	0.7436	-0.1279	SILAC 2 / Biological 3	Raptor up			
Q05D44	KTARPNSEAPLSGS(ph)EDADDS(ph)NK	1.3567	0.4219	-0.5781	SILAC 2 / Biological 3	Raptor up			
P49586	MLQAIS(ph)PKQS(ph)PSSS(ph)PTHER	1.1768	0.1063	-0.7294	SILAC 2 / Biological 3	Raptor up			
Q8BTI8	MVQASSQSLLPPAQDRPRS(ph)PVPSAFSDQSR	1.1687	0.5881	-0.5359	SILAC 2 / Biological 3	Raptor up			
Q99JF8	NLAKPGVTS(ph)TSDS(ph)EDEDDQEGEK	0.9893	0.2333	-0.4364	SILAC 2 / Biological 3	Raptor up			
P09450	S(ph)RDAT(ph)PPVS(ph)PINMEDQER	0.9392	0.2529	-0.5762	SILAC 2 / Biological 3	Raptor up			
A6X919	S(ph)SPPPLSGASEVDAGELGSER	0.9706	0.3245	-0.3977	SILAC 2 / Biological 3	Raptor up			
Q3UHP6	SPS(ph)FASEWDEIEK	1.1139	-0.4037	-0.7677	SILAC 2 / Biological 3	Raptor up			
Q80YV2	SQDATVSPGS(ph)EQSEK	1.0754	0.4721	-0.2375	SILAC 2 / Biological 3	Raptor up			
Q6A065	TEEDSKS(ph)IKS(ph)DVPVYLK	1.1620	0.5789	-0.2575	SILAC 2 / Biological 3	Raptor up			
Q6A065	TEEDSKS(ph)IKS(ph)DVPVYLK	1.1620	0.5789	-0.2575	SILAC 2 / Biological 3	Raptor up			
O35243	TETDITTVEQSS(ph)PSGK	1.0008	0.3832	-0.5278	SILAC 2 / Biological 3	Raptor up			
Q9DBJ3	TPISTPVSGT(ph)PQPS(ph)PMIER	1.0093	0.0910	-0.8316	SILAC 2 / Biological 3	Raptor up			
Q9WU62	TPS(ph)PPCPANK	1.3976	0.5451	-0.7531	SILAC 2 / Biological 3	Raptor up			
Q61687	TTSTS(ph)NPSS(ph)PAPDWYK	1.0119	0.4008	-0.5711	SILAC 2 / Biological 3	Raptor up			
A2AIV2	VISHDRDS(ph)PPPPPPPPPPQPQPTLK	1.3528	0.7180	-0.8335	SILAC 2 / Biological 3	Raptor up			
O88792	VIYSQPS(ph)TR	0.9868	0.4242	-0.5978	SILAC 2 / Biological 3	Raptor up			
Q64511	VKASPIT(ph)NDGEDEFVPSDGLDKDEY(ph)AFSSGK	0.9846	0.7303	-0.1376	SILAC 2 / Biological 3	Raptor up			
Q5DTP7	WGQPPS(ph)PTPVPRPPDADPNT(ph)PSPK	0.9394	0.3459	-0.6068	SILAC 2 / Biological 3	Raptor up			
Q5DTP7	WGQPPS(ph)PTPVPRPPDADPNT(ph)PSPK	0.9394	0.3459	-0.6068	SILAC 2 / Biological 3	Raptor up			
Q5DTP7	WGQPPS(ph)PTPVPRPPDADPNT(ph)PSPK	1.0654	0.4699	-0.5198	SILAC 2 / Biological 3	Raptor up			
P08775	YSPT(ph)SPT(ph)YSPTSPK	1.1541	0.8104	-0.0944	SILAC 2 / Biological 3	Raptor up			
P08775	YSPTS(ph)PTYSPTS(ph)PK	1.0874	0.1929	-0.6544	SILAC 2 / Biological 3	Raptor up			
O54724	ATEEPS(ph)GT(ph)GSDELIK	1.1680	0.7682	-0.4853	SILAC 3 / Biological 4	Raptor up			
Q80YV2	DTAATFQSVDGS(ph)PQAEQSPLESTSK	1.0158	0.3619	-0.2609	SILAC 3 / Biological 4	Raptor up			
Q923J1	FSVST(ph)PSQPSCK	1.1862	0.5833	-0.6579	SILAC 3 / Biological 4	Raptor up			
Q64511	IVETINS(ph)DS(ph)DSEFGIPK	1.0088	0.2010	-0.7276	SILAC 3 / Biological 4	Raptor up			
B9EKC2	KENEEAEPS(ph)TAPGT(ph)PTLR	1.3197	0.6204	-0.7642	SILAC 3 / Biological 4	Raptor up			
Q8R1Q8	KPASVS(ph)PTTPTSPTEGEAS	0.9399	0.8177	0.0627	SILAC 3 / Biological 4	Raptor up			
Q3U4X8	KQSQIQNQQSS(ph)DLDSDVEDY(ph)	1.2652	0.2349	-0.9270	SILAC 3 / Biological 4	Raptor up			
Q3U4X8	KQSQIQNQQSSDLDS(ph)DVEDY	1.1432	0.3816	-0.9244	SILAC 3 / Biological 4	Raptor up			
Q99JF8	NLAKPGVT(ph)STSDS(ph)EDEDDQEGEK	1.1824	0.5465	-0.5284	SILAC 3 / Biological 4	Raptor up			
Q99JF8	NLAKPGVTSTS(ph)DS(ph)EDEDDQEGEK	1.3916	0.2894	-0.7704	SILAC 3 / Biological 4	Raptor up			
Q99JF8	NLAKPGVTSTS(ph)DS(ph)EDEDDQEGEK	1.0339	0.3358	-0.6964	SILAC 3 / Biological 4	Raptor up			
O35144	NS(ph)PMTISR	1.0078	0.2242	-0.8891	SILAC 3 / Biological 4	Raptor up			
Q3UH59	QLHIEGAS(ph)LELS(ph)DDDTESK	1.2918	0.5415	-0.8537	SILAC 3 / Biological 4	Raptor up			
Q3UHJ0	REQGSSGLGSGSS(ph)GGGGSSSGLGSGYIGR	0.9746	-0.1730	-0.8536	SILAC 3 / Biological 4	Raptor up			
Q8R1A4	S(ph)PSGSAFGS(ph)QENLR	0.9679	0.3381	-0.8749	SILAC 3 / Biological 4	Raptor up			
P26231	S(ph)RTS(ph)VQTEDDQLIAGQSAR	1.0710	0.0523	-0.8802	SILAC 3 / Biological 4	Raptor up			
P26231	S(ph)RTS(ph)VQTEDDQLIAGQSAR	0.9678	0.1582	-0.8257	SILAC 3 / Biological 4	Raptor up			
Q8R1A4	SPS(ph)GSAFGS(ph)QENLR	1.1300	0.5032	-0.6117	SILAC 3 / Biological 4	Raptor up			
P27546	VGS(ph)LDNVGHLPAGGAVK	1.1136	0.3233	-0.8890	SILAC 3 / Biological 4	Raptor up			
P14873	ES(ph)SPLYS(ph)PGFSDSTSAAK	-0.7384	-2.2190	-1.3762	SILAC 1 / Biological 2		Rictor down	H/M down	+
Q4VAC9	RFS(ph)FSPSAVS(ph)PR	-0.2030	-1.3975	-1.8523	SILAC 1 / Biological 2		Rictor down	H/M down	+
Q4VAC9	RFSFS(ph)PSAVS(ph)PR	-0.2669	-1.3544	-1.1151	SILAC 1 / Biological 2		Rictor down	H/M down	+
Q4VAC9	RFSFS(ph)PSAVS(ph)PR	-0.3308	-1.3112	-1.0905	SILAC 1 / Biological 2		Rictor down	H/M down	+
P20152	SLYSSS(ph)PGGAYVTR	-0.3939	-1.6695	-1.4205	SILAC 1 / Biological 2		Rictor down	H/M down	+
Q62433	SRT(ph)AS(ph)GSSVTSLEGTR	-0.0804	-2.1199	-2.1936	SILAC 3 / Biological 4		Rictor down	H/M down	+
Q5NCR9	VLQKPSVFGS(ph)DS(ph)DDDETSVSESLQR	0.0089	-1.1991	-1.2688	SILAC 2 / Biological 3		Rictor down	H/M down	+
Q5NCR9	VLQKPSVFGS(ph)DS(ph)DDDETSVSESLQR	-0.1399	-1.6403	-1.1215	SILAC 2 / Biological 3		Rictor down	H/M down	+
Q3TIY5	AAAQYS(ph)SQKS(ph)VEER	-0.6827	-3.1759	-1.9843	SILAC 1 / Biological 1		Rictor down	H/M down	
Q3TIY5	AAAQYS(ph)SQKS(ph)VEER	-0.5378	-3.1720	-1.9267	SILAC 1 / Biological 1		Rictor down	H/M down	
Q8BQM4	ECLSGLDSNEMS(ph)PQEK	-0.2134	-1.2846	-1.6344	SILAC 1 / Biological 1		Rictor down	H/M down	
Q8BQM4	ECLSGLDSNEMS(ph)PQEK	-0.2007	-1.2798	-1.6316	SILAC 1 / Biological 1		Rictor down	H/M down	
Q62261	ES(ph)SPVPS(ph)PTLDRK	-0.9424	-2.1667	-0.9927	SILAC 1 / Biological 1		Rictor down	H/M down	
Q62261	ES(ph)SPVPS(ph)PTLDRK	-0.9424	-2.1667	-0.9788	SILAC 1 / Biological 1		Rictor down	H/M down	
Q99K70	MSPNETLFLEST(ph)NK	0.0698	-1.2725	-1.5416	SILAC 1 / Biological 1		Rictor down	H/M down	
Q99K70	MSPNETLFLEST(ph)NK	0.1142	-1.2322	-1.5372	SILAC 1 / Biological 1		Rictor down	H/M down	
Q6QI06	NDS(ph)GEENVPLDLTR	0.7235	-1.2831	-1.2978	SILAC 1 / Biological 1		Rictor down	H/M down	
Q6QI06	NDS(ph)GEENVPLDLTR	0.7235	-1.2831	-1.2978	SILAC 1 / Biological 1		Rictor down	H/M down	
Q91YM2	NEEENIY(ph)SVPHDSTQGK	0.2399	-2.0151	-1.0839	SILAC 1 / Biological 1		Rictor down	H/M down	
Q91YM2	NEEENIY(ph)SVPHDSTQGK	0.2399	-2.0151	-1.0839	SILAC 1 / Biological 1		Rictor down	H/M down	
Q09XV5	NTSS(ph)DNS(ph)DVEVMPAQSPR	-0.4994	-1.7650	-3.5300	SILAC 1 / Biological 1		Rictor down	H/M down	
Q09XV5	NTSS(ph)DNS(ph)DVEVMPAQSPR	-0.4994	-1.7650	-3.5283	SILAC 1 / Biological 1		Rictor down	H/M down	
Q09XV5	NTSS(ph)DNS(ph)DVEVMPAQSPR	-0.3475	-1.6764	-2.1586	SILAC 1 / Biological 1		Rictor down	H/M down	

Uniprot	Modified Sequence	M/L Ratio	H/L Ratio	H/M Ratio	Experiment	iRapKO/Control	iRicKO/Control	iRicKO/iRapKO	Peptide array +
Q09XV5	NTSS(ph)DNS(ph)DVEVMPAQSPR	-0.3475	-1.6764	-2.1577	SILAC 1 / Biological 1		Rictor down	H/M down	
Q9Z248	RGS(ph)LEMSS(ph)DGEPLSR	-0.7395	-1.2506	-1.2389	SILAC 1 / Biological 1		Rictor down	H/M down	
Q9Z248	RGS(ph)LEMSS(ph)DGEPLSR	-0.7395	-1.2506	-1.2389	SILAC 1 / Biological 1		Rictor down	H/M down	
Q9Z248	RGS(ph)LEMSS(ph)DGEPLSR	-0.8444	-1.2438	-1.2376	SILAC 1 / Biological 1		Rictor down	H/M down	
Q9Z248	RGS(ph)LEMSS(ph)DGEPLSR	-0.8444	-1.2438	-1.2376	SILAC 1 / Biological 1		Rictor down	H/M down	
P14602	SPS(ph)WEPFR	0.8615	-1.3112	-2.0037	SILAC 1 / Biological 1		Rictor down	H/M down	
P14602	SPS(ph)WEPFR	0.4199	-1.1068	-1.7460	SILAC 1 / Biological 1		Rictor down	H/M down	
P14602	SPS(ph)WEPFR	0.4201	-1.1081	-1.7426	SILAC 1 / Biological 1		Rictor down	H/M down	
O08784	STSS(ph)SPAPTQTLPNSITQR	-0.7178	-1.6642	-2.0973	SILAC 1 / Biological 1		Rictor down	H/M down	
O08784	STSS(ph)SPAPTQTLPNSITQR	-0.8812	-1.6477	-2.0781	SILAC 1 / Biological 1		Rictor down	H/M down	
Q9CQ20	T(ph)TPAPS(ph)PGSANESFFAPSR	-0.2303	-1.4213	-1.0849	SILAC 1 / Biological 1		Rictor down	H/M down	
Q9CQ20	T(ph)TPAPS(ph)PGSANESFFAPSR	-0.2303	-1.4213	-1.0849	SILAC 1 / Biological 1		Rictor down	H/M down	
Q9CQ20	T(ph)TPAPS(ph)PGSANESFFAPSR	-0.2327	-1.4098	-1.0781	SILAC 1 / Biological 1		Rictor down	H/M down	
Q9CQ20	T(ph)TPAPS(ph)PGSANESFFAPSR	-0.2327	-1.4098	-1.0781	SILAC 1 / Biological 1		Rictor down	H/M down	
Q3UJN1	(ac)AES(ph)SES(ph)LSASS(ph)PAR	0.0630	-1.3356	-1.3362	SILAC 1 / Biological 2		Rictor down	H/M down	
Q3UJN1	(ac)AES(ph)SES(ph)LSASS(ph)PAR	0.0630	-1.3356	-1.3362	SILAC 1 / Biological 2		Rictor down	H/M down	
Q9EPC1	(ac)ATS(ph)PQKSPLVPKSPT(ph)PK	0.2377	-1.1325	-1.7536	SILAC 1 / Biological 2		Rictor down	H/M down	
Q9WU62	ASWGLQDS(ph)PGS(ph)TDSPWQER	-0.9149	-2.0182	-1.4568	SILAC 1 / Biological 2		Rictor down	H/M down	
Q9WU62	ASWGLQDS(ph)PGS(ph)TDSPWQER	-0.7969	-1.8624	-1.0689	SILAC 1 / Biological 2		Rictor down	H/M down	
Q8C8U0	DFAARS(ph)PSAS(ph)ITDEDSNV	-0.0735	-1.7724	-1.6014	SILAC 1 / Biological 2		Rictor down	H/M down	
Q8C8U0	DFAARS(ph)PSAS(ph)ITDEDSNV	0.2940	-1.2524	-1.5637	SILAC 1 / Biological 2		Rictor down	H/M down	
Q8K298	DSNLS(ph)AASPKPGK	0.0213	-1.2526	-1.0450	SILAC 1 / Biological 2		Rictor down	H/M down	
P13864	EADDDEEADDDVSEMPS(ph)PK	-0.5043	-2.6560	-1.3109	SILAC 1 / Biological 2		Rictor down	H/M down	
Q8BQM4	ECLSGLDSNEMS(ph)PQEK	-0.1472	-1.4165	-1.2964	SILAC 1 / Biological 2		Rictor down	H/M down	
Q8BIG4	EVMESAVGTSSGSGQSEES(ph)PR	-0.4525	-1.9103	-1.1028	SILAC 1 / Biological 2		Rictor down	H/M down	
Q9ESL4	GSVS(ph)LNSS(ph)PK	-0.0879	-1.0922	-1.3011	SILAC 1 / Biological 2		Rictor down	H/M down	
Q9ESL4	GSVS(ph)LNSS(ph)PK	-0.0879	-1.0922	-1.3011	SILAC 1 / Biological 2		Rictor down	H/M down	
P47713	HIVSNDSSDS(ph)DDEAQGPK	0.1027	-1.1788	-1.2439	SILAC 1 / Biological 2		Rictor down	H/M down	
Q9ET54	IAS(ph)DEEIQGTK	-0.4728	-1.6408	-1.2222	SILAC 1 / Biological 2		Rictor down	H/M down	
P52927	KQQQEPTCEPS(ph)PK	-0.6529	-1.5057	-1.0189	SILAC 1 / Biological 2		Rictor down	H/M down	
Q60598	KQT(ph)PPAS(ph)PS(ph)PQPIEDRPPSSPIY(ph)EDAAPFK	-0.7796	-1.9911	-1.2746	SILAC 1 / Biological 2		Rictor down	H/M down	
Q60598	KQT(ph)PPAS(ph)PSPQPIEDRPPS(ph)SPIYEDAAPFK	-0.4044	-1.6938	-1.2123	SILAC 1 / Biological 2		Rictor down	H/M down	
Q60598	KQT(ph)PPASPSPQPIEDRPPS(ph)SPIYEDAAPFK	-0.6374	-2.5885	-1.9313	SILAC 1 / Biological 2		Rictor down	H/M down	
Q60598	KQT(ph)PPASPSPQPIEDRPPSSPIY(ph)EDAAPFK	-0.4009	-2.0620	-1.1826	SILAC 1 / Biological 2		Rictor down	H/M down	
Q60598	KQT(ph)PPASPSPQPIEDRPPSSPIY(ph)EDAAPFK	-0.6346	-2.1240	-1.1502	SILAC 1 / Biological 2		Rictor down	H/M down	
Q3TIY5	LEIS(ph)PDSS(ph)PER	-0.0569	-1.4125	-1.2012	SILAC 1 / Biological 2		Rictor down	H/M down	
Q9WU42	LEPVS(ph)PPS(ph)PPHADPELELAPSR	-0.4046	-1.4835	-1.0999	SILAC 1 / Biological 2		Rictor down	H/M down	
Q9WU42	LEPVS(ph)PPS(ph)PPHADPELELAPSR	-0.4046	-1.4835	-1.0999	SILAC 1 / Biological 2		Rictor down	H/M down	
Q8K2Z4	LQPLTS(ph)VDS(ph)DNDFVTPKPR	-0.3559	-1.5155	-1.1893	SILAC 1 / Biological 2		Rictor down	H/M down	
Q8BRB8	LRS(ph)EDGVEGDLGETQSR	-0.2895	-1.2584	-1.1645	SILAC 1 / Biological 2		Rictor down	H/M down	
Q6A006	LSTT(ph)PS(ph)PT(ph)NSLHEDGVDDFRR	-0.4435	-1.4653	-0.9506	SILAC 1 / Biological 2		Rictor down	H/M down	
Q6QI06	NDS(ph)GEENVPLDLTR	0.5959	-1.3744	-1.8380	SILAC 1 / Biological 2		Rictor down	H/M down	
Q99JF8	QVDTEEAGMVTAATASNVKAS(ph)PK	0.0049	-1.5883	-1.1688	SILAC 1 / Biological 2		Rictor down	H/M down	
Q61127	S(ph)FSPKS(ph)PLELGEKLS(ph)PLPGGPGAGDPR	0.0283	-2.3369	-1.8199	SILAC 1 / Biological 2		Rictor down	H/M down	
P13864	S(ph)KSDSDTLSVETSPSS(ph)VATR	-0.9576	-2.2193	-0.9938	SILAC 1 / Biological 2		Rictor down	H/M down	
Q8C8U0	S(ph)PS(ph)ASITDEDSNV	0.3506	-1.2524	-1.5637	SILAC 1 / Biological 2		Rictor down	H/M down	
Q6AW69	S(ph)YGSQPNS(ph)PTSEDLAK	0.2992	-1.3385	-1.6689	SILAC 1 / Biological 2		Rictor down	H/M down	
Q6AW69	S(ph)YGSQPNS(ph)PTSEDLAK	0.5129	-1.0931	-1.5316	SILAC 1 / Biological 2		Rictor down	H/M down	
P60330	SFEILRGS(ph)DGEDS(ph)ASGEK	-0.4651	-2.1134	-1.9206	SILAC 1 / Biological 2		Rictor down	H/M down	
P60330	SFEILRGS(ph)DGEDS(ph)ASGEK	-0.4651	-2.1134	-1.9206	SILAC 1 / Biological 2		Rictor down	H/M down	
Q9EPC1	SPLVPKSPT(ph)PKS(ph)PPSR	0.2377	-1.5084	-1.7702	SILAC 1 / Biological 2		Rictor down	H/M down	
Q8VCV2	SRT(ph)HST(ph)SSSIGSGESPFSR	0.0828	-1.2997	-1.3459	SILAC 1 / Biological 2		Rictor down	H/M down	
Q8VCV2	SRT(ph)HSTS(ph)SSIGSGESPFSR	-0.1575	-1.4233	-1.7829	SILAC 1 / Biological 2		Rictor down	H/M down	
Q8VCV2	SRT(ph)HSTS(ph)SSIGSGESPFSR	-0.0373	-1.3615	-1.5644	SILAC 1 / Biological 2		Rictor down	H/M down	
Q3UAI4	SSLGQS(ph)AS(ph)ETEEDTVSISK	-0.2432	-1.1957	-0.9518	SILAC 1 / Biological 2		Rictor down	H/M down	
Q3UAI4	SSLGQS(ph)ASET(ph)EEDTVSISK	-0.2432	-1.1957	-0.9518	SILAC 1 / Biological 2		Rictor down	H/M down	
Q05A74	STGVSFWTQDS(ph)DENEQERQS(ph)DTEDGSSKR	-0.7538	-1.6448	-1.1971	SILAC 1 / Biological 2		Rictor down	H/M down	
Q9WU42	TDDT(ph)S(ph)GEDNDEKEAVASK	-0.4154	-1.5015	-1.0105	SILAC 1 / Biological 2		Rictor down	H/M down	
Q9WU42	TDDT(ph)S(ph)GEDNDEKEAVASK	-0.4154	-1.5015	-1.0105	SILAC 1 / Biological 2		Rictor down	H/M down	
O35243	TETDITTVEQSS(ph)PSGK	-0.4500	-2.5231	-2.7436	SILAC 1 / Biological 2		Rictor down	H/M down	
Q9DBJ3	TPISTPVSGT(ph)PQPS(ph)PMIER	0.0249	-1.0717	-0.9579	SILAC 1 / Biological 2		Rictor down	H/M down	
Q80U72	TTEAPCS(ph)PGSQQPPS(ph)PDELPANVK	-0.6828	-1.1728	-1.1176	SILAC 1 / Biological 2		Rictor down	H/M down	
Q3UYI5	VIEPPAAS(ph)CPSS(ph)PR	0.2600	-1.7364	-2.0160	SILAC 1 / Biological 2		Rictor down	H/M down	
Q3UYI5	VIEPPAAS(ph)CPSS(ph)PR	0.2600	-1.7364	-2.0160	SILAC 1 / Biological 2		Rictor down	H/M down	
A2AJI0	AAEEKEPAAPAS(ph)PAPS(ph)PVPSPT(ph)PAQPQK	0.3865	-1.5860	-1.4234	SILAC 2 / Biological 3		Rictor down	H/M down	
Q9QX47	ASES(ph)S(ph)SEEKDDYEIFVK	0.7125	-1.1435	-1.6425	SILAC 2 / Biological 3		Rictor down	H/M down	
Q9QX47	ASES(ph)S(ph)SEEKDDYEIFVK	0.7125	-1.1435	-1.6425	SILAC 2 / Biological 3		Rictor down	H/M down	
Q9QX47	ASES(ph)SS(ph)EEKDDYEIFVK	0.8682	-1.1047	-1.4597	SILAC 2 / Biological 3		Rictor down	H/M down	
Q8C8U0	DFAARS(ph)PS(ph)ASITDEDSNV	0.3432	-1.1853	-1.4605	SILAC 2 / Biological 3		Rictor down	H/M down	
P98203	DIPSYGS(ph)LSR	0.9092	-1.1985	-1.8269	SILAC 2 / Biological 3		Rictor down	H/M down	
Q61823	DSGRGDS(ph)VSDNGSEAVR	-0.3680	-1.2028	-1.2877	SILAC 2 / Biological 3		Rictor down	H/M down	
P13864	EADDDEEADDDVSEMPS(ph)PK	0.0049	-1.1956	-1.5763	SILAC 2 / Biological 3		Rictor down	H/M down	
Q3UMF0	EQT(ph)AS(ph)APATPLVSK	-0.0793	-1.1465	-1.3272	SILAC 2 / Biological 3		Rictor down	H/M down	
Q6ZPE9	ET(ph)VVESQSSQSPS(ph)PKR	-0.1460	-1.2971	-1.5160	SILAC 2 / Biological 3		Rictor down	H/M down	
Q6ZPE9	ETVVESQSS(ph)QSPS(ph)PKR	0.0441	-1.1393	-1.8915	SILAC 2 / Biological 3		Rictor down	H/M down	
Q6ZPE9	ETVVESQSSQS(ph)PS(ph)PK	-0.0007	-1.1964	-1.3654	SILAC 2 / Biological 3		Rictor down	H/M down	
Q5F2E7	GADNDGSGSES(ph)GY(ph)TTPK	-0.0230	-1.1763	-1.6797	SILAC 2 / Biological 3		Rictor down	H/M down	
A2BH40	GPS(ph)PSPVGS(ph)PASVAQSR	-0.2243	-1.3827	-1.6635	SILAC 2 / Biological 3		Rictor down	H/M down	
A2BH40	GPS(ph)PSPVGS(ph)PASVAQSR	-0.2243	-1.3827	-1.6635	SILAC 2 / Biological 3		Rictor down	H/M down	
Q9WTQ5	GPSEAPQEAEAEEGAT(ph)SDGEK	0.4017	-1.1440	-1.8382	SILAC 2 / Biological 3		Rictor down	H/M down	
Q9WU62	ISVDDYGMDLNS(ph)DDS(ph)T(ph)DDESHPR	-0.5025	-1.2065	-0.9950	SILAC 2 / Biological 3		Rictor down	H/M down	
P52927	KQQQEPTCEPS(ph)PK	0.0840	-1.1473	-1.3806	SILAC 2 / Biological 3		Rictor down	H/M down	
A2RSX9	KWS(ph)LNTYK	-0.3400	-1.3529	-0.9539	SILAC 2 / Biological 3		Rictor down	H/M down	
Q9WU62	LDSVTVNSLKAT(ph)PQS(ph)PK	-0.3405	-1.5834	-1.0799	SILAC 2 / Biological 3		Rictor down	H/M down	
Q9WU62	LDSVTVNSLKAT(ph)PQS(ph)PK	-0.3405	-1.5834	-1.0799	SILAC 2 / Biological 3		Rictor down	H/M down	
Q3TIY5	LEIS(ph)PDSS(ph)PER	0.5467	-1.2336	-1.7152	SILAC 2 / Biological 3		Rictor down	H/M down	
Q3TIY5	LEIS(ph)PDSS(ph)PER	0.5467	-1.2336	-1.7152	SILAC 2 / Biological 3		Rictor down	H/M down	
B1AWD9	LQS(ph)EPESIR	-0.2156	-1.3745	-1.8556	SILAC 2 / Biological 3		Rictor down	H/M down	
Q8BRB8	LRS(ph)EDGVEGDLGETQSR	-0.3310	-1.4048	-1.0287	SILAC 2 / Biological 3		Rictor down	H/M down	
B9EHJ7	LSTS(ph)PATRDEAAS(ph)PGAK	0.1906	-1.1394	-1.3962	SILAC 2 / Biological 3		Rictor down	H/M down	
Q8CI59	LVDS(ph)DGS(ph)LAEVPK	-0.4032	-1.2117	-1.1717	SILAC 2 / Biological 3		Rictor down	H/M down	
Q8CI59	LVDS(ph)DGS(ph)LAEVPK	-0.4032	-1.2117	-1.1717	SILAC 2 / Biological 3		Rictor down	H/M down	
Q9JMH9	NKLEGDS(ph)DVDS(ph)ELEDRVDGVK	0.5611	-1.5613	-2.0604	SILAC 2 / Biological 3		Rictor down	H/M down	
Q9JMH9	NKLEGDS(ph)DVDS(ph)ELEDRVDGVK	0.5611	-1.5613	-2.0604	SILAC 2 / Biological 3		Rictor down	H/M down	
Q6ZPJ3	NMTVEQLLTGS(ph)PT(ph)SPTVEPEKPTR	-0.9149	-1.8203	-1.3602	SILAC 2 / Biological 3		Rictor down	H/M down	
Q3U4X8	NQVVPES(ph)DSPVKR	0.6987	-1.1086	-2.0049	SILAC 2 / Biological 3		Rictor down	H/M down	
Q61234	NSAGGTSVGWDS(ph)PPAS(ph)PLQR	-0.1557	-1.0829	-1.1413	SILAC 2 / Biological 3		Rictor down	H/M down	
Q571F6	NTETQPTS(ph)PQLGTK	0.0402	-1.1238	-1.1620	SILAC 2 / Biological 3		Rictor down	H/M down	
Q9Z277	RDS(ph)SSLSS(ph)PLNPK	0.4813	-2.1902	-2.6515	SILAC 2 / Biological 3		Rictor down	H/M down	
P97496	RKPSPS(ph)PPPPT(ph)ATESR	-0.5130	-1.3367	-1.1046	SILAC 2 / Biological 3		Rictor down	H/M down	
Q9QYG0	S(ph)RT(ph)LSQSSESGTLPSGPPGHTMEVSC	0.1077	-1.6380	-2.4603	SILAC 2 / Biological 3		Rictor down	H/M down	
Q9QXS1	S(ph)SSVGSSSSYPISSAGPR	0.1938	-1.1773	-1.2719	SILAC 2 / Biological 3		Rictor down	H/M down	
Q99K70	SCSHQT(ph)SAPSLK	-0.6339	-1.8889	-1.2327	SILAC 2 / Biological 3		Rictor down	H/M down	
Q6QI06	SNS(ph)VSLVPPGSSHTLPR	0.1373	-1.2527	-4.3362	SILAC 2 / Biological 3		Rictor down	H/M down	
Q8VCV2	SRT(ph)HS(ph)TSSSIGSGESPFSR	0.2551	-1.5845	-2.2734	SILAC 2 / Biological 3		Rictor down	H/M down	
Q6ZPE9	SSSDS(ph)VEEETVDS(ph)DTPPVLEK	0.1217	-1.2116	-1.1879	SILAC 2 / Biological 3		Rictor down	H/M down	
Q8VCV2	SVT(ph)SNQSDGTQESCESPDVLDR	-0.1766	-1.7765	-1.7676	SILAC 2 / Biological 3		Rictor down	H/M down	
Q9QYG0	T(ph)LSQS(ph)SESGTLPSGPPGHTMEVSC	0.5832	-1.9554	-3.2102	SILAC 2 / Biological 3		Rictor down	H/M down	
A2AQB0	TEQIVNEDS(ph)QAAALAPNPK	0.4818	-1.1702	-1.7237	SILAC 2 / Biological 3		Rictor down	H/M down	
Q62261	TSS(ph)KESS(ph)PVPS(ph)PTLDR	-0.0043	-1.3285	-1.6142	SILAC 2 / Biological 3		Rictor down	H/M down	
Q5DTM8	ALVVPEPEPDSDS(ph)NQER	-0.2581	-1.4147	-1.3700	SILAC 3 / Biological 4		Rictor down	H/M down	
Q9ERU9	ANT(ph)S(ph)SDLEKDDDAYK	0.0054	-1.8632	-1.0363	SILAC 3 / Biological 4		Rictor down	H/M down	
Q9ERU9	ANT(ph)S(ph)SDLEKDDDAYK	0.0054	-1.8632	-1.0363	SILAC 3 / Biological 4		Rictor down	H/M down	
Q9ERU9	ANT(ph)S(ph)SDLEKDDDAYK	0.0054	-1.8632	-1.0363	SILAC 3 / Biological 4		Rictor down	H/M down	
Q6QI06	NDS(ph)GEENVPLDLTR	0.3346	-1.7133	-2.0243	SILAC 3 / Biological 4		Rictor down	H/M down	

Uniprot	Modified Sequence	M/L Ratio	H/L Ratio	H/M Ratio	Experiment	iRapKO/Control	iRicKO/Control	iRicKO/iRapKO	Peptide array +
Q6ZPJ3	NMTVEQLLTGSPT(ph)SPTVEPEKPTR	-0.7755	-1.8459	-0.9747	SILAC 3 / Biological 4		Rictor down	H/M down	
Q9D4H9	NSADDEELT(ph)NDS(ph)LTLSQSK	-0.1278	-1.2167	-1.1617	SILAC 3 / Biological 4		Rictor down	H/M down	
Q9D4H9	NSADDEELT(ph)NDS(ph)LTLSQSK	-0.1278	-1.2167	-1.1617	SILAC 3 / Biological 4		Rictor down	H/M down	
Q62433	S(ph)RTAS(ph)GSSVTSLEGTR	0.4496	-1.8688	-2.4402	SILAC 3 / Biological 4		Rictor down	H/M down	
Q9QYG0	SRT(ph)AS(ph)LTSAASIDGSR	0.4206	-1.2076	-1.6295	SILAC 3 / Biological 4		Rictor down	H/M down	
Q6ZQ58	VEPAWHDQDETS(ph)S(ph)VKSDGAGGAR	0.0359	-1.3551	-1.3307	SILAC 3 / Biological 4		Rictor down	H/M down	
Q3TUD7	KAENAEGQTPAIGPDGEPLDETS(ph)QMS(ph)DLPVK	-0.8274	-1.1630	-0.4662	SILAC 2 / Biological 3		Rictor down		+
Q4VAC9	RFS(ph)FSPSAVS(ph)PR	-0.7417	-1.3116	-0.6570	SILAC 1 / Biological 1		Rictor down		+
Q4VAC9	RFS(ph)FSPSAVS(ph)PR	-0.7417	-1.3073	-0.6570	SILAC 1 / Biological 1		Rictor down		+
Q9R0L6	VTNAIS(ph)PES(ph)SPGVGR	-0.8833	-1.3849	-0.3253	SILAC 1 / Biological 1		Rictor down		+
Q9R0L6	VTNAIS(ph)PES(ph)SPGVGR	-0.8833	-1.3801	-0.3244	SILAC 1 / Biological 1		Rictor down		+
Q9R0L6	VTNAIS(ph)PES(ph)SPGVGR	-0.1750	-1.1896	-0.8446	SILAC 1 / Biological 2		Rictor down		+
Q9R0L6	VTNAIS(ph)PES(ph)SPGVGR	-0.1750	-1.1896	-0.8446	SILAC 1 / Biological 2		Rictor down		+
Q80ZA1	AFQALIKEES(ph)PNC	-0.4573	-1.1224	-0.4738	SILAC 1 / Biological 1		Rictor down		
Q80ZA1	AFQALIKEES(ph)PNC	-0.3814	-1.1219	-0.4282	SILAC 1 / Biological 1		Rictor down		
P14873	AS(ph)LSPMDEPVPDSESPVEK	-0.2794	-1.1369	-0.0117	SILAC 1 / Biological 1		Rictor down		
P14873	AS(ph)LSPMDEPVPDSESPVEK	-0.2794	-1.1369	-0.0117	SILAC 1 / Biological 1		Rictor down		
P14873	AS(ph)LSPMDEPVPDSESPVEK	-0.2794	-1.1369	-0.0117	SILAC 1 / Biological 1		Rictor down		
P14873	AS(ph)LSPMDEPVPDSESPVEK	-0.2794	-1.1369	-0.0117	SILAC 1 / Biological 1		Rictor down		
Q62261	ESS(ph)PVPS(ph)PTLDR	-0.8792	-1.6304	-0.8060	SILAC 1 / Biological 1		Rictor down		
Q62261	ESS(ph)PVPS(ph)PTLDR	-0.9157	-1.4822	-0.8060	SILAC 1 / Biological 1		Rictor down		
Q01320	FTVDLDS(ph)DEDFS(ph)GLDEKDEDEDFLPLDAT(ph)PPK	-0.7591	-1.2570	-0.0274	SILAC 1 / Biological 1		Rictor down		
Q01320	FTVDLDS(ph)DEDFS(ph)GLDEKDEDEDFLPLDAT(ph)PPK	-0.7578	-1.1743	-0.0274	SILAC 1 / Biological 1		Rictor down		
Q52KI8	GAS(ph)ASPQGRQS(ph)PSPS(ph)TRPIR	0.2248	-1.3058	-0.4901	SILAC 1 / Biological 1		Rictor down		
Q52KI8	GAS(ph)ASPQGRQS(ph)PSPS(ph)TRPIR	0.1826	-1.3105	-0.4182	SILAC 1 / Biological 1		Rictor down		
Q8VDN3	GGVT(ph)GSPEASISGSK	-0.3051	-1.2945	-0.7403	SILAC 1 / Biological 1		Rictor down		
Q8VDN3	GGVT(ph)GSPEASISGSK	-0.2925	-1.2861	-0.7261	SILAC 1 / Biological 1		Rictor down		
Q61990	GVTIPYRPKPS(ph)SSPVIFAGGQDR	-0.9032	-1.4879	-0.6618	SILAC 1 / Biological 1		Rictor down		
Q61990	GVTIPYRPKPS(ph)SSPVIFAGGQDR	-0.8784	-1.4879	-0.6406	SILAC 1 / Biological 1		Rictor down		
A2RSX9	KWS(ph)LNTYK	-0.6493	-1.7644	0.2699	SILAC 1 / Biological 1		Rictor down		
Q9WU62	LDSVTVNS(ph)LKAT(ph)PQS(ph)PK	-0.9312	-3.3334	-0.2197	SILAC 1 / Biological 1		Rictor down		
Q9WU62	LDSVTVNS(ph)LKAT(ph)PQS(ph)PK	-0.9312	-3.3334	-0.2197	SILAC 1 / Biological 1		Rictor down		
Q9WU62	LDSVTVNSLKAT(ph)PQS(ph)PK	-0.8825	-1.2408	-0.3324	SILAC 1 / Biological 1		Rictor down		
Q9WU62	LDSVTVNSLKAT(ph)PQS(ph)PK	-0.8825	-1.2408	-0.3324	SILAC 1 / Biological 1		Rictor down		
Q9WU62	LDSVTVNSLKAT(ph)PQS(ph)PK	-0.8722	-1.2141	-0.3237	SILAC 1 / Biological 1		Rictor down		
Q9WU62	LDSVTVNSLKAT(ph)PQS(ph)PK	-0.8722	-1.2141	-0.3237	SILAC 1 / Biological 1		Rictor down		
Q9ERU9	LNQSGAS(ph)VGT(ph)DEESDVTQEEER	-0.8085	-1.0910	-0.0742	SILAC 1 / Biological 1		Rictor down		
Q9ERU9	LNQSGAS(ph)VGT(ph)DEESDVTQEEER	-0.8085	-1.0910	-0.0724	SILAC 1 / Biological 1		Rictor down		
Q9ESC8	NSYSNSQAPS(ph)PGLGSK	-0.4018	-1.4821	-0.6384	SILAC 1 / Biological 1		Rictor down		
Q9ESC8	NSYSNSQAPS(ph)PGLGSK	-0.4018	-1.4821	-0.6384	SILAC 1 / Biological 1		Rictor down		
Q64337	S(ph)RLTPTT(ph)PESSSTGTEDK	-0.6846	-1.6829	-0.6306	SILAC 1 / Biological 1		Rictor down		
Q64337	S(ph)RLTPTT(ph)PESSSTGTEDK	-0.6846	-1.6829	-0.6305	SILAC 1 / Biological 1		Rictor down		
Q8VCV2	S(ph)RTHSTS(ph)SSIGSGESPFSR	-0.7545	-1.1342	-0.3073	SILAC 1 / Biological 1		Rictor down		
Q8VCV2	S(ph)RTHSTS(ph)SSIGSGESPFSR	-0.7545	-1.1342	-0.3073	SILAC 1 / Biological 1		Rictor down		
P60330	SFEILRGS(ph)DGEDS(ph)ASGEK	0.1517	-1.2225	-0.6596	SILAC 1 / Biological 1		Rictor down		
P60330	SFEILRGS(ph)DGEDS(ph)ASGEK	0.1517	-1.2225	-0.6596	SILAC 1 / Biological 1		Rictor down		
P60330	SFEILRGS(ph)DGEDS(ph)ASGEK	0.1517	-1.2225	-0.6596	SILAC 1 / Biological 1		Rictor down		
P60330	SFEILRGS(ph)DGEDS(ph)ASGEK	0.1517	-1.2225	-0.6596	SILAC 1 / Biological 1		Rictor down		
Q61127	SFSPKS(ph)PLELGEK	-0.6023	-1.6364	-0.0213	SILAC 1 / Biological 1		Rictor down		
Q61127	SFSPKS(ph)PLELGEK	-0.6023	-1.6364	-0.0213	SILAC 1 / Biological 1		Rictor down		
Q99N57	SHSESASPSALSSS(ph)PNNLS(ph)PTGWSQPK	-0.4609	-1.9104	-0.7925	SILAC 1 / Biological 1		Rictor down		
Q99N57	SHSESASPSALSSS(ph)PNNLS(ph)PTGWSQPK	-0.4784	-1.9104	-0.7814	SILAC 1 / Biological 1		Rictor down		
Q3UAI4	SSLGQS(ph)AS(ph)ETEEDTVSISK	-0.8395	-1.7083	-0.9350	SILAC 1 / Biological 1		Rictor down		
Q3UAI4	SSLGQS(ph)AS(ph)ETEEDTVSISK	-0.8395	-1.7083	-0.9350	SILAC 1 / Biological 1		Rictor down		
Q3UAI4	SSLGQS(ph)AS(ph)ETEEDTVSISK	-0.7876	-1.7156	-0.8448	SILAC 1 / Biological 1		Rictor down		
Q3UAI4	SSLGQS(ph)AS(ph)ETEEDTVSISK	-0.7876	-1.7156	-0.8448	SILAC 1 / Biological 1		Rictor down		
Q9QXS1	SSS(ph)VGS(ph)SSSYPISSAGPR	-0.3143	-1.2868	-0.5813	SILAC 1 / Biological 1		Rictor down		
Q9QXS1	SSS(ph)VGS(ph)SSSYPISSAGPR	-0.3185	-1.2892	-0.5700	SILAC 1 / Biological 1		Rictor down		
P14873	SVS(ph)PGVTQAVVEEHCAS(ph)PEEK	-0.8468	-1.3370	-0.2394	SILAC 1 / Biological 1		Rictor down		
P14873	SVS(ph)PGVTQAVVEEHCAS(ph)PEEK	-0.8468	-1.3370	-0.2394	SILAC 1 / Biological 1		Rictor down		
Q9R0L6	VTNAIS(ph)PESS(ph)PGVGR	-0.8833	-1.3992	-0.3109	SILAC 1 / Biological 1		Rictor down		
Q9R0L6	VTNAIS(ph)PESS(ph)PGVGR	-0.8833	-1.3992	-0.3100	SILAC 1 / Biological 1		Rictor down		
P08775	Y(ph)SPTSPTYSPTS(ph)PVYTPT(ph)SPK	-0.8181	-1.0826	-0.3620	SILAC 1 / Biological 1		Rictor down		
P08775	Y(ph)SPTSPTYSPTS(ph)PVYTPT(ph)SPK	-0.8181	-1.0826	-0.3620	SILAC 1 / Biological 1		Rictor down		
P08775	Y(ph)SPTSPTYSPTS(ph)PVYTPT(ph)SPK	-0.8181	-1.0826	-0.3620	SILAC 1 / Biological 1		Rictor down		
P08775	Y(ph)SPTSPTYSPTS(ph)PVYTPT(ph)SPK	-0.8181	-1.0826	-0.3620	SILAC 1 / Biological 1		Rictor down		
P08775	Y(ph)SPTSPTYSPTS(ph)PVYTPT(ph)SPK	-0.7746	-1.3877	-0.1022	SILAC 1 / Biological 1		Rictor down		
P08775	Y(ph)SPTSPTYSPTS(ph)PVYTPT(ph)SPK	-0.7746	-1.3877	-0.1022	SILAC 1 / Biological 1		Rictor down		
Q6DFZ1	ADAPDAGAQS(ph)DSELPSYHQNDVSLDR	-0.4040	-1.1711	-0.4221	SILAC 1 / Biological 2		Rictor down		
Q4VA53	AESPETS(ph)AVESTQS(ph)TPQK	-0.7305	-1.1547	-0.8686	SILAC 1 / Biological 2		Rictor down		
Q9DBE9	ALDISLS(ph)S(ph)EEEEEGDEEEAVAETK	-0.6729	-1.7067	-0.8788	SILAC 1 / Biological 2		Rictor down		
Q8CD14	ALPSFPTSECVS(ph)DVEPDTR	-0.8448	-1.1945	-0.1767	SILAC 1 / Biological 2		Rictor down		
Q5DTM8	ALVVPEPEPDS(ph)DSNQER	-0.1786	-1.1415	-0.7521	SILAC 1 / Biological 2		Rictor down		
Q52KI8	APQTS(ph)SPPPVR	-0.9506	-1.1209	-0.0751	SILAC 1 / Biological 2		Rictor down		
Q80YR5	APTAALS(ph)PEPQDSK	-0.7058	-1.4274	-0.4801	SILAC 1 / Biological 2		Rictor down		
Q80YR5	APTAALSPEPQDS(ph)KEDVKK	-0.8879	-1.1900	-0.5726	SILAC 1 / Biological 2		Rictor down		
Q61083	AQS(ph)YPDNHQEFTDYDNPIFEK	-0.2053	-1.5316	-0.7496	SILAC 1 / Biological 2		Rictor down		
Q8BTI8	AQSGTDS(ph)S(ph)PEHKIPAPR	-0.4300	-1.0828	-0.5918	SILAC 1 / Biological 2		Rictor down		
Q8BGU5	AST(ph)IFLSKS(ph)QTDVR	0.6476	-1.0808	-0.7373	SILAC 1 / Biological 2		Rictor down		
Q8BGU5	AST(ph)IFLSKS(ph)QTDVR	0.6476	-1.0808	-0.7373	SILAC 1 / Biological 2		Rictor down		
Q9WU42	ASTS(ph)PQKPLDLK	-0.7876	-1.2637	-0.5593	SILAC 1 / Biological 2		Rictor down		
Q68FG5	ATAPQTQHVS(ph)PMR	-0.5356	-1.3520	-0.6401	SILAC 1 / Biological 2		Rictor down		
Q8BK67	CSSS(ph)S(ph)GGGSSGDEDGPELDGAPGGGKR	-0.2013	-1.7810	-0.4760	SILAC 1 / Biological 2		Rictor down		
Q8BK67	CSSS(ph)S(ph)GGGSSGDEDGPELDGAPGGGKR	-0.2013	-1.7810	-0.4760	SILAC 1 / Biological 2		Rictor down		
A2AFQ0	DGGS(ph)GNS(ph)TIIVSR	-0.4142	-1.1972	-0.4785	SILAC 1 / Biological 2		Rictor down		
P07901	DKEVS(ph)DDEAEEKEEK	-0.3989	-1.1202	-0.0904	SILAC 1 / Biological 2		Rictor down		
Q91YE7	DYDS(ph)PERER	-0.1820	-1.1235	-0.6340	SILAC 1 / Biological 2		Rictor down		
P48755	DYGEPGPSSGAGS(ph)PYGRPAQPPQAQAQTAQQQK	-0.5412	-1.1826	-0.5384	SILAC 1 / Biological 2		Rictor down		
Q8BP27	ENPPS(ph)PPTS(ph)PAAPQPR	-0.8053	-1.2671	-0.4693	SILAC 1 / Biological 2		Rictor down		
Q8BP27	ENPPSPPT(ph)S(ph)PAAPQPR	-0.7699	-1.1115	-0.0855	SILAC 1 / Biological 2		Rictor down		
P14873	EVSSKEEQS(ph)PVKAEVAEK	-0.7510	-3.0928	-0.1159	SILAC 1 / Biological 2		Rictor down		
Q1HFZ0	FQQPPQPEGEEDAS(ph)DGGR	-0.6013	-1.4645	-0.4908	SILAC 1 / Biological 2		Rictor down		
Q68FE6	FSTYSQS(ph)PPDTPSLR	-0.0658	-1.0997	-0.7315	SILAC 1 / Biological 2		Rictor down		
Q01320	FTVDLDS(ph)DEDFS(ph)GLDEKDEDEDFLPLDATPPK	-0.5913	-1.6356	-0.2232	SILAC 1 / Biological 2		Rictor down		
Q01320	FTVDLDS(ph)DEDFS(ph)GLDEKDEDEDFLPLDATPPK	-0.8429	-1.6267	-0.1462	SILAC 1 / Biological 2		Rictor down		
Q5F2E7	GADNDGS(ph)GS(ph)ESGYTTPK	-0.4276	-1.0693	-0.5201	SILAC 1 / Biological 2		Rictor down		
Q9ERU9	GGEDEDGS(ph)DEDVVHNEDIHFEPIVSLPEVEVK	-0.4660	-1.6390	-0.5006	SILAC 1 / Biological 2		Rictor down		
Q8VHR5	GRLT(ph)PS(ph)PDIIVLS(ph)DNEASS(ph)PR	-0.6113	-1.2960	-0.1770	SILAC 1 / Biological 2		Rictor down		
Q8VHR5	GRLT(ph)PS(ph)PDIIVLS(ph)DNEASS(ph)PR	-0.6113	-1.2960	-0.1770	SILAC 1 / Biological 2		Rictor down		
Q8K019	KAEGEPQEES(ph)PLK	-0.8596	-1.3319	-0.4775	SILAC 1 / Biological 2		Rictor down		
Q8K019	KAEGEPQEESPLKS(ph)K	-0.9461	-1.4086	-0.4023	SILAC 1 / Biological 2		Rictor down		
Q52KI8	KPPAPPSPVQS(ph)QS(ph)PST(ph)NWSPAVPAK	-0.6837	-1.4683	-0.5325	SILAC 1 / Biological 2		Rictor down		
A2AR02	KS(ph)PS(ph)S(ph)ESEAENVDAQPQSTVRPEEIPPIPENR	-0.7522	-1.3047	-0.2562	SILAC 1 / Biological 2		Rictor down		
Q9ERU9	LNQSGAS(ph)VGT(ph)DEESDVTQEEER	-0.7708	-1.2649	-0.5968	SILAC 1 / Biological 2		Rictor down		
Q9ERU9	LNQSGAS(ph)VGT(ph)DEESDVTQEEER	-0.7708	-1.2649	-0.5968	SILAC 1 / Biological 2		Rictor down		
Q6A006	LSTTPS(ph)PT(ph)NSLHEDGVDDFRR	-0.3038	-1.2946	-0.7709	SILAC 1 / Biological 2		Rictor down		
Q4VA53	METVSNASSSSNPSS(ph)PGR	-0.4893	-1.2401	-0.6391	SILAC 1 / Biological 2		Rictor down		
Q8BTI8	MSCFSRPS(ph)MSPT(ph)PLDR	-0.5783	-1.2799	-0.6091	SILAC 1 / Biological 2		Rictor down		
Q6ZPJ3	NMTVEQLLTGS(ph)PTSPT(ph)VEPEKPTR	-0.7142	-2.1278	-0.8844	SILAC 1 / Biological 2		Rictor down		
Q8C9B9	NTTKPETIPDMEDS(ph)PPVS(ph)DSEEQQESVR	-0.2055	-1.0784	-0.5339	SILAC 1 / Biological 2		Rictor down		
P97496	RKPS(ph)PSPPPPTAT(ph)ESR	-0.7308	-1.0944	-0.4064	SILAC 1 / Biological 2		Rictor down		
Q8K3X4	RNSS(ph)SPVS(ph)PASVPGQR	-0.9318	-1.2758	-0.1261	SILAC 1 / Biological 2		Rictor down		
Q8K3X4	RNSSS(ph)PVS(ph)PASVPGQR	-0.9318	-1.1711	-0.2106	SILAC 1 / Biological 2		Rictor down		
Q5SSI6	RTSS(ph)DDES(ph)EEDEDDLLQR	-0.5233	-1.1894	-0.4843	SILAC 1 / Biological 2		Rictor down		
Q5SSI6	RTSS(ph)DDES(ph)EEDEDDLLQR	-0.6278	-1.2432	-0.4247	SILAC 1 / Biological 2		Rictor down		

Uniprot	Modified Sequence	M/L Ratio	H/L Ratio	H/M Ratio	Experiment	iRapKO/Control	iRicKO/Control	iRicKO/iRapKO	Peptide array +
Q8BTI8	RVPS(ph)PTPVPK	-0.8388	-1.5843	-0.6587	SILAC 1 / Biological 2		Rictor down		
P28028	S(ph)ASEPSLNR	-0.7167	-1.2270	-0.1706	SILAC 1 / Biological 2		Rictor down		
O70310	S(ph)GLSPANDTGAK	-0.9855	-1.7498	-0.8965	SILAC 1 / Biological 2		Rictor down		
P13864	S(ph)KSDSDTLSVETS(ph)PSSVATR	-0.8136	-1.6960	-0.7785	SILAC 1 / Biological 2		Rictor down		
B1AQD9	SAEPTREPGAEAES(ph)GS(ph)ESEPEPGPGPR	-0.1634	-1.1877	-0.5033	SILAC 1 / Biological 2		Rictor down		
B1AQD9	SAEPTREPGAEAES(ph)GS(ph)ESEPEPGPGPR	-0.1634	-1.1877	-0.5033	SILAC 1 / Biological 2		Rictor down		
Q99N57	SHSESASPSALSSS(ph)PNNLS(ph)PTGWSQPK	-0.5695	-3.0034	-0.5524	SILAC 1 / Biological 2		Rictor down		
Q99N57	SHSESASPSALSSS(ph)PNNLS(ph)PTGWSQPK	-0.5695	-3.0034	-0.5524	SILAC 1 / Biological 2		Rictor down		
Q9JIX8	SLS(ph)PLSGTTDTKAES(ph)PAGR	-0.2376	-1.2498	-0.2990	SILAC 1 / Biological 2		Rictor down		
Q9JIX8	SLSPLSGTT(ph)DTKAES(ph)PAGR	-0.3857	-1.2427	-0.5935	SILAC 1 / Biological 2		Rictor down		
Q9JIX8	SLSPLSGTT(ph)DTKAES(ph)PAGR	-0.2376	-1.2427	-0.4736	SILAC 1 / Biological 2		Rictor down		
A2AJI0	SSQPS(ph)PTTVPASDS(ph)PPAKQDVK	-0.0360	-1.2366	-0.7864	SILAC 1 / Biological 2		Rictor down		
Q8BTI8	SSSPVT(ph)ELT(ph)ARSPVKQDK	-0.3809	-1.3509	-0.3790	SILAC 1 / Biological 2		Rictor down		
Q8BTI8	SSSPVT(ph)ELT(ph)ARSPVKQDK	-0.3809	-1.3509	-0.3790	SILAC 1 / Biological 2		Rictor down		
Q7TSC1	T(ph)ASETRS(ph)EGSEY(ph)EEIPK	-0.4594	-1.0854	-0.5187	SILAC 1 / Biological 2		Rictor down		
Q7TSC1	T(ph)ASETRS(ph)EGSEY(ph)EEIPK	-0.4594	-1.0854	-0.5187	SILAC 1 / Biological 2		Rictor down		
Q8BKC8	T(ph)ASNPKVENEDEPVR	-0.0777	-1.1463	-0.3228	SILAC 1 / Biological 2		Rictor down		
Q7TSC1	TAS(ph)ETRS(ph)EGS(ph)EYEEIPK	-0.3281	-1.1249	-0.6334	SILAC 1 / Biological 2		Rictor down		
Q7TSC1	TAS(ph)ETRS(ph)EGS(ph)EYEEIPK	-0.2991	-1.0854	-0.6073	SILAC 1 / Biological 2		Rictor down		
A2AQB0	TEQIVNEDS(ph)QAAALAPNPK	-0.5306	-1.3817	-0.9269	SILAC 1 / Biological 2		Rictor down		
A2AAE1	VVFENEQDNNS(ph)LTK	-0.6581	-1.0824	-0.7787	SILAC 1 / Biological 2		Rictor down		
Q8K2Z4	VVFLS(ph)DES(ph)S(ph)EDELSAEMTEEETPKR	-0.3672	-1.3796	-0.7671	SILAC 1 / Biological 2		Rictor down		
Q8K2Z4	VVFLS(ph)DES(ph)S(ph)EDELSAEMTEEETPKR	-0.3672	-1.3796	-0.7671	SILAC 1 / Biological 2		Rictor down		
Q8K2Z4	VVFLS(ph)DES(ph)S(ph)EDELSAEMTEEETPKR	-0.3672	-1.3796	-0.7671	SILAC 1 / Biological 2		Rictor down		
Q5DTP7	WGQPPS(ph)PTPVPRPPDADPNT(ph)PSPK	-0.9924	-1.6074	-0.6618	SILAC 1 / Biological 2		Rictor down		
Q5DTP7	WGQPPS(ph)PTPVPRPPDADPNT(ph)PSPK	-0.9924	-1.6074	-0.6618	SILAC 1 / Biological 2		Rictor down		
Q5DTP7	WGQPPS(ph)PTPVPRPPDADPNT(ph)PSPK	-0.9924	-1.6074	-0.6618	SILAC 1 / Biological 2		Rictor down		
Q80V30	YMLTHQELAS(ph)DGEIQTK	-0.4459	-1.2847	-0.5096	SILAC 1 / Biological 2		Rictor down		
Q6ZQK6	AAKES(ph)EEEEEEEETEEK	-0.9077	-1.3346	-0.2460	SILAC 2 / Biological 3		Rictor down		
O54988	AKDSGS(ph)VSLQETR	-0.2951	-1.1710	-0.8940	SILAC 2 / Biological 3		Rictor down		
Q9DBE9	ALDIS(ph)LSS(ph)EEEEEGDEEEAVAETK	-0.7949	-1.9950	-0.7337	SILAC 2 / Biological 3		Rictor down		
Q68FG5	ATAPQTQHVS(ph)PMR	-0.7405	-1.4905	-0.8245	SILAC 2 / Biological 3		Rictor down		
A2AFQ0	DGGS(ph)GNST(ph)IIVSR	-0.6544	-1.3220	-0.6824	SILAC 2 / Biological 3		Rictor down		
O54988	DS(ph)GSVSLQETR	-0.8216	-1.0798	-0.4224	SILAC 2 / Biological 3		Rictor down		
Q04692	DTVIIVS(ph)EPSEDEESHDLPSVT(ph)R	-0.7909	-1.1770	-0.3190	SILAC 2 / Biological 3		Rictor down		
Q1HFZ0	EGVILT(ph)NENAASPEQPGDEDAK	-0.6282	-1.3680	-0.6838	SILAC 2 / Biological 3		Rictor down		
Q3UMF0	EQTAS(ph)APAT(ph)PLVSK	-0.3434	-1.0711	-0.7616	SILAC 2 / Biological 3		Rictor down		
Q68FE6	FSTYS(ph)QSPPDTPSLR	-0.7114	-1.4453	-0.9499	SILAC 2 / Biological 3		Rictor down		
Q6ZQK6	GGSISVQVNSVKFDS(ph)E	-0.9606	-1.2993	-0.6492	SILAC 2 / Biological 3		Rictor down		
Q3UMF0	ITVEKDPDSALGIS(ph)DGET(ph)SPSSK	-0.3651	-1.1500	-0.5507	SILAC 2 / Biological 3		Rictor down		
Q3UMF0	ITVEKDPDSALGISDGET(ph)S(ph)PSSK	-0.3637	-1.7292	-0.6946	SILAC 2 / Biological 3		Rictor down		
Q3TUD7	KAENAEGQTPAIGPDGEPLDET(ph)S(ph)QMSDLPVK	-0.6786	-1.3543	-0.5273	SILAC 2 / Biological 3		Rictor down		
Q8BRB8	LPS(ph)GSGPAS(ph)PTTGSAVDIR	-0.7426	-1.3601	-0.8771	SILAC 2 / Biological 3		Rictor down		
B9EHJ7	LS(ph)TSPATRDEAAS(ph)PGAK	-0.2295	-1.3124	-0.7546	SILAC 2 / Biological 3		Rictor down		
B9EHJ7	LSTS(ph)PATRDEAAS(ph)PGAK	0.0516	-1.1394	-0.7546	SILAC 2 / Biological 3		Rictor down		
Q8BTI8	MSCFSRPSMS(ph)PT(ph)PLDR	-0.8036	-1.1263	-0.6075	SILAC 2 / Biological 3		Rictor down		
Q9D4H9	NSADDEELT(ph)NDS(ph)LTLSQSK	-0.7324	-1.2647	-0.6130	SILAC 2 / Biological 3		Rictor down		
Q9D4H9	NSADDEELT(ph)NDS(ph)LTLSQSK	-0.7324	-1.2647	-0.6130	SILAC 2 / Biological 3		Rictor down		
P60330	S(ph)FEILRGSDGEDS(ph)ASGEK	-0.0679	-1.3001	-0.7110	SILAC 2 / Biological 3		Rictor down		
Q7TPV4	S(ph)PSLLQSGVK	-0.5524	-1.0752	-0.2754	SILAC 2 / Biological 3		Rictor down		
O70310	SGLS(ph)PANDTGAK	-0.4550	-1.5060	-0.9139	SILAC 2 / Biological 3		Rictor down		
Q9JIK5	SNSSDAPGEES(ph)SSETEKEIPVEQK	-0.9778	-1.1319	0.1255	SILAC 2 / Biological 3		Rictor down		
Q8K2D3	SQDVAIS(ph)PQQQQCSK	-0.5845	-1.2177	-0.1175	SILAC 2 / Biological 3		Rictor down		
Q9QXS1	SSS(ph)VGSSSS(ph)YPISSAGPR	-0.1495	-1.0836	-0.5426	SILAC 2 / Biological 3		Rictor down		
B2RUR8	STPES(ph)GES(ph)DKESVGSSSLGNEGSR	-0.1881	-1.0835	-0.8755	SILAC 2 / Biological 3		Rictor down		
B2RUR8	STPES(ph)GES(ph)DKESVGSSSLGNEGSR	-0.2051	-1.1063	-0.8579	SILAC 2 / Biological 3		Rictor down		
Q6ZQ58	VEPAWHDQDETSS(ph)VKS(ph)DGAGGAR	-0.2418	-1.1092	-0.9100	SILAC 2 / Biological 3		Rictor down		
Q6ZQ58	VEPAWHDQDETSS(ph)VKS(ph)DGAGGAR	-0.3278	-1.1443	-0.7769	SILAC 2 / Biological 3		Rictor down		
A2AQB0	VSDSSLS(ph)PEKFTQVECQHK	-0.5791	-1.3162	-0.5798	SILAC 2 / Biological 3		Rictor down		
Q80V30	YMLTHQELAS(ph)DGEIQTK	-0.9625	-1.3592	-0.7941	SILAC 2 / Biological 3		Rictor down		
P08775	YSPTSPTY(ph)SPT(ph)TPK	-0.6280	-1.5569	-0.6920	SILAC 2 / Biological 3		Rictor down		
Q3UZ39	AGS(ph)REPVEDPQSGSSGK	-0.6436	-1.1033	-0.6549	SILAC 3 / Biological 4		Rictor down		
A2RSX9	KWS(ph)LNTYK	-0.4545	-1.1687	-0.8713	SILAC 3 / Biological 4		Rictor down		
P48678	SGAQASSTPLS(ph)PTR	-0.0763	-1.0795	-0.7012	SILAC 3 / Biological 4		Rictor down		
P48678	SGAQASSTPLSPT(ph)R	-0.1770	-1.0966	-0.9041	SILAC 3 / Biological 4		Rictor down		
O70310	SGLS(ph)PANDTGAK	-0.2519	-1.1099	-0.7991	SILAC 3 / Biological 4		Rictor down		
Q05A74	DKKS(ph)PLIESTANMENNQPQK	-0.6783	1.0643	1.7984	SILAC 2 / Biological 3		Rictor up	H/M up	+
O54774	HSSLPTES(ph)DEDIAPAQR	0.1971	1.0222	1.2423	SILAC 1 / Biological 1		Rictor up	H/M up	+
O54774	HSSLPTES(ph)DEDIAPAQR	0.2055	1.0250	1.2429	SILAC 1 / Biological 1		Rictor up	H/M up	+
P10711	KKEPAIS(ph)SQNSPEAR	0.4401	1.8652	1.5305	SILAC 3 / Biological 4		Rictor up	H/M up	+
Q6NZJ6	S(ph)FSKEVEER	0.3621	0.9005	0.7551	SILAC 1 / Biological 1		Rictor up	H/M up	+
Q9JIX8	SQS(ph)PS(ph)PPPLPEDLEK	0.1454	1.3182	0.9276	SILAC 1 / Biological 2		Rictor up	H/M up	+
Q9JIX8	SQS(ph)PS(ph)PPPLPEDLEK	0.5529	2.8551	1.5614	SILAC 1 / Biological 2		Rictor up	H/M up	+
Q9JIX8	SQS(ph)PS(ph)PPPLPEDLEK	0.9109	1.9643	0.9421	SILAC 2 / Biological 3		Rictor up	H/M up	+
P27546	DMS(ph)PLPESEVTLGK	0.4919	0.9968	0.8658	SILAC 1 / Biological 1		Rictor up	H/M up	
P27546	DMS(ph)PLPESEVTLGK	0.4919	0.9968	0.8658	SILAC 1 / Biological 1		Rictor up	H/M up	
Q60598	KQT(ph)PPAS(ph)PSPQPIEDRPPS(ph)SPIYEDAAPFK	-0.6048	0.9702	2.2679	SILAC 1 / Biological 1		Rictor up	H/M up	
Q60598	KQT(ph)PPAS(ph)PSPQPIEDRPPS(ph)SPIYEDAAPFK	-0.6048	0.9702	2.2679	SILAC 1 / Biological 1		Rictor up	H/M up	
Q99JF8	NLAKPGVTST(ph)SDS(ph)EDEDDQEGEKK	0.7146	1.0716	0.8328	SILAC 1 / Biological 1		Rictor up	H/M up	
Q63918	RGNNS(ph)AVGS(ph)NADLTIEEDEEEEPVALQQAQQVR	0.7983	2.3883	3.5633	SILAC 1 / Biological 1		Rictor up	H/M up	
Q63918	RGNNS(ph)AVGS(ph)NADLTIEEDEEEEPVALQQAQQVR	0.7983	2.3883	3.5633	SILAC 1 / Biological 1		Rictor up	H/M up	
Q63918	RGNNS(ph)AVGS(ph)NADLTIEEDEEEEPVALQQAQQVR	0.7983	2.3970	3.5633	SILAC 1 / Biological 1		Rictor up	H/M up	
Q63918	RGNNS(ph)AVGS(ph)NADLTIEEDEEEEPVALQQAQQVR	0.7983	2.3970	3.5633	SILAC 1 / Biological 1		Rictor up	H/M up	
Q6NZJ6	S(ph)FSKEVEERS(ph)R	0.0308	1.0986	1.1885	SILAC 1 / Biological 1		Rictor up	H/M up	
Q6NZJ6	S(ph)FSKEVEERS(ph)R	0.0348	1.0986	1.1928	SILAC 1 / Biological 1		Rictor up	H/M up	
Q3UGP0	S(ph)PSPSPTSPGS(ph)LRK	-0.4455	1.4403	1.4157	SILAC 1 / Biological 1		Rictor up	H/M up	
Q3UGP0	S(ph)PSPSPTSPGS(ph)LRK	-0.4444	1.4430	1.4900	SILAC 1 / Biological 1		Rictor up	H/M up	
Q63918	S(ph)SPFKVS(ph)PLSFGR	0.2046	0.9870	0.8868	SILAC 1 / Biological 1		Rictor up	H/M up	
Q63918	S(ph)SPFKVS(ph)PLSFGR	0.2460	1.0464	0.9076	SILAC 1 / Biological 1		Rictor up	H/M up	
Q3UGP0	SPS(ph)PS(ph)PTSPGSLRK	0.0994	0.9875	1.3787	SILAC 1 / Biological 1		Rictor up	H/M up	
Q3UGP0	SPS(ph)PS(ph)PTSPGSLRK	0.1100	0.9937	1.3787	SILAC 1 / Biological 1		Rictor up	H/M up	
Q3UGP0	SPS(ph)PSPT(ph)SPGSLR	-0.1199	0.9969	1.3664	SILAC 1 / Biological 1		Rictor up	H/M up	
Q3UGP0	SPS(ph)PSPT(ph)SPGSLR	-0.2215	0.9947	1.3847	SILAC 1 / Biological 1		Rictor up	H/M up	
Q63918	SS(ph)PFKVS(ph)PLSFGR	0.2031	1.2332	0.9446	SILAC 1 / Biological 1		Rictor up	H/M up	
Q63918	SS(ph)PFKVS(ph)PLSFGR	0.2256	1.2297	0.9589	SILAC 1 / Biological 1		Rictor up	H/M up	
Q3TZZ7	SSS(ph)S(ph)LLASPSHIAAK	0.4093	1.0760	0.7626	SILAC 1 / Biological 1		Rictor up	H/M up	
Q80YV2	T(ph)RSWES(ph)SSPVDRPELEAASPTTR	0.8333	1.1006	0.8721	SILAC 1 / Biological 1		Rictor up	H/M up	
Q80YV2	T(ph)RSWES(ph)SSPVDRPELEAASPTTR	0.8284	1.1333	0.8800	SILAC 1 / Biological 1		Rictor up	H/M up	
Q64511	VKAS(ph)PITNDGEDEFVPS(ph)DGLDKDEYAFSSGK	0.1214	0.8692	0.8843	SILAC 1 / Biological 1		Rictor up	H/M up	
Q99P72	(ac)MEDIDQSSLVSSSADS(ph)PPRPPPAFK	-0.1694	1.5710	1.6119	SILAC 1 / Biological 2		Rictor up	H/M up	
Q80TM9	ACSDS(ph)LES(ph)IPAGQVASDDLR	0.2208	1.2992	0.9280	SILAC 1 / Biological 2		Rictor up	H/M up	
Q80TM9	ACSDS(ph)LES(ph)IPAGQVASDDLR	0.2208	1.2992	0.9280	SILAC 1 / Biological 2		Rictor up	H/M up	
Q99KK9	DLS(ph)PQQMVVR	0.1928	0.8817	0.8800	SILAC 1 / Biological 2		Rictor up	H/M up	
P27546	DMS(ph)PSAETEAPLAK	0.8640	2.5359	1.1024	SILAC 1 / Biological 2		Rictor up	H/M up	
Q8R5F7	DSGTMGS(ph)DS(ph)DESVIQTK	0.2164	1.6409	1.2468	SILAC 1 / Biological 2		Rictor up	H/M up	
Q8R5F7	DSGTMGSDS(ph)DESVIQTK	0.3798	1.8374	1.3586	SILAC 1 / Biological 2		Rictor up	H/M up	
P14873	DVMSDETNNEETES(ph)PSQEFVNITK	0.4363	2.1911	0.9796	SILAC 1 / Biological 2		Rictor up	H/M up	
P53986	EGKEDEAST(ph)DVDEKPK	0.0585	1.3534	1.3631	SILAC 1 / Biological 2		Rictor up	H/M up	
Q9WTQ5	EKEPTKPLESPT(ph)S(ph)PVSNETTSSFK	-0.6042	2.0101	2.7153	SILAC 1 / Biological 2		Rictor up	H/M up	
Q9WTQ5	EKEPTKPLESPT(ph)S(ph)PVSNETTSSFK	-0.6042	2.0101	2.7153	SILAC 1 / Biological 2		Rictor up	H/M up	
Q8C2Q7	HTGPNS(ph)PDTANDGFVR	0.0731	0.9025	1.1369	SILAC 1 / Biological 2		Rictor up	H/M up	
Q8C2Q7	HTGPNS(ph)PDTANDGFVR	0.0298	0.9894	1.3471	SILAC 1 / Biological 2		Rictor up	H/M up	
Q8C0D4	IQQDS(ph)ES(ph)GDELSSSSTEQMR	0.5098	1.0401	0.8285	SILAC 1 / Biological 2		Rictor up	H/M up	
Q8C0D4	IQQDS(ph)ES(ph)GDELSSSSTEQMR	0.5098	1.0401	0.8285	SILAC 1 / Biological 2		Rictor up	H/M up	
P09405	KEDS(ph)DEDEDEEDEDDS(ph)DEDEDDEEEDEFEPPIVK	-0.3516	1.5401	1.4422	SILAC 1 / Biological 2		Rictor up	H/M up	

Uniprot	Modified Sequence	M/L Ratio	H/L Ratio	H/M Ratio	Experiment	iRapKO/Control	iRicKO/Control	iRicKO/iRapKO	Peptide array +
P09405	KEDS(ph)DEDEDEEDEDDS(ph)DEDEDDEEEDEFEPPIVK	-0.3516	1.5401	1.4422	SILAC 1 / Biological 2		Rictor up	H/M up	
O08784	KSAEPLANTVLAS(ph)ET(ph)EEEGNAQALGPTAK	0.1697	1.0799	0.7565	SILAC 1 / Biological 2		Rictor up	H/M up	
O08784	KSAEPLANTVLAS(ph)ET(ph)EEEGNAQALGPTAK	0.1697	1.0799	0.7565	SILAC 1 / Biological 2		Rictor up	H/M up	
Q5F2E7	NDS(ph)WGSFDLR	0.2622	1.9788	1.3008	SILAC 1 / Biological 2		Rictor up	H/M up	
P16951	NDSVIVADQT(ph)PT(ph)PTR	0.7961	1.6650	1.0075	SILAC 1 / Biological 2		Rictor up	H/M up	
P16951	NDSVIVADQT(ph)PT(ph)PTR	0.7961	1.6650	1.0075	SILAC 1 / Biological 2		Rictor up	H/M up	
P09405	NLS(ph)FNITEDELK	0.0182	2.0545	1.9696	SILAC 1 / Biological 2		Rictor up	H/M up	
Q8C0N2	NSAS(ph)VGIIQR	0.2046	1.8150	2.0731	SILAC 1 / Biological 2		Rictor up	H/M up	
Q80Y35	QAASSQEPS(ph)ELEELR	-0.4785	2.0086	4.5674	SILAC 1 / Biological 2		Rictor up	H/M up	
Q6P4S8	RDS(ph)TEAPKPESS(ph)PEPPPGQGR	0.0000	0.8653	0.8316	SILAC 1 / Biological 2		Rictor up	H/M up	
Q3UFM5	S(ph)RSS(ph)S(ph)EDDIEQQESHSVESGEK	0.0618	0.9172	0.8045	SILAC 1 / Biological 2		Rictor up	H/M up	
Q9QZQ1	S(ph)SPNVANQPPS(ph)PGGK	0.4791	1.7841	1.0263	SILAC 1 / Biological 2		Rictor up	H/M up	
P28028	SAS(ph)EPSLNR	-0.9132	0.9157	1.0149	SILAC 1 / Biological 2		Rictor up	H/M up	
Q3UFM5	SRS(ph)S(ph)S(ph)EDDIEQQESHSVESGEK	0.0068	0.8215	0.8494	SILAC 1 / Biological 2		Rictor up	H/M up	
Q3UFM5	SRS(ph)S(ph)S(ph)EDDIEQQESHSVESGEK	0.0068	0.8215	0.8494	SILAC 1 / Biological 2		Rictor up	H/M up	
Q9QZQ1	SSPNVANQPPS(ph)PGGK	-0.1040	1.5100	1.2118	SILAC 1 / Biological 2		Rictor up	H/M up	
B2RUB9	SSTPLPTVSSS(ph)AENTR	0.3386	1.2214	0.9293	SILAC 1 / Biological 2		Rictor up	H/M up	
Q3UQN6	VSEGCLTSS(ph)QDGVENDGLHR	0.3633	1.6936	1.1860	SILAC 1 / Biological 2		Rictor up	H/M up	
P35486	YGMGT(ph)SVER	0.1595	1.5070	1.5360	SILAC 1 / Biological 2		Rictor up	H/M up	
Q6Y7W8	AGAEASEEVPQTSLSSARPGT(ph)PSDHQPQEATQFER	-0.7111	1.4124	2.5206	SILAC 2 / Biological 3		Rictor up	H/M up	
P14873	ASLS(ph)PMDEPVPDSES(ph)PVEK	0.0525	0.9061	0.8230	SILAC 2 / Biological 3		Rictor up	H/M up	
Q8K1N2	ASYSGTS(ph)PSHSFISGEPDR	0.3720	1.5043	0.8250	SILAC 2 / Biological 3		Rictor up	H/M up	
Q8BTI8	DKFSPT(ph)QDRPESSTVLK	-0.1165	1.2715	1.7264	SILAC 2 / Biological 3		Rictor up	H/M up	
P27546	DMS(ph)PSAETEAPLAK	-0.0060	1.1446	1.3083	SILAC 2 / Biological 3		Rictor up	H/M up	
P27546	DMS(ph)PSAETEAPLAK	0.2143	2.0311	1.7965	SILAC 2 / Biological 3		Rictor up	H/M up	
P14873	DVMSDETNNEETES(ph)PSQEFVNITK	-0.3204	1.9357	2.2031	SILAC 2 / Biological 3		Rictor up	H/M up	
Q3UMF0	EVQRDPQLS(ph)PEQHPSSLSER	-0.5567	1.1375	1.4691	SILAC 2 / Biological 3		Rictor up	H/M up	
P97311	FNGSSEDAS(ph)QETVSKPSLR	0.4708	1.7254	1.3295	SILAC 2 / Biological 3		Rictor up	H/M up	
Q6ZPV6	IKTEPS(ph)S(ph)PLSDPSDIIR	0.2953	0.8305	0.8713	SILAC 2 / Biological 3		Rictor up	H/M up	
Q8BTM8	IPEISIQDMTAQVTS(ph)PSGK	-0.1919	1.0776	1.2315	SILAC 2 / Biological 3		Rictor up	H/M up	
Q8C0D4	IQQDS(ph)ES(ph)GDELSSSSTEQMR	0.2590	0.9838	0.7537	SILAC 2 / Biological 3		Rictor up	H/M up	
O08784	KSAEPLANTVLAS(ph)ET(ph)EEEGNAQALGPTAK	0.0644	0.8956	1.0233	SILAC 2 / Biological 3		Rictor up	H/M up	
O08784	KSAEPLANTVLAS(ph)ET(ph)EEEGNAQALGPTAK	0.0644	0.8956	1.0233	SILAC 2 / Biological 3		Rictor up	H/M up	
Q9QZQ1	LFS(ph)QGQDVSDKVK	0.4715	1.3815	1.3003	SILAC 2 / Biological 3		Rictor up	H/M up	
Q3UH27	LLHEDLDES(ph)DDDVDEK	0.1580	1.8494	1.8854	SILAC 2 / Biological 3		Rictor up	H/M up	
Q99P31	LLQTCFSSPT(ph)DDSM(ox)DR	-0.8630	1.4973	2.3276	SILAC 2 / Biological 3		Rictor up	H/M up	
Q8R2M2	NMPNVSDSETYNS(ph)DFDDSSPR	0.0994	1.0299	1.1302	SILAC 2 / Biological 3		Rictor up	H/M up	
Q8C0N2	NSAS(ph)VGIIQR	0.0366	0.9662	1.6490	SILAC 2 / Biological 3		Rictor up	H/M up	
Q3TUQ5	QQDS(ph)QPEEVMDVLEMVESVK	0.5220	1.6372	1.3175	SILAC 2 / Biological 3		Rictor up	H/M up	
Q3UJN1	RADALTSS(ph)PGR	0.2558	0.9382	0.8510	SILAC 2 / Biological 3		Rictor up	H/M up	
Q62388	S(ph)ATPANSDS(ph)ESENFLR	0.0973	1.4827	0.9039	SILAC 2 / Biological 3		Rictor up	H/M up	
Q62388	S(ph)ATPANSDS(ph)ESENFLR	0.0893	1.1595	0.9102	SILAC 2 / Biological 3		Rictor up	H/M up	
B2RRF1	S(ph)DSAPPTPVNR	-0.7139	1.0305	1.5001	SILAC 2 / Biological 3		Rictor up	H/M up	
Q8K019	S(ph)KSQEEPKDTFEHDPSESIDEFNK	0.7875	1.8339	0.8349	SILAC 2 / Biological 3		Rictor up	H/M up	
Q8R457	S(ph)LSRS(ph)PIPSR	-0.3007	1.0028	1.5735	SILAC 2 / Biological 3		Rictor up	H/M up	
Q8R457	S(ph)LSRS(ph)PIPSR	-0.2849	1.0071	1.6658	SILAC 2 / Biological 3		Rictor up	H/M up	
Q5SXY1	S(ph)SKGSPTGS(ph)SPNNASELSLASLTEK	-0.3255	1.0343	1.2893	SILAC 2 / Biological 3		Rictor up	H/M up	
Q8BTI8	S(ph)SRRSS(ph)SELS(ph)PEVVEK	0.2634	2.2576	2.0552	SILAC 2 / Biological 3		Rictor up	H/M up	
O88665	SLQDLDMS(ph)S(ph)PEDEGQTR	-0.1991	1.7520	2.1223	SILAC 2 / Biological 3		Rictor up	H/M up	
O88665	SLQDLDMS(ph)S(ph)PEDEGQTR	-0.1991	1.7520	2.1223	SILAC 2 / Biological 3		Rictor up	H/M up	
Q9JIX8	SLS(ph)PLSGTTDTK	0.0896	1.6006	0.8467	SILAC 2 / Biological 3		Rictor up	H/M up	
Q9JIX8	SLS(ph)PLSGTTDTKAES(ph)PAGR	0.2891	0.8746	0.9779	SILAC 2 / Biological 3		Rictor up	H/M up	
Q8R457	SLS(ph)RS(ph)PIPSR	-0.2692	1.0114	1.7580	SILAC 2 / Biological 3		Rictor up	H/M up	
Q8K2R0	SPDEATAADQES(ph)EDDLSASR	0.9027	1.9037	1.2030	SILAC 2 / Biological 3		Rictor up	H/M up	
Q69ZM0	SQS(ph)QAS(ph)LTGLAFMSPSNR	0.3031	0.8280	0.8729	SILAC 2 / Biological 3		Rictor up	H/M up	
Q6Y7W8	SQS(ph)WEER	-0.5920	0.9542	2.2594	SILAC 2 / Biological 3		Rictor up	H/M up	
Q3UAM3	SSS(ph)LDMNR	-0.1665	1.0131	1.3530	SILAC 2 / Biological 3		Rictor up	H/M up	
Q9JIX8	SSSFS(ph)EEKGESDDEKPR	0.2793	1.4408	1.6516	SILAC 2 / Biological 3		Rictor up	H/M up	
Q9JIX8	SSSFSEEKGES(ph)DDEKPR	0.4452	1.6570	1.1995	SILAC 2 / Biological 3		Rictor up	H/M up	
Q80X50	STSAPQMS(ph)PGSSDNQSSS(ph)PQPAQQK	-0.3132	1.3363	1.7577	SILAC 2 / Biological 3		Rictor up	H/M up	
P14873	SVS(ph)PGVTQAVVEEHCAS(ph)PEEK	-0.2393	1.0100	1.4248	SILAC 2 / Biological 3		Rictor up	H/M up	
Q8BYJ6	T(ph)SSTCS(ph)NES(ph)LNAGGTPVTPR	0.4727	1.5590	1.1463	SILAC 2 / Biological 3		Rictor up	H/M up	
Q8BYJ6	T(ph)SSTCS(ph)NES(ph)LNAGGTPVTPR	0.4727	1.5590	1.1463	SILAC 2 / Biological 3		Rictor up	H/M up	
O08784	TVVHLLSGKS(ph)PK	0.1499	1.0218	1.0122	SILAC 2 / Biological 3		Rictor up	H/M up	
Q3UHJ0	VGSLT(ph)PPS(ph)SPK	0.5402	1.4233	0.9743	SILAC 2 / Biological 3		Rictor up	H/M up	
Q3UQN6	VSEGCLTSS(ph)QDGVENDGLHR	-0.0065	2.7210	2.8843	SILAC 2 / Biological 3		Rictor up	H/M up	
Q61206	(ac)S(ph)QGDSNPAAIPHAAEDIQGDDR	0.0708	1.9302	2.0167	SILAC 3 / Biological 4		Rictor up	H/M up	
A2AU91	AETTEKDAVTEDS(ph)PQPPLPSVR	-0.1947	0.9964	1.3717	SILAC 3 / Biological 4		Rictor up	H/M up	
A2AU91	AS(ph)QEPFS(ph)PAEDVMETDLLEGLAANQDRPSK	-0.1211	1.6730	2.0679	SILAC 3 / Biological 4		Rictor up	H/M up	
A2AU91	AS(ph)QEPFS(ph)PAEDVMETDLLEGLAANQDRPSK	-0.1211	1.6730	2.0679	SILAC 3 / Biological 4		Rictor up	H/M up	
Q8R5F7	DSGTMGS(ph)DSDESVIQTK	-0.0478	2.4371	2.2154	SILAC 3 / Biological 4		Rictor up	H/M up	
P97311	FNGS(ph)SEDAS(ph)QETVSKPSLR	-0.6535	1.5211	1.6667	SILAC 3 / Biological 4		Rictor up	H/M up	
P97311	FNGSSEDAS(ph)QETVSKPSLR	0.1455	1.5512	1.3422	SILAC 3 / Biological 4		Rictor up	H/M up	
O35280	FSSS(ph)QPEPR	-0.0310	1.2381	1.0660	SILAC 3 / Biological 4		Rictor up	H/M up	
Q64511	KIVET(ph)INS(ph)DSDSEFGIPK	0.8735	1.1198	0.9745	SILAC 3 / Biological 4		Rictor up	H/M up	
P10711	KKEPAISS(ph)QNSPEAR	0.6347	1.6297	1.2583	SILAC 3 / Biological 4		Rictor up	H/M up	
Q8C9B9	KNTTKPETIPDMEDS(ph)PPVSDS(ph)EEQQESVR	-0.1050	0.9880	1.0700	SILAC 3 / Biological 4		Rictor up	H/M up	
Q8C9B9	KNTTKPETIPDMEDS(ph)PPVSDS(ph)EEQQESVR	-0.0802	0.8542	1.1344	SILAC 3 / Biological 4		Rictor up	H/M up	
O08784	KSAEPLANTVLAS(ph)ET(ph)EEEGNAQALGPTAK	-0.7608	1.4442	2.7095	SILAC 3 / Biological 4		Rictor up	H/M up	
Q05D44	KTS(ph)FDENDSEELEDKDSK	0.1961	1.8680	1.8034	SILAC 3 / Biological 4		Rictor up	H/M up	
P05627	LQALKEEPQTVPEMPGET(ph)PPLS(ph)PIDMESQER	0.1990	1.3565	0.9923	SILAC 3 / Biological 4		Rictor up	H/M up	
P05627	LQALKEEPQTVPEMPGET(ph)PPLS(ph)PIDMESQER	0.1990	1.3565	0.9923	SILAC 3 / Biological 4		Rictor up	H/M up	
Q8C9B9	NTTKPETIPDM(ox)EDS(ph)PPVS(ph)DSEEQQESVR	-0.1297	1.1219	1.0057	SILAC 3 / Biological 4		Rictor up	H/M up	
Q3UAM3	PSAEQQEPVSPVVSPQQS(ph)PPT(ph)SPHTWR	-0.2948	0.9314	1.0790	SILAC 3 / Biological 4		Rictor up	H/M up	
Q80Y35	QAASS(ph)QEPSELEELR	-0.3867	2.3479	2.6601	SILAC 3 / Biological 4		Rictor up	H/M up	
Q3TUQ5	QQDS(ph)QPEEVMDVLEMVESVK	-0.0203	1.0438	0.9582	SILAC 3 / Biological 4		Rictor up	H/M up	
Q80X50	RYPSSISSS(ph)PQK	-0.3996	1.6505	1.8822	SILAC 3 / Biological 4		Rictor up	H/M up	
P30999	S(ph)GDLGDMEPLK	-0.5564	0.9904	0.9736	SILAC 3 / Biological 4		Rictor up	H/M up	
Q02248	S(ph)PQMVSAIVR	-0.3052	0.8408	0.9287	SILAC 3 / Biological 4		Rictor up	H/M up	
Q80WJ7	SETNWES(ph)PK	-0.5272	1.3414	1.2576	SILAC 3 / Biological 4		Rictor up	H/M up	
P49586	T(ph)SPSSS(ph)PASLSR	-0.3132	0.8716	0.8931	SILAC 3 / Biological 4		Rictor up	H/M up	
Q9ESX5	T(ph)VLESGGETGDGDNDTTKK	0.0514	0.9746	1.3858	SILAC 3 / Biological 4		Rictor up	H/M up	
Q05D44	TSFDENDS(ph)EELEDKDSK	-0.2597	1.0729	1.0982	SILAC 3 / Biological 4		Rictor up	H/M up	
Q921K9	VDSSTNSSPS(ph)PQQSESLS(ph)PAHTSDFR	-0.4026	0.8323	1.0661	SILAC 3 / Biological 4		Rictor up	H/M up	
Q3UHJ0	VGSLT(ph)PPS(ph)SPK	-0.1328	0.9318	1.0458	SILAC 3 / Biological 4		Rictor up	H/M up	
A2AIV2	VISHDRDS(ph)PPPPPPPPPPQPQPTLK	0.3290	1.5384	1.0679	SILAC 3 / Biological 4		Rictor up	H/M up	
Q3UQN6	VSEGCLTSS(ph)QDGVENDGLHR	-0.1105	1.0122	1.3004	SILAC 3 / Biological 4		Rictor up	H/M up	
P08775	Y(ph)SPTSPTYSPTS(ph)PVYTPTS(ph)PK	-0.3480	0.8274	0.9390	SILAC 3 / Biological 4		Rictor up	H/M up	
P08775	Y(ph)SPTSPTYSPTS(ph)PVYTPTS(ph)PK	-0.3480	0.8274	0.9390	SILAC 3 / Biological 4		Rictor up	H/M up	
P08775	Y(ph)TPTSPSYSPSSPEY(ph)TPASPK	-0.0945	1.0433	1.0433	SILAC 3 / Biological 4		Rictor up	H/M up	
P08775	Y(ph)TPTSPSYSPSSPEY(ph)TPASPK	-0.0945	1.0433	1.0433	SILAC 3 / Biological 4		Rictor up	H/M up	
P08775	YS(ph)PTSPTYS(ph)PTSPK	-0.7247	1.0686	1.4518	SILAC 3 / Biological 4		Rictor up	H/M up	
P08775	YTPTS(ph)PSYSPSS(ph)PEYTPASPK	-0.0945	1.0433	1.0433	SILAC 3 / Biological 4		Rictor up	H/M up	
Q8VE94	ENFSAGS(ph)DCVTLK	0.7199	1.3201	0.6003	SILAC 3 / Biological 4		Rictor up		+
O54774	HSSLPTES(ph)DEDIAPAQR	0.4266	3.2945	-0.3993	SILAC 2 / Biological 3		Rictor up		+
Q6NZJ6	S(ph)FSKEVEER	0.4672	0.9179	0.5961	SILAC 1 / Biological 1		Rictor up		+
P43274	(ac)S(ph)ETAPAAPAAPAPAEK	0.4796	0.8249	0.0000	SILAC 1 / Biological 1		Rictor up		
P43274	(ac)S(ph)ETAPAAPAAPAPAEK	0.4796	0.8249	0.0000	SILAC 1 / Biological 1		Rictor up		
Q80TC1	DAPTS(ph)PASVASSSSTPSSK	0.1881	0.9049	0.3012	SILAC 1 / Biological 1		Rictor up		
Q80TC1	DAPTS(ph)PASVASSSSTPSSK	0.2141	0.9049	0.3012	SILAC 1 / Biological 1		Rictor up		
Q99JF8	ETNVS(ph)KEDT(ph)DQEEKASNEDVTK	0.6837	0.8863	0.1469	SILAC 1 / Biological 1		Rictor up		
A2A5R2	HLDVDLDRQS(ph)LS(ph)SIDR	0.8713	1.2882	0.2040	SILAC 1 / Biological 1		Rictor up		
A2A5R2	HLDVDLDRQS(ph)LS(ph)SIDR	0.8713	1.2882	0.2040	SILAC 1 / Biological 1		Rictor up		
A2A5R2	HLDVDLDRQS(ph)LS(ph)SIDR	0.8197	1.2112	0.4042	SILAC 1 / Biological 1		Rictor up		
A2A5R2	HLDVDLDRQS(ph)LS(ph)SIDR	0.8197	1.2112	0.4042	SILAC 1 / Biological 1		Rictor up		

Uniprot	Modified Sequence	M/L Ratio	H/L Ratio	H/M Ratio	Experiment	iRapKO/Control	iRicKO/Control	iRicKO/iRapKO	Peptide array +
A2A5R2	HLDVDLDRQS(ph)LS(ph)SIDR	0.8197	1.2112	0.4042	SILAC 1 / Biological 1		Rictor up		
A2A5R2	HLDVDLDRQS(ph)LS(ph)SIDR	0.8197	1.2112	0.4042	SILAC 1 / Biological 1		Rictor up		
O54774	HSSLPT(ph)ESDEDIAPAQR	-0.3581	1.0598	0.4110	SILAC 1 / Biological 1		Rictor up		
O54774	HSSLPT(ph)ESDEDIAPAQR	-0.3599	1.0598	0.7038	SILAC 1 / Biological 1		Rictor up		
Q64511	KAS(ph)GSENEGDYNPGR	0.7479	1.1907	0.6673	SILAC 1 / Biological 1		Rictor up		
Q64511	KAS(ph)GSENEGDYNPGR	0.7403	1.1349	0.6897	SILAC 1 / Biological 1		Rictor up		
Q64511	KASGS(ph)ENEGDYNPGR	0.7404	0.9843	0.2615	SILAC 1 / Biological 1		Rictor up		
Q64511	KASGS(ph)ENEGDYNPGR	0.7404	1.0151	0.2641	SILAC 1 / Biological 1		Rictor up		
P53986	LKS(ph)KES(ph)LQEAGK	0.6678	0.8358	0.3609	SILAC 1 / Biological 1		Rictor up		
Q3UZ39	NMPSLSAATLASLGGTSS(ph)R	0.6976	0.8783	0.5429	SILAC 1 / Biological 1		Rictor up		
Q3UZ39	NMPSLSAATLASLGGTSS(ph)R	0.6976	0.8783	0.5429	SILAC 1 / Biological 1		Rictor up		
Q60875	QILS(ph)QSTDSLNMR	0.6811	1.0463	0.6482	SILAC 1 / Biological 1		Rictor up		
Q60875	QILS(ph)QSTDSLNMR	0.4864	1.0463	0.6826	SILAC 1 / Biological 1		Rictor up		
Q60875	QILSQS(ph)TDSLNMR	0.7091	0.8669	0.1184	SILAC 1 / Biological 1		Rictor up		
Q8K1N2	RLS(ph)AGTTVADVQK	0.6837	0.8441	0.2916	SILAC 1 / Biological 1		Rictor up		
Q8K1N2	RLS(ph)AGTTVADVQK	0.6837	0.8446	0.3054	SILAC 1 / Biological 1		Rictor up		
Q8K1N2	RLS(ph)AGTTVADVQK	0.5314	0.9499	0.3452	SILAC 1 / Biological 1		Rictor up		
Q3UJN1	RRIS(ph)DPLT(ph)SSPGR	0.8951	1.3929	0.5597	SILAC 1 / Biological 1		Rictor up		
Q3UJN1	RRIS(ph)DPLT(ph)SSPGR	0.8383	1.3138	0.5630	SILAC 1 / Biological 1		Rictor up		
Q58A65	S(ph)ASQSS(ph)LDKLDQELK	0.7156	0.8386	0.1817	SILAC 1 / Biological 1		Rictor up		
P53986	S(ph)KESLQEAGKSDANTDLIGGSPK	0.6377	1.0424	0.7262	SILAC 1 / Biological 1		Rictor up		
P53986	S(ph)KESLQEAGKSDANTDLIGGSPK	0.6377	1.0424	0.7262	SILAC 1 / Biological 1		Rictor up		
Q63918	S(ph)SPFKVSPLS(ph)FGR	0.2813	1.1250	0.6059	SILAC 1 / Biological 1		Rictor up		
Q63918	S(ph)SPFKVSPLS(ph)FGR	0.2813	1.1250	0.6059	SILAC 1 / Biological 1		Rictor up		
O88665	SLQDLDMS(ph)S(ph)PEDEGQTR	0.1653	1.0512	0.6800	SILAC 1 / Biological 1		Rictor up		
O88665	SLQDLDMS(ph)S(ph)PEDEGQTR	0.1653	1.0512	0.6800	SILAC 1 / Biological 1		Rictor up		
O88665	SLQDLDMS(ph)S(ph)PEDEGQTR	0.1653	1.0512	0.6800	SILAC 1 / Biological 1		Rictor up		
O88665	SLQDLDMS(ph)S(ph)PEDEGQTR	0.1653	1.0512	0.6800	SILAC 1 / Biological 1		Rictor up		
Q3TZZ7	SSS(ph)S(ph)LLASPSHIAAK	0.5343	0.9620	0.7286	SILAC 1 / Biological 1		Rictor up		
Q9WV92	VESTSVGSIS(ph)PGGAK	0.4950	0.8641	0.3276	SILAC 1 / Biological 1		Rictor up		
Q9DBR0	ADS(ph)DGDLS(ph)ENDDGAGDLRS(ph)GDEEFRGEDDLCDSR	0.7276	1.4092	0.5643	SILAC 1 / Biological 2		Rictor up		
P30999	APS(ph)RQDVYGPQPQVR	0.5613	0.8781	0.0351	SILAC 1 / Biological 2		Rictor up		
Q3UMU9	AQEDGQDS(ph)EDGPRGGS(ph)S(ph)EELHDSPR	0.1654	1.1683	0.5017	SILAC 1 / Biological 2		Rictor up		
P14873	ASLS(ph)PMDEPVPDSES(ph)PVEK	0.7459	1.5249	0.4420	SILAC 1 / Biological 2		Rictor up		
Q8BT07	ATS(ph)PKSPS(ph)AALNDSLVECPK	-0.3909	0.9896	0.2627	SILAC 1 / Biological 2		Rictor up		
P47713	DFS(ph)SQDSFDDELDAAVADPDEFER	0.8080	1.2008	0.2823	SILAC 1 / Biological 2		Rictor up		
P47713	DFS(ph)SQDSFDDELDAAVADPDEFER	0.8080	1.2008	0.2823	SILAC 1 / Biological 2		Rictor up		
P47713	DFS(ph)SQDSFDDELDAAVADPDEFER	0.8080	1.2008	0.2823	SILAC 1 / Biological 2		Rictor up		
P27546	DMS(ph)PLPESEVTLGK	0.4427	1.9102	0.7490	SILAC 1 / Biological 2		Rictor up		
P46467	EEQSGPVDEKGNDS(ph)DGEAESDDPEKK	0.2070	1.3115	0.1451	SILAC 1 / Biological 2		Rictor up		
Q3UJN1	GLLY(ph)DS(ph)SEEDEERPAR	0.6616	1.1345	0.3183	SILAC 1 / Biological 2		Rictor up		
P51859	GSAEGS(ph)S(ph)DEEGKLVIDEPAKEK	0.8124	1.2437	0.2399	SILAC 1 / Biological 2		Rictor up		
Q3THK3	IHDLEDDLEMS(ph)S(ph)DAS(ph)DAS(ph)GEEGSR	0.2754	0.9822	0.5986	SILAC 1 / Biological 2		Rictor up		
Q3THK3	IHDLEDDLEMS(ph)S(ph)DAS(ph)DAS(ph)GEEGSR	0.2754	0.9822	0.5986	SILAC 1 / Biological 2		Rictor up		
Q3THK3	IHDLEDDLEMS(ph)S(ph)DAS(ph)DAS(ph)GEEGSR	0.2754	0.9822	0.5986	SILAC 1 / Biological 2		Rictor up		
Q3THK3	IHDLEDDLEMS(ph)S(ph)DAS(ph)DAS(ph)GEEGSR	0.2754	0.9822	0.5986	SILAC 1 / Biological 2		Rictor up		
P51859	KGSAEGS(ph)S(ph)DEEGKLVIDEPAK	0.7469	1.2295	0.2444	SILAC 1 / Biological 2		Rictor up		
Q8CI11	KLEVS(ph)PGDEQSNVETR	-0.2016	1.3362	0.7230	SILAC 1 / Biological 2		Rictor up		
Q810V0	KSPVFS(ph)DEDS(ph)DLDFDIGKLEQQTK	0.4768	1.1673	0.2717	SILAC 1 / Biological 2		Rictor up		
Q810V0	KSPVFS(ph)DEDS(ph)DLDFDIGKLEQQTK	0.4768	1.1673	0.2717	SILAC 1 / Biological 2		Rictor up		
Q60953	LAT(ph)S(ph)SPEQSWPSTFK	0.4442	0.8202	0.0037	SILAC 1 / Biological 2		Rictor up		
Q924Z4	LIEDERS(ph)DREET(ph)ES(ph)S(ph)EGEETAAGAGAK	-0.0015	0.8965	0.3354	SILAC 1 / Biological 2		Rictor up		
Q924Z4	LIEDERS(ph)DREET(ph)ES(ph)S(ph)EGEETAAGAGAK	-0.0015	0.8965	0.3354	SILAC 1 / Biological 2		Rictor up		
Q924Z4	LIEDERS(ph)DREET(ph)ES(ph)S(ph)EGEETAAGAGAK	-0.0015	0.8965	0.3354	SILAC 1 / Biological 2		Rictor up		
Q924Z4	LIEDERS(ph)DREET(ph)ES(ph)S(ph)EGEETAAGAGAK	-0.0015	0.8965	0.3354	SILAC 1 / Biological 2		Rictor up		
P14873	LSPAKSPS(ph)LS(ph)PSPPS(ph)PIEK	0.8256	1.2192	-0.1357	SILAC 1 / Biological 2		Rictor up		
Q68EF0	NKS(ph)TSSAMGGSHQDLSVIQPIVK	-0.3383	1.3026	0.6463	SILAC 1 / Biological 2		Rictor up		
Q99JF8	NLAKPGVTST(ph)SDS(ph)EDEDDQEGEK	0.3703	1.3628	0.1902	SILAC 1 / Biological 2		Rictor up		
P24788	RGT(ph)S(ph)PRPPEGGLGYSQLGDDDLK	0.1355	0.8494	0.4618	SILAC 1 / Biological 2		Rictor up		
P24788	RGT(ph)S(ph)PRPPEGGLGYSQLGDDDLK	0.1355	0.8494	0.4618	SILAC 1 / Biological 2		Rictor up		
A5D6P2	RS(ph)SDPALTGLSTSVSDNNFSSEEPSR	0.4000	1.0472	0.4530	SILAC 1 / Biological 2		Rictor up		
Q69ZM0	S(ph)QSQAS(ph)LTGLAFMSPSNR	0.2610	1.1168	0.6076	SILAC 1 / Biological 2		Rictor up		
P58871	S(ph)SGSLS(ph)PGLETEDPLEAR	0.8201	1.1378	0.3400	SILAC 1 / Biological 2		Rictor up		
Q3UAI4	S(ph)SLGQSAS(ph)ETEEDTVSISK	0.6401	1.3339	0.1884	SILAC 1 / Biological 2		Rictor up		
P14873	S(ph)VSPGVTQAVVEEHCAS(ph)PEEK	0.5790	1.1094	0.0999	SILAC 1 / Biological 2		Rictor up		
Q9CT10	SAGSSS(ph)PEAGEDS(ph)DHEDGNYCPPVKR	0.3102	1.6851	0.3599	SILAC 1 / Biological 2		Rictor up		
Q8R1A4	SPSGSAFGS(ph)QENLR	0.2085	0.9822	0.6508	SILAC 1 / Biological 2		Rictor up		
Q3UAI4	SSLGQS(ph)ASET(ph)EEDTVSISK	0.8481	0.8791	0.1519	SILAC 1 / Biological 2		Rictor up		
Q3UAM3	SSS(ph)LDMNR	0.4230	1.1446	0.4116	SILAC 1 / Biological 2		Rictor up		
P14873	SVS(ph)PGVTQAVVEEHCAS(ph)PEEK	0.6166	1.1163	0.1499	SILAC 1 / Biological 2		Rictor up		
Q3UMF0	T(ph)LSSPTGTET(ph)NPPKAPR	0.4578	1.1995	0.6573	SILAC 1 / Biological 2		Rictor up		
Q9CZJ2	TQESCGIAPLT(ph)PSQS(ph)PKPEAR	-0.0305	1.2396	-0.3734	SILAC 1 / Biological 2		Rictor up		
Q8BT07	VKAT(ph)S(ph)PKSPSAALNDSLVECPK	0.5006	1.3598	0.5040	SILAC 1 / Biological 2		Rictor up		
Q8K298	AASPSKPPISNAS(ph)ATPVGR	0.4564	0.8530	0.6440	SILAC 2 / Biological 3		Rictor up		
Q8VDN3	ASLGS(ph)LEGEVEAEASSPK	0.9272	0.8593	0.1842	SILAC 2 / Biological 3		Rictor up		
P47713	DFS(ph)S(ph)QDSFDDELDAAVADPDEFER	0.5647	1.1058	0.6231	SILAC 2 / Biological 3		Rictor up		
P47713	DFS(ph)S(ph)QDSFDDELDAAVADPDEFER	0.5647	1.1058	0.6231	SILAC 2 / Biological 3		Rictor up		
B9EKC2	ENEEAEPSTAPGT(ph)PTLR	0.8345	0.8983	0.0634	SILAC 2 / Biological 3		Rictor up		
O35280	FSSS(ph)QPEPR	0.4487	0.9722	0.4070	SILAC 2 / Biological 3		Rictor up		
Q3UMU9	GGS(ph)S(ph)GEELEDEEPVKK	0.2203	1.2879	0.5677	SILAC 2 / Biological 3		Rictor up		
Q9Z1D1	GIPLPTGDT(ph)SPEPELLPGDPLPPPK	0.7634	1.4051	0.5570	SILAC 2 / Biological 3		Rictor up		
Q69ZM0	HS(ph)QSPDSGKESLLK	0.7549	0.9588	0.1845	SILAC 2 / Biological 3		Rictor up		
Q62130	ICTEQSNS(ph)PPPIR	0.6387	1.1551	-0.7555	SILAC 2 / Biological 3		Rictor up		
Q6ZPV6	IKT(ph)EPSS(ph)PLSDPSDIIR	0.8290	1.2310	0.6075	SILAC 2 / Biological 3		Rictor up		
Q8C9B9	NTTKPETIPDMEDS(ph)PPVS(ph)DSEEQQESVR	0.9206	0.9156	0.1894	SILAC 2 / Biological 3		Rictor up		
Q9Z1X4	RPMEEDGEEKS(ph)PSK	0.3736	0.9280	0.4053	SILAC 2 / Biological 3		Rictor up		
Q8R1A4	S(ph)LSNSNPDISGTPTS(ph)PDDEVR	0.3917	0.9366	0.4310	SILAC 2 / Biological 3		Rictor up		
Q3TUQ5	S(ph)LSPGKENINSQEVEK	0.5046	0.8383	0.5950	SILAC 2 / Biological 3		Rictor up		
Q6DIC7	S(ph)NLDITVGSR	0.5643	1.0222	0.2630	SILAC 2 / Biological 3		Rictor up		
Q02248	S(ph)PQMVSAIVR	0.4783	0.8229	0.1041	SILAC 2 / Biological 3		Rictor up		
Q80U93	STQTAPSSAPSTGQKS(ph)PR	0.6285	1.2640	0.6338	SILAC 2 / Biological 3		Rictor up		
P49586	T(ph)SPSSSPASLSR	0.7532	1.3969	0.7454	SILAC 2 / Biological 3		Rictor up		
Q3UHJ0	VGSLT(ph)PPS(ph)SPK	0.5240	1.4554	0.5089	SILAC 2 / Biological 3		Rictor up		
P43276	(ac)S(ph)ETAPAETAAPAPVEK	0.2438	0.8875	0.6872	SILAC 3 / Biological 4		Rictor up		
Q63918	DEEALEDS(ph)AEEK	0.5117	0.8649	0.6718	SILAC 3 / Biological 4		Rictor up		
P47713	DFS(ph)S(ph)QDSFDDELDAAVADPDEFER	0.3645	0.8306	0.2388	SILAC 3 / Biological 4		Rictor up		
Q9D6Z1	EEVASEPEEAAS(ph)PTTPK	-0.1661	0.9516	0.5173	SILAC 3 / Biological 4		Rictor up		
P70255	HKS(ph)GSMEEDVDTSPGGDYYTSPNS(ph)PTSSSR	0.4483	1.4312	0.5417	SILAC 3 / Biological 4		Rictor up		
Q8C0D4	IQQDS(ph)ES(ph)GDELSSSSTEQMR	0.2343	0.8369	0.4660	SILAC 3 / Biological 4		Rictor up		
Q8C0D4	IQQDS(ph)ES(ph)GDELSSSSTEQMR	0.2343	0.8369	0.4660	SILAC 3 / Biological 4		Rictor up		
Q64511	KTS(ph)FDQDS(ph)DVDIFPSDFTSEPPALPR	0.4334	0.8300	0.3258	SILAC 3 / Biological 4		Rictor up		
P43274	KTS(ph)GPPVSELITK	0.3148	0.8676	0.5569	SILAC 3 / Biological 4		Rictor up		
Q8BYC6	NGPLNES(ph)QEEEEDGEQGSNLNR	0.9018	0.8252	-0.4019	SILAC 3 / Biological 4		Rictor up		
Q62388	S(ph)ATPANS(ph)DSESENFLR	0.7630	1.3214	0.6578	SILAC 3 / Biological 4		Rictor up		
Q62388	S(ph)ATPANS(ph)DSESENFLR	0.7630	1.3214	0.6578	SILAC 3 / Biological 4		Rictor up		
B2RRF1	SDS(ph)APPTPVNR	0.4217	1.0040	0.6101	SILAC 3 / Biological 4		Rictor up		
Q3TYK4	T(ph)DS(ph)REDEISPPPPNPVVK	0.2992	1.2002	0.5792	SILAC 3 / Biological 4		Rictor up		
Q3TYK4	T(ph)DSREDEIS(ph)PPPPNPVVK	0.2090	0.9965	0.6031	SILAC 3 / Biological 4		Rictor up		
O55091	TEEVEVES(ph)EEDPILEHPPENPVK	0.0546	0.9003	0.3353	SILAC 3 / Biological 4		Rictor up		
P97792	TQYNQVPS(ph)EDFER	0.4598	0.8240	-0.2714	SILAC 3 / Biological 4		Rictor up		
Q60953	VPAPPGS(ph)PCR	0.4567	0.9273	0.3051	SILAC 3 / Biological 4		Rictor up		
Q3UQN6	VSEGCLT(ph)SSQDGVENDGLHR	0.0589	1.0933	0.4745	SILAC 3 / Biological 4		Rictor up		
Q3UQN6	VSEGCLTS(ph)SQDGVENDGLHR	0.0382	1.1960	0.0828	SILAC 3 / Biological 4		Rictor up		
Q99L90	GDQVLNFS(ph)DAEDLIDDSK	-0.0832	-0.8920	-1.0363	SILAC 1 / Biological 2			H/M down	+
Q99L90	GDQVLNFS(ph)DAEDLIDDSK	0.6107	-0.2779	-1.1570	SILAC 3 / Biological 4			H/M down	+

Uniprot	Modified Sequence	M/L Ratio	H/L Ratio	H/M Ratio	Experiment	iRapKO/Control	iRicKO/Control	iRicKO/iRapKO	Peptide array +
Q9Z277	LADDEGDS(ph)DSES(ph)VGQSR	0.3376	-0.6160	-1.4439	SILAC 2 / Biological 3			H/M down	+
Q4VAC9	RFSFS(ph)PSAVS(ph)PR	0.5315	-0.5325	-1.1757	SILAC 2 / Biological 3			H/M down	+
Q4VAC9	RFSFS(ph)PSAVS(ph)PR	0.5315	-0.5325	-1.1757	SILAC 2 / Biological 3			H/M down	+
Q6NZJ6	S(ph)FSKEVEER	0.4677	-0.3145	-1.2305	SILAC 1 / Biological 2			H/M down	+
Q62433	SRT(ph)AS(ph)GSSVTSLEGTR	0.8835	-0.6805	-1.1999	SILAC 1 / Biological 1			H/M down	+
Q62433	SRT(ph)AS(ph)GSSVTSLEGTR	0.8858	-0.6249	-1.1718	SILAC 1 / Biological 1			H/M down	+
Q6P5B5	T(ph)DGSIS(ph)GDRQPVTVADYISR	0.8709	-0.5895	-1.0106	SILAC 3 / Biological 4			H/M down	+
Q5NCR9	VLQKPSVFGS(ph)DS(ph)DDDETSVSESLQR	0.0459	-0.7991	-1.1115	SILAC 3 / Biological 4			H/M down	+
Q5NCR9	VLQKPSVFGS(ph)DS(ph)DDDETSVSESLQR	0.0459	-0.7991	-1.1115	SILAC 3 / Biological 4			H/M down	+
Q9R0L6	VTNAIS(ph)PES(ph)SPGVGR	0.6386	-0.0693	-1.2535	SILAC 2 / Biological 3			H/M down	+
Q52KI8	APQTSS(ph)PPPVR	-0.2101	-0.2293	-1.3849	SILAC 1 / Biological 1			H/M down	
Q52KI8	APQTSS(ph)PPPVR	-0.2101	-0.2063	-1.3849	SILAC 1 / Biological 1			H/M down	
Q8BTI8	AQSGTDS(ph)S(ph)PEHKIPAPR	-0.4874	-0.7701	-2.1544	SILAC 1 / Biological 1			H/M down	
Q8BTI8	AQSGTDS(ph)S(ph)PEHKIPAPR	-0.4874	-0.7699	-2.1475	SILAC 1 / Biological 1			H/M down	
Q60710	CDGS(ph)PRT(ph)PPS(ph)TPPATANLSADDDFQNTDLR	0.8144	-0.0497	-2.8896	SILAC 1 / Biological 1			H/M down	
Q60710	CDGS(ph)PRT(ph)PPS(ph)TPPATANLSADDDFQNTDLR	0.8144	-0.0497	-2.8896	SILAC 1 / Biological 1			H/M down	
Q60710	CDGS(ph)PRT(ph)PPS(ph)TPPATANLSADDDFQNTDLR	0.2683	-0.2574	-1.6594	SILAC 1 / Biological 1			H/M down	
Q60710	CDGS(ph)PRT(ph)PPS(ph)TPPATANLSADDDFQNTDLR	0.2683	-0.2574	-1.6594	SILAC 1 / Biological 1			H/M down	
Q60710	CDGS(ph)PRT(ph)PPS(ph)TPPATANLSADDDFQNTDLR	0.2683	-0.2540	-1.6594	SILAC 1 / Biological 1			H/M down	
Q60710	CDGS(ph)PRT(ph)PPS(ph)TPPATANLSADDDFQNTDLR	0.2683	-0.2540	-1.6594	SILAC 1 / Biological 1			H/M down	
P09450	DAT(ph)PPVSPINMEDQER	-0.3004	-0.3433	-1.4678	SILAC 1 / Biological 1			H/M down	
P09450	DAT(ph)PPVSPINMEDQER	-0.3961	-0.3449	-1.3638	SILAC 1 / Biological 1			H/M down	
Q9D6Z1	EEVAS(ph)EPEEAASPTTPK	0.2676	-0.7486	-1.8720	SILAC 1 / Biological 1			H/M down	
P14873	ESSPLYS(ph)PGFSDSTSAAK	0.5331	-0.6594	-1.0946	SILAC 1 / Biological 1			H/M down	
Q9WTQ5	GPSEAPQEAEAEEGAT(ph)SDGEK	0.9048	-0.8352	-1.4257	SILAC 1 / Biological 1			H/M down	
Q8K4Q0	ILDTSSLTQSAPAS(ph)PTNK	0.1450	-0.6053	-1.3381	SILAC 1 / Biological 1			H/M down	
Q8K4Q0	ILDTSSLTQSAPAS(ph)PTNK	0.2031	-0.5823	-1.3330	SILAC 1 / Biological 1			H/M down	
Q6PDH0	KNS(ph)ITEIS(ph)DNEDELLEYHR	-0.3771	-1.0306	-1.1194	SILAC 1 / Biological 1			H/M down	
Q6PDH0	KNS(ph)ITEIS(ph)DNEDELLEYHR	-0.3771	-1.0306	-1.1194	SILAC 1 / Biological 1			H/M down	
Q6PDH0	KNS(ph)ITEIS(ph)DNEDELLEYHR	-0.3771	-1.0301	-1.1055	SILAC 1 / Biological 1			H/M down	
Q6PDH0	KNS(ph)ITEIS(ph)DNEDELLEYHR	-0.3771	-1.0301	-1.1055	SILAC 1 / Biological 1			H/M down	
Q9QZQ1	LDSDRVS(ph)SAS(ph)STAER	0.8082	-0.0290	-1.0115	SILAC 1 / Biological 1			H/M down	
Q6A065	LGSLS(ph)ARS(ph)DSEATISR	0.4564	-0.1065	-0.9562	SILAC 1 / Biological 1			H/M down	
Q6A065	LGSLS(ph)ARS(ph)DSEATISR	0.4564	-0.1065	-0.9562	SILAC 1 / Biological 1			H/M down	
B1AWD9	LQS(ph)EPESIR	0.4338	-0.2622	-1.2262	SILAC 1 / Biological 1			H/M down	
B2RUB9	LSQSSYQDSESLS(ph)PPR	-0.3956	-0.9057	-0.9606	SILAC 1 / Biological 1			H/M down	
Q61687	LT(ph)LSDGES(ph)GEEKPTKPK	0.4866	-0.2294	-1.1957	SILAC 1 / Biological 1			H/M down	
Q61687	LT(ph)LSDGES(ph)GEEKPTKPK	0.4866	-0.2271	-1.1957	SILAC 1 / Biological 1			H/M down	
Q99K70	MSPNETLFLES(ph)TNK	0.8655	-0.5279	-1.2676	SILAC 1 / Biological 1			H/M down	
Q99K70	MSPNETLFLES(ph)TNK	0.8655	-0.5279	-1.2676	SILAC 1 / Biological 1			H/M down	
P52293	NVSS(ph)FPDDATSPLQENR	-0.2925	-1.0153	-1.8144	SILAC 1 / Biological 1			H/M down	
P52293	NVSS(ph)FPDDATSPLQENR	-0.2925	-1.0153	-1.8144	SILAC 1 / Biological 1			H/M down	
Q6PCY9	RGS(ph)LS(ph)PPSSAYER	0.5103	-0.0815	-1.0216	SILAC 1 / Biological 1			H/M down	
Q6PCY9	RGS(ph)LS(ph)PPSSAYER	0.5103	-0.0771	-1.0216	SILAC 1 / Biological 1			H/M down	
Q9D1F4	S(ph)SDEENGPPSS(ph)PDLDR	-0.5009	-0.8773	-1.0030	SILAC 1 / Biological 1			H/M down	
Q9D1F4	S(ph)SDEENGPPSS(ph)PDLDR	-0.5009	-0.8773	-1.0030	SILAC 1 / Biological 1			H/M down	
Q9D1F4	S(ph)SDEENGPPSS(ph)PDLDR	-0.2977	-0.8773	-1.0030	SILAC 1 / Biological 1			H/M down	
Q9D1F4	S(ph)SDEENGPPSS(ph)PDLDR	-0.2977	-0.8773	-1.0030	SILAC 1 / Biological 1			H/M down	
Q542W3	SAT(ph)PPPAEPASLPQEPPKPR	-0.1000	-0.7575	-0.9743	SILAC 1 / Biological 1			H/M down	
P14873	SLMS(ph)S(ph)PEDLTK	0.8546	-0.2856	-1.0431	SILAC 1 / Biological 1			H/M down	
P14873	SLMS(ph)S(ph)PEDLTK	0.8493	-0.3557	-1.0182	SILAC 1 / Biological 1			H/M down	
P14873	SLMS(ph)S(ph)PEDLTK	0.8620	-0.2847	-0.9965	SILAC 1 / Biological 1			H/M down	
P14873	SLMS(ph)S(ph)PEDLTK	0.8465	-0.3517	-0.9949	SILAC 1 / Biological 1			H/M down	
Q5BL07	SQS(ph)GEDESLNQPGPIK	0.3748	-0.6457	-1.7587	SILAC 1 / Biological 1			H/M down	
Q5BL07	SQS(ph)GEDESLNQPGPIK	0.3748	-0.6457	-1.7587	SILAC 1 / Biological 1			H/M down	
O08784	STSSS(ph)PAPTQTLPNSITQR	-0.7952	-1.0289	-1.2636	SILAC 1 / Biological 1			H/M down	
O08784	STSSS(ph)PAPTQTLPNSITQR	-0.7952	-0.9882	-1.2596	SILAC 1 / Biological 1			H/M down	
Q8BKC8	T(ph)ASNPKVENEDEPVR	0.7248	-0.0279	-1.1884	SILAC 1 / Biological 1			H/M down	
Q8BKC8	T(ph)ASNPKVENEDEPVR	0.7381	-0.0243	-1.1378	SILAC 1 / Biological 1			H/M down	
Q05CR3	T(ph)SSEDNLYLAVLR	0.0766	-0.7495	-0.9632	SILAC 1 / Biological 1			H/M down	
Q05CR3	T(ph)SSEDNLYLAVLR	0.0849	-0.7520	-0.9553	SILAC 1 / Biological 1			H/M down	
Q3TIY5	AAAQYSS(ph)QKS(ph)VEER	0.9027	-0.8661	-1.4583	SILAC 1 / Biological 2			H/M down	
Q3TIY5	AAAQYSS(ph)QKS(ph)VEER	0.9027	-0.8661	-1.4583	SILAC 1 / Biological 2			H/M down	
Q9QX47	ASES(ph)S(ph)SEEKDDYEIFVK	-0.1396	-0.8460	-1.1748	SILAC 1 / Biological 2			H/M down	
Q9QX47	ASESS(ph)S(ph)EEKDDYEIFVK	0.3509	0.0000	-1.3686	SILAC 1 / Biological 2			H/M down	
Q60710	CDGS(ph)PRTPPST(ph)PPATANLSADDDFQNT(ph)DLR	0.3428	-0.3921	-1.5813	SILAC 1 / Biological 2			H/M down	
Q80TC1	DAPTS(ph)PASVASSSSTPSSK	-0.2855	-0.7552	-1.7588	SILAC 1 / Biological 2			H/M down	
Q6A065	DNS(ph)IS(ph)PESDVDTASTISLVTGETER	0.5354	-0.9503	-1.5043	SILAC 1 / Biological 2			H/M down	
Q6A065	DNS(ph)IS(ph)PESDVDTASTISLVTGETER	0.5354	-0.9503	-1.5043	SILAC 1 / Biological 2			H/M down	
Q6A065	DNSIS(ph)PES(ph)DVDTASTISLVTGETER	0.3632	-1.0276	-1.1748	SILAC 1 / Biological 2			H/M down	
Q99JF8	ETNVS(ph)KEDT(ph)DQEEKASNEDVTK	0.5360	-0.9662	-1.0624	SILAC 1 / Biological 2			H/M down	
Q8VDN3	FKAEAPLPS(ph)PK	-0.1506	-0.7536	-1.4217	SILAC 1 / Biological 2			H/M down	
Q9Z0U1	GSYGS(ph)DPEEEEYRQQLAAHSK	-0.2531	-0.4979	-1.4533	SILAC 1 / Biological 2			H/M down	
P52927	KPAQETEETSSQES(ph)AEED	0.9362	-0.5917	-1.4630	SILAC 1 / Biological 2			H/M down	
Q6A065	LGSLS(ph)ARS(ph)DSEATISR	0.9362	-0.0539	-1.0173	SILAC 1 / Biological 2			H/M down	
A6PW47	LLSSSDDDANILSS(ph)PTDR	-0.2127	-0.4201	-3.1923	SILAC 1 / Biological 2			H/M down	
Q8BRB8	LPSGS(ph)GPASPTT(ph)GSAVDIR	0.2108	-0.8020	-1.0132	SILAC 1 / Biological 2			H/M down	
Q8BRB8	LPSGSGPAS(ph)PTTGSAVDIR	0.1674	-0.9454	-1.0914	SILAC 1 / Biological 2			H/M down	
B1AR17	MEAEVDSPS(ph)PAPS(ph)LGER	-0.1207	-0.7786	-1.0839	SILAC 1 / Biological 2			H/M down	
B1AR17	MEAEVDSPS(ph)PAPS(ph)LGER	-0.1207	-0.7786	-1.0839	SILAC 1 / Biological 2			H/M down	
Q9D4H9	NSADDEELT(ph)NDS(ph)LTLSQSK	0.1219	-0.5865	-1.2610	SILAC 1 / Biological 2			H/M down	
Q9D4H9	NSADDEELT(ph)NDS(ph)LTLSQSK	0.1130	-0.6586	-1.1510	SILAC 1 / Biological 2			H/M down	
Q9ESC8	NSYSNSQAPS(ph)PGLGSK	0.0674	-0.0875	-4.0845	SILAC 1 / Biological 2			H/M down	
O35130	RFS(ph)VQEQDWET(ph)TPPKK	-0.5971	-0.8929	-1.0085	SILAC 1 / Biological 2			H/M down	
Q9Z277	RQS(ph)LELQK	0.7641	-0.6600	-1.2033	SILAC 1 / Biological 2			H/M down	
Q8BTI8	S(ph)GTPPRPGS(ph)VTNMQADECTATPQR	-0.4662	-0.9178	-0.9877	SILAC 1 / Biological 2			H/M down	
P97434	S(ph)KSVIEQVSWDN	0.2772	-1.0072	-1.0578	SILAC 1 / Biological 2			H/M down	
Q8R1A4	S(ph)LSNSNPDISGTPTSPDDEVR	0.0259	-0.9572	-1.1305	SILAC 1 / Biological 2			H/M down	
Q7TPV4	S(ph)PSLLQSGVK	-0.2887	0.0952	-4.3543	SILAC 1 / Biological 2			H/M down	
Q9QXS1	S(ph)SSVGSS(ph)SSYPISSAGPR	0.2635	-0.8560	-1.0019	SILAC 1 / Biological 2			H/M down	
Q6AW69	S(ph)YGSQPNS(ph)PTSEDLAK	0.6043	-0.9223	-1.5791	SILAC 1 / Biological 2			H/M down	
Q8BRB8	SSEVVLS(ph)GDDEDYQR	0.2614	-0.9738	-1.1911	SILAC 1 / Biological 2			H/M down	
Q5SNZ0	SSS(ph)QENLLDEVMK	-0.0781	-0.7377	-2.1205	SILAC 1 / Biological 2			H/M down	
Q5FWX6	SVFPATVSAVLPAPS(ph)PCSS(ph)PK	0.7185	-0.6508	-1.4478	SILAC 1 / Biological 2			H/M down	
Q5FWX6	SVFPATVSAVLPAPS(ph)PCSS(ph)PK	0.7185	-0.6508	-1.4478	SILAC 1 / Biological 2			H/M down	
Q03141	TPVAST(ph)HS(ph)ISSATTPDR	0.3844	-0.3817	-1.0745	SILAC 1 / Biological 2			H/M down	
Q03141	TPVAST(ph)HS(ph)ISSATTPDR	0.3844	-0.3817	-1.0745	SILAC 1 / Biological 2			H/M down	
Q9CZJ2	TQESCGIAPLT(ph)PS(ph)QSPKPEAR	0.8573	-0.0864	-0.9753	SILAC 1 / Biological 2			H/M down	
Q8K3Z9	TSS(ph)VS(ph)SLASACTGGIPSSSR	-0.4085	-0.7313	-3.0363	SILAC 1 / Biological 2			H/M down	
Q8K3Z9	TSS(ph)VS(ph)SLASACTGGIPSSSR	-0.7027	-0.8425	-1.9931	SILAC 1 / Biological 2			H/M down	
Q9WV60	TTS(ph)FAESCKPVQQPSAFGSMK	0.9070	-0.2587	-1.0081	SILAC 1 / Biological 2			H/M down	
P27546	VGS(ph)LDNVGHLPAGGAVK	-0.2454	-0.8167	-1.2256	SILAC 1 / Biological 2			H/M down	
Q62130	YVSGS(ph)S(ph)PDLVTR	0.5118	-1.0071	-1.3076	SILAC 1 / Biological 2			H/M down	
Q62130	YVSGS(ph)S(ph)PDLVTR	0.5118	-1.0071	-1.3076	SILAC 1 / Biological 2			H/M down	
Q80ZA1	AFQALIKEES(ph)PNC	0.6633	-0.4850	-1.1726	SILAC 2 / Biological 3			H/M down	
Q99NH0	APS(ph)PAPSSVPLGSEKPSSVSQDR	0.4500	-0.1740	-1.0247	SILAC 2 / Biological 3			H/M down	
Q80YR5	APTAALSPEPQDS(ph)KEDVKK	0.4276	-0.8243	-1.5100	SILAC 2 / Biological 3			H/M down	
Q7M739	DAVQAPLNVS(ph)LNEEGK	0.3359	-0.6166	-1.1558	SILAC 2 / Biological 3			H/M down	
Q8BVR6	DDS(ph)GAEDNVDTHQQQAENSTVPTADSR	0.8316	-0.3579	-1.6160	SILAC 2 / Biological 3			H/M down	
Q8C8U0	DFAARS(ph)PSAS(ph)ITDEDSNV	0.1315	-0.4396	-1.2743	SILAC 2 / Biological 3			H/M down	
Q8C8U0	DFAARS(ph)PSAS(ph)ITDEDSNV	0.3432	-0.4396	-1.2743	SILAC 2 / Biological 3			H/M down	
O35295	DSLGDFIEHYAQLGPS(ph)SPEQLAAGAEEGGGPR	0.2029	-0.8362	-1.2068	SILAC 2 / Biological 3			H/M down	
O35295	DSLGDFIEHYAQLGPS(ph)SPEQLAAGAEEGGGPR	0.2029	-0.8362	-1.2068	SILAC 2 / Biological 3			H/M down	
P48755	DYGEPGPSSGAGS(ph)PYGRPAQPPQAQAQTAQQQK	0.4366	-0.8154	-1.5935	SILAC 2 / Biological 3			H/M down	
P48755	DYGEPGPSSGAGSPY(ph)GRPAQPPQAQAQTAQQQK	0.6020	-0.9517	-1.6794	SILAC 2 / Biological 3			H/M down	

Uniprot	Modified Sequence	M/L Ratio	H/L Ratio	H/M Ratio	Experiment	iRapKO/Control	iRicKO/Control	iRicKO/iRapKO	Peptide array +
Q61687	EQLAVNQVNS(ph)ES(ph)DS(ph)DSEESKKPR	0.6094	-0.6163	-1.2935	SILAC 2 / Biological 3			H/M down	
Q61687	EQLAVNQVNS(ph)ES(ph)DS(ph)DSEESKKPR	0.6094	-0.6163	-1.2935	SILAC 2 / Biological 3			H/M down	
Q61687	EQLAVNQVNS(ph)ES(ph)DS(ph)DSEESKKPR	0.6094	-0.6163	-1.2935	SILAC 2 / Biological 3			H/M down	
Q61687	EQLAVNQVNS(ph)ES(ph)DS(ph)DSEESKKPR	0.5994	-0.3931	-1.2779	SILAC 2 / Biological 3			H/M down	
Q99P72	ESETFSDS(ph)S(ph)PIEIIDEFPTFVSAK	0.4228	-0.7140	-1.1453	SILAC 2 / Biological 3			H/M down	
Q99JF8	ETNVSKEDTDQEEKAS(ph)NEDVTK	0.7322	0.3314	-1.0696	SILAC 2 / Biological 3			H/M down	
Q8BIG4	EVMESAVGTSSGSGQSEES(ph)PR	0.1691	-0.7596	-1.1289	SILAC 2 / Biological 3			H/M down	
Q8VDN3	FKAEAPLPS(ph)PK	0.4240	-0.7107	-1.1894	SILAC 2 / Biological 3			H/M down	
Q68FE6	FSTYSQS(ph)PPDTPSLR	0.4765	-0.2438	-1.0983	SILAC 2 / Biological 3			H/M down	
Q5F2E7	GADNDGS(ph)GSESGYTTPK	0.1289	-0.9057	-1.0330	SILAC 2 / Biological 3			H/M down	
Q5F2E7	GADNDGSGSES(ph)GY(ph)TTPK	0.1088	-1.0446	-1.3541	SILAC 2 / Biological 3			H/M down	
Q3UMU9	GGSSEELHDS(ph)PRDNSDPAKPGNER	0.3058	-0.9152	-1.3492	SILAC 2 / Biological 3			H/M down	
Q3UJN1	GLLY(ph)DSS(ph)EEDEERPAR	-0.2021	-0.6859	-0.9569	SILAC 2 / Biological 3			H/M down	
Q91YE7	GLVAAYS(ph)GDSDNEEELVER	0.4218	-0.5003	-1.4274	SILAC 2 / Biological 3			H/M down	
Q91YE7	GLVAAYSGDS(ph)DNEEELVER	0.5335	-0.5961	-1.6938	SILAC 2 / Biological 3			H/M down	
B2RUB9	GPPDFSSDEEREPT(ph)PVLGSGASVGR	0.0582	-0.7263	-1.1472	SILAC 2 / Biological 3			H/M down	
Q8VHR5	GRLT(ph)PS(ph)PDIIVLSDNEAS(ph)S(ph)PR	-0.0766	-0.3858	-1.1964	SILAC 2 / Biological 3			H/M down	
Q09XV5	HFSTLKDDDLVEFS(ph)DLES(ph)EDDERPR	0.6386	-0.6933	-1.6141	SILAC 2 / Biological 3			H/M down	
Q09XV5	HFSTLKDDDLVEFS(ph)DLES(ph)EDDERPR	0.6386	-0.6933	-1.6141	SILAC 2 / Biological 3			H/M down	
P47713	HIVSNDSSDS(ph)DDEAQGPK	0.5470	-0.3893	-1.1478	SILAC 2 / Biological 3			H/M down	
Q61687	IKPVTENLVLPS(ph)HTGFCQSS(ph)GDEALSK	0.3877	-0.3537	-0.9845	SILAC 2 / Biological 3			H/M down	
Q61687	IKPVTENLVLPSHT(ph)GFCQSS(ph)GDEALSK	0.1267	-0.6241	-1.2778	SILAC 2 / Biological 3			H/M down	
Q61687	IKPVTENLVLPSHT(ph)GFCQSS(ph)GDEALSK	0.3648	-0.6241	-0.9845	SILAC 2 / Biological 3			H/M down	
P17095	KLEKEEEEGISQES(ph)S(ph)EEEQ	0.5608	-0.4363	-1.0222	SILAC 2 / Biological 3			H/M down	
P17095	KLEKEEEEGISQES(ph)S(ph)EEEQ	0.5267	-0.4336	-1.0201	SILAC 2 / Biological 3			H/M down	
Q6PDH0	KLS(ph)SGDLR	0.7047	-0.5464	-1.4214	SILAC 2 / Biological 3			H/M down	
Q6PDH0	KLS(ph)SGDLR	0.7047	-0.5464	-1.4214	SILAC 2 / Biological 3			H/M down	
Q6PHZ2	KPDGVKES(ph)TESSNTTIEDEDVK	0.5573	-0.0201	-1.4461	SILAC 2 / Biological 3			H/M down	
A2AR02	KSPS(ph)S(ph)ES(ph)EAENVDAQPQSTVRPEEIPPIPENR	0.2670	-0.4459	-1.0226	SILAC 2 / Biological 3			H/M down	
A2AR02	KSPS(ph)S(ph)ES(ph)EAENVDAQPQSTVRPEEIPPIPENR	0.2670	-0.4459	-1.0226	SILAC 2 / Biological 3			H/M down	
A2AR02	KSPS(ph)S(ph)ES(ph)EAENVDAQPQSTVRPEEIPPIPENR	0.2670	-0.4459	-1.0226	SILAC 2 / Biological 3			H/M down	
P39447	KVQIPVS(ph)HPDPEPVSDNEDDSY(ph)DEEVHDPR	0.2752	-0.5377	-1.2179	SILAC 2 / Biological 3			H/M down	
Q9WU42	LEPVS(ph)PPS(ph)PPHADPELELAPSR	0.5296	-0.4014	-1.1106	SILAC 2 / Biological 3			H/M down	
Q9WU42	LEPVS(ph)PPS(ph)PPHADPELELAPSR	0.5296	-0.4014	-1.1106	SILAC 2 / Biological 3			H/M down	
Q80XU3	LKATVT(ph)PSPVKGK	0.4393	-0.3378	-1.3409	SILAC 2 / Biological 3			H/M down	
Q9Z0R4	LPEEPS(ph)SEDEQQPEK	0.6080	-0.5212	-1.3377	SILAC 2 / Biological 3			H/M down	
Q8BRB8	LPSGSGPAS(ph)PTT(ph)GSAVDIR	0.2599	-0.5176	-1.0139	SILAC 2 / Biological 3			H/M down	
Q60875	LQDSSDPDTGSEEEVS(ph)S(ph)RLSPPHSPR	0.7497	-0.7299	-1.5067	SILAC 2 / Biological 3			H/M down	
Q60875	LQDSSDPDTGSEEEVS(ph)S(ph)RLSPPHSPR	0.6235	-0.7112	-1.4001	SILAC 2 / Biological 3			H/M down	
Q8K2Z4	LQPLTSVDS(ph)DNDFVTPKPR	0.3692	-0.8084	-1.2570	SILAC 2 / Biological 3			H/M down	
Q61687	LT(ph)LSDGES(ph)GEEKPTKPK	0.3653	-0.8585	-0.9725	SILAC 2 / Biological 3			H/M down	
Q80U72	MQS(ph)PELPAPER	0.4371	-0.2664	-1.0146	SILAC 2 / Biological 3			H/M down	
Q91YM2	NEEENIY(ph)SVPHDSTQGK	0.3216	-0.5601	-1.0594	SILAC 2 / Biological 3			H/M down	
Q9ESL4	NFS(ph)SLNLSSR	0.8456	-0.4782	-1.1136	SILAC 2 / Biological 3			H/M down	
Q5U3K5	NISLS(ph)S(ph)EEEAEGLAGHPR	-0.0108	-0.6866	-1.0437	SILAC 2 / Biological 3			H/M down	
Q69ZN8	NLETLPS(ph)FS(ph)SDEEDSVAK	0.6522	-0.8574	-1.7044	SILAC 2 / Biological 3			H/M down	
Q69ZN8	NLETLPSFS(ph)S(ph)DEEDSVAK	0.6051	-0.5508	-1.5111	SILAC 2 / Biological 3			H/M down	
Q69ZN8	NLETLPSFS(ph)S(ph)DEEDSVAK	0.3479	-0.7041	-1.0691	SILAC 2 / Biological 3			H/M down	
Q3UYI5	NREPPPPGS(ph)PPAS(ph)PGPQS(ph)PSTK	0.7283	-0.0503	-1.6469	SILAC 2 / Biological 3			H/M down	
Q3UYI5	NREPPPPGS(ph)PPAS(ph)PGPQS(ph)PSTK	0.7283	-0.0503	-1.6469	SILAC 2 / Biological 3			H/M down	
Q3UYI5	NREPPPPGS(ph)PPAS(ph)PGPQS(ph)PSTK	0.7283	-0.0503	-1.6469	SILAC 2 / Biological 3			H/M down	
Q9ESC8	NSYSNSQAPS(ph)PGLGSK	0.2195	-0.4552	-1.2002	SILAC 2 / Biological 3			H/M down	
Q09XV5	NTSS(ph)DNS(ph)DVEVMPAQSPR	0.9337	0.1076	-4.9241	SILAC 2 / Biological 3			H/M down	
Q09XV5	NTSS(ph)DNS(ph)DVEVMPAQSPR	0.7894	-0.2662	-3.2383	SILAC 2 / Biological 3			H/M down	
A2AU91	QSEQPVKPVGPVMDDAAPEDSAS(ph)PVSQQR	0.7791	-0.6718	-1.3705	SILAC 2 / Biological 3			H/M down	
Q99JF8	QSNASSDVEVEEKET(ph)NVSKEDTDQEEK	0.4573	-0.4125	-1.0133	SILAC 2 / Biological 3			H/M down	
Q3U4X8	QSQIQNQQSS(ph)DLDSDVEDY(ph)	0.7489	-0.3838	-1.2494	SILAC 2 / Biological 3			H/M down	
Q9Z277	RCDVQEDS(ph)EGS(ph)ETDDNKDSTPFEDNEVQDEFLEK	0.4696	-0.5139	-1.2327	SILAC 2 / Biological 3			H/M down	
Q9Z277	RCDVQEDS(ph)EGS(ph)ETDDNKDSTPFEDNEVQDEFLEK	0.7072	-0.6632	-1.1760	SILAC 2 / Biological 3			H/M down	
P28028	RDS(ph)SDDWEIPDGQITVGQR	-0.0380	-0.9865	-1.0773	SILAC 2 / Biological 3			H/M down	
Q6ZPE9	RETVVESQSSQS(ph)PS(ph)PK	-0.1122	-1.0184	-1.3654	SILAC 2 / Biological 3			H/M down	
Q6PCY9	RGS(ph)LS(ph)PPSSAYER	0.3043	-1.0013	-1.2862	SILAC 2 / Biological 3			H/M down	
Q6PCY9	RGS(ph)LS(ph)PPSSAYER	0.0412	-1.0013	-1.2819	SILAC 2 / Biological 3			H/M down	
Q80U72	RNEAFVCKPDPSPPS(ph)PSEEEK	0.4474	-0.4287	-1.1194	SILAC 2 / Biological 3			H/M down	
Q80U72	RNEAFVCKPDPSPPSPS(ph)EEEK	0.2391	-0.5146	-1.5787	SILAC 2 / Biological 3			H/M down	
Q9Z277	RQS(ph)LELQK	0.6631	-0.5227	-1.0869	SILAC 2 / Biological 3			H/M down	
Q8R457	RRSS(ph)SPFLS(ph)K	0.7125	-0.3966	-1.2696	SILAC 2 / Biological 3			H/M down	
Q6PDH0	RTRS(ph)PS(ph)PTLGESLAPR	0.6274	0.0228	-1.0682	SILAC 2 / Biological 3			H/M down	
O08582	S(ph)RSPVDSPVPASMFAPEPS(ph)SPGAAR	0.6610	-0.5468	-1.2457	SILAC 2 / Biological 3			H/M down	
B1AQD9	SAEPTREPGAEAES(ph)GS(ph)ES(ph)EPEPGPGPR	0.4191	-0.3314	-1.0417	SILAC 2 / Biological 3			H/M down	
Q3TUQ7	SGS(ph)ISNYR	0.1113	-1.0273	-1.3826	SILAC 2 / Biological 3			H/M down	
Q9R0L6	SNRPVS(ph)ADGNYRPLAK	0.7239	-0.7097	-2.1771	SILAC 2 / Biological 3			H/M down	
P14873	SPSLS(ph)PSPPS(ph)PIEK	0.6406	-0.0938	-1.0575	SILAC 2 / Biological 3			H/M down	
Q80YV2	SQDATVSPGSEQSEKS(ph)PGPIVSR	0.9017	0.6886	-1.1774	SILAC 2 / Biological 3			H/M down	
Q8BRB8	SSEVVLS(ph)GDDEDYQR	-0.0352	-0.9050	-1.0952	SILAC 2 / Biological 3			H/M down	
Q5FWX6	SVFPATVSAVLPAPS(ph)PCSS(ph)PK	0.9097	-0.3207	-1.6007	SILAC 2 / Biological 3			H/M down	
Q8VCV2	SVTSNQS(ph)DGTQESCESPDVLDR	0.0838	-0.7480	-0.9548	SILAC 2 / Biological 3			H/M down	
Q8VCV2	SVTSNQSDGT(ph)QESCESPDVLDR	-0.1221	-0.6135	-1.3450	SILAC 2 / Biological 3			H/M down	
A2AI52	SYS(ph)SPDITQALQEEEKR	0.8350	-0.0952	-1.1700	SILAC 2 / Biological 3			H/M down	
Q09XV5	T(ph)ASPS(ph)PLRPDAPVEK	0.8484	-1.0180	-2.1379	SILAC 2 / Biological 3			H/M down	
Q09XV5	T(ph)ASPS(ph)PLRPDAPVEK	0.8124	0.0393	-1.1557	SILAC 2 / Biological 3			H/M down	
A2AQB0	T(ph)EQIVNEDSQAAALAPNPK	0.8783	0.5198	-0.9786	SILAC 2 / Biological 3			H/M down	
Q9WV60	T(ph)TSFAESCKPVQQPSAFGSMK	0.7282	-0.1456	-1.4777	SILAC 2 / Biological 3			H/M down	
Q8BKC8	TAS(ph)NPKVENEDEPVR	0.2041	-0.7646	-1.0213	SILAC 2 / Biological 3			H/M down	
B2RWS6	TDGKEEEEQPSTSATQSS(ph)PAPGQSK	-0.2830	-0.9211	-1.3984	SILAC 2 / Biological 3			H/M down	
Q6PDG5	TLTDEVNSPDS(ph)DRR	0.0571	-0.8828	-1.3020	SILAC 2 / Biological 3			H/M down	
Q9CZJ2	TQESCGIAPLT(ph)PS(ph)QSPKPEAR	0.9037	-0.4641	-1.7637	SILAC 2 / Biological 3			H/M down	
Q9CZJ2	TQESCGIAPLT(ph)PS(ph)QSPKPEAR	0.8355	-0.5391	-1.7138	SILAC 2 / Biological 3			H/M down	
Q9CZJ2	TQESCGIAPLT(ph)PSQS(ph)PKPEAR	0.7672	-0.6140	-1.6748	SILAC 2 / Biological 3			H/M down	
P97792	TQYNQVPSEDFERAPQS(ph)PTLAPAK	0.3985	-0.3406	-1.1229	SILAC 2 / Biological 3			H/M down	
Q8BRB8	TVIRLPSGS(ph)GPASPT(ph)TGSAVDIR	0.1669	-0.5746	-0.9574	SILAC 2 / Biological 3			H/M down	
P27546	VGS(ph)LDNVGHLPAGGAVK	0.2924	-0.5135	-0.9551	SILAC 2 / Biological 3			H/M down	
Q3UHJ0	VGSLTPPS(ph)S(ph)PK	0.5382	-0.7264	-1.2316	SILAC 2 / Biological 3			H/M down	
P39447	VQIPVSHPDPEPVS(ph)DNEDDSY(ph)DEEVHDPR	0.2752	-0.4171	-1.0022	SILAC 2 / Biological 3			H/M down	
Q6DFZ1	ADAPDAGAQS(ph)DSELPSYHQNDVSLDR	0.4460	-0.5670	-0.9628	SILAC 3 / Biological 4			H/M down	
Q8BGU5	AST(ph)IFLSKS(ph)QTDVR	0.5506	-0.3764	-1.3324	SILAC 3 / Biological 4			H/M down	
Q8BGU5	AST(ph)IFLSKS(ph)QTDVR	0.4072	-0.5340	-1.1515	SILAC 3 / Biological 4			H/M down	
Q68FG5	ATAPQTQHVS(ph)PMR	0.2184	-0.9706	-1.1718	SILAC 3 / Biological 4			H/M down	
A2AFQ0	DGGS(ph)GNS(ph)TIIVSR	0.4339	-0.6220	-0.9513	SILAC 3 / Biological 4			H/M down	
Q3UMF0	DPDSALGIS(ph)DGETS(ph)PSSK	0.5374	-0.6465	-1.0447	SILAC 3 / Biological 4			H/M down	
O54988	DSGS(ph)VSLQETR	0.8746	-0.2921	-1.4181	SILAC 3 / Biological 4			H/M down	
Q80TC1	ESSTNNSVS(ph)PSESLR	-0.0012	-1.0625	-1.0455	SILAC 3 / Biological 4			H/M down	
Q6ZPE9	ETVVESQS(ph)SQSPS(ph)PKR	0.8306	-0.9567	-1.6318	SILAC 3 / Biological 4			H/M down	
Q68FE6	FSTYS(ph)QSPPDTPSLR	0.2836	-0.7085	-1.1946	SILAC 3 / Biological 4			H/M down	
Q5F2E7	GADNDGSGSES(ph)GY(ph)TTPK	0.8564	-0.5743	-1.6091	SILAC 3 / Biological 4			H/M down	
Q5F2E7	GADNDGSGSES(ph)GY(ph)TTPK	0.8564	-0.5743	-1.6091	SILAC 3 / Biological 4			H/M down	
Q9QXS1	GYYSPYSVSGSGS(ph)TAGS(ph)R	0.6071	-0.3826	-1.1254	SILAC 3 / Biological 4			H/M down	
Q5U4B1	IINDS(ph)DS(ph)ESEETVQVK	0.8151	-0.1469	-0.9953	SILAC 3 / Biological 4			H/M down	
Q5U4B1	IINDS(ph)DS(ph)ESEETVQVK	0.8151	-0.1074	-0.9953	SILAC 3 / Biological 4			H/M down	
O55131	ILEQQNSSRT(ph)LEK	0.8900	-0.3537	-1.2729	SILAC 3 / Biological 4			H/M down	
Q3UMF0	ITVEKDPDSALGIS(ph)DGET(ph)SPSSK	0.6519	-0.6094	-1.1616	SILAC 3 / Biological 4			H/M down	
Q6PDH0	KNS(ph)ITEIS(ph)DNEDELLEYHR	0.6027	-0.2695	-0.9950	SILAC 3 / Biological 4			H/M down	
Q6PDH0	KNS(ph)ITEIS(ph)DNEDELLEYHR	0.6027	-0.2695	-0.9950	SILAC 3 / Biological 4			H/M down	
Q69ZN8	KQETAAVCGET(ph)DEEAGES(ph)GGEGIFR	0.7459	-0.2639	-1.0454	SILAC 3 / Biological 4			H/M down	
Q69ZN8	KQETAAVCGET(ph)DEEAGES(ph)GGEGIFR	0.7459	-0.2639	-1.0454	SILAC 3 / Biological 4			H/M down	

Uniprot	Modified Sequence	M/L Ratio	H/L Ratio	H/M Ratio	Experiment	iRapKO/Control	iRicKO/Control	iRicKO/iRapKO	Peptide array +
Q9ESX5	KRDS(ph)ESES(ph)DETPTVPQLK	0.9246	-0.3753	-1.3203	SILAC 3 / Biological 4			H/M down	
Q62318	LDLDLTSDS(ph)QPPVFK	0.5348	-0.3750	-1.0766	SILAC 3 / Biological 4			H/M down	
Q3TIY5	LEIS(ph)PDSS(ph)PER	0.2451	-0.7004	-1.1380	SILAC 3 / Biological 4			H/M down	
Q6A065	LGS(ph)LSARS(ph)DSEATISR	0.0982	-0.9877	-1.3055	SILAC 3 / Biological 4			H/M down	
Q6A065	LGS(ph)LSARS(ph)DSEATISR	0.1489	-0.9374	-1.2488	SILAC 3 / Biological 4			H/M down	
Q6A065	LGSLS(ph)ARS(ph)DSEATISR	0.0474	-1.0379	-1.3622	SILAC 3 / Biological 4			H/M down	
Q5FWX6	LS(ph)NGS(ph)FSAPSLTNSR	0.8420	-0.0689	-1.1607	SILAC 3 / Biological 4			H/M down	
Q5FWX6	LS(ph)NGS(ph)FSAPSLTNSR	0.8420	-0.0689	-1.1607	SILAC 3 / Biological 4			H/M down	
Q8CI59	LVDS(ph)DGS(ph)LAEVPK	0.3618	-1.0629	-1.1895	SILAC 3 / Biological 4			H/M down	
Q8CI59	LVDS(ph)DGS(ph)LAEVPK	0.3618	-1.0629	-1.1895	SILAC 3 / Biological 4			H/M down	
Q99K70	MSPNETLFLEST(ph)NK	0.7960	0.5541	-0.9667	SILAC 3 / Biological 4			H/M down	
Q91YM2	NEEENIY(ph)SVPHDSTQGK	0.8471	-0.3114	-1.1129	SILAC 3 / Biological 4			H/M down	
Q9Z277	RQS(ph)LELQK	0.6889	-0.3910	-1.2086	SILAC 3 / Biological 4			H/M down	
Q9Z277	S(ph)DGACDSPSSDKENSSQMAQDLQK	0.8269	-0.0862	-1.0550	SILAC 3 / Biological 4			H/M down	
P97434	S(ph)KSVIEQVSWDN	0.4714	-0.8209	-1.3217	SILAC 3 / Biological 4			H/M down	
Q8BTI8	S(ph)RS(ph)PLAIR	0.7528	-0.5906	-1.4854	SILAC 3 / Biological 4			H/M down	
Q8BTI8	S(ph)RT(ph)SPAPWK	0.7389	-0.6556	-1.6739	SILAC 3 / Biological 4			H/M down	
Q9QXS1	S(ph)SSVGSS(ph)SSYPISSAGPR	0.5119	-0.6021	-1.0895	SILAC 3 / Biological 4			H/M down	
Q9QXS1	S(ph)SSVGSSSSYPISSAGPR	0.4021	-0.8457	-1.3503	SILAC 3 / Biological 4			H/M down	
O08784	S(ph)TSSSPAPT(ph)QTLPNSITQR	0.7775	-0.4561	-1.5303	SILAC 3 / Biological 4			H/M down	
A2AI52	S(ph)YSSPDITQALQEEEKR	0.7293	-0.9544	-1.6509	SILAC 3 / Biological 4			H/M down	
Q99J21	SELQAYIEQCQDS(ph)PTSGK	0.8071	-0.0080	-1.1654	SILAC 3 / Biological 4			H/M down	
Q3TUQ7	SIDDEITEAKS(ph)GTAT(ph)PQR	0.9305	-0.6759	-1.6230	SILAC 3 / Biological 4			H/M down	
Q3TUQ7	SIDDEITEAKS(ph)GTAT(ph)PQR	0.9305	-0.6759	-1.6230	SILAC 3 / Biological 4			H/M down	
P97434	SKS(ph)VIEQVSWDN	0.3398	-0.7487	-1.3073	SILAC 3 / Biological 4			H/M down	
Q8C8U0	SPS(ph)AS(ph)ITDEDSNV	0.4242	-0.9432	-1.5470	SILAC 3 / Biological 4			H/M down	
Q9QXS1	SS(ph)SVGS(ph)SSSYPISSAGPR	0.4823	-0.6061	-1.2009	SILAC 3 / Biological 4			H/M down	
Q8BRB8	SSEVVLS(ph)GDDEDYQR	0.6827	-0.6365	-1.2719	SILAC 3 / Biological 4			H/M down	
Q6AW69	SYGS(ph)QPNS(ph)PTSEDLAK	0.6409	-0.5516	-1.1827	SILAC 3 / Biological 4			H/M down	
Q62433	TAS(ph)GSSVTS(ph)LEGTR	0.7120	-1.0084	-1.9414	SILAC 3 / Biological 4			H/M down	
B2RWS6	TDGKEEEEQPSTSATQSS(ph)PAPGQSK	0.4212	-0.9661	-1.0922	SILAC 3 / Biological 4			H/M down	
Q6P9R2	TEDGGWEWS(ph)DDEFDEESEEGR	0.5599	-0.4393	-1.2225	SILAC 3 / Biological 4			H/M down	
A2AQB0	TEQIVNEDS(ph)QAAALAPNPK	0.7995	-0.9547	-1.6564	SILAC 3 / Biological 4			H/M down	
Q9CZJ2	TQESCGIAPLT(ph)PS(ph)QSPKPEAR	0.7420	-0.0357	-0.9539	SILAC 3 / Biological 4			H/M down	
Q9CZJ2	TQESCGIAPLT(ph)PSQS(ph)PKPEAR	0.7882	-0.0577	-1.4640	SILAC 3 / Biological 4			H/M down	
Q6PDH0	TRS(ph)PS(ph)PTLGESLAPR	0.4462	-0.2089	-1.0012	SILAC 3 / Biological 4			H/M down	
Q05CR3	TSS(ph)EDNLYLAVLR	0.7286	-0.3130	-1.2724	SILAC 3 / Biological 4			H/M down	
Q4JIM5	TVS(ph)TSS(ph)QPEENVDR	0.4427	-0.4526	-1.2713	SILAC 3 / Biological 4			H/M down	
Q3UYI5	VIEPPAAS(ph)CPSS(ph)PR	0.7197	-0.8388	-1.3700	SILAC 3 / Biological 4			H/M down	
Q3UYI5	VIEPPAASCPS(ph)S(ph)PR	0.5459	-0.7952	-1.2669	SILAC 3 / Biological 4			H/M down	
Q3UYI5	VIEPPAASCPS(ph)S(ph)PR	0.3721	-0.7517	-1.1638	SILAC 3 / Biological 4			H/M down	
A2AAE1	VVFENEQDNNS(ph)LTK	0.6134	-0.4190	-1.3756	SILAC 3 / Biological 4			H/M down	
Q62130	YVSGS(ph)S(ph)PDLVTR	0.7887	-0.1872	-1.2748	SILAC 3 / Biological 4			H/M down	
Q62130	YVSGS(ph)S(ph)PDLVTR	0.7887	-0.1872	-1.2748	SILAC 3 / Biological 4			H/M down	
P09411	ALES(ph)PERPFLAILGGAK	-0.7927	-0.1574	0.8530	SILAC 1 / Biological 2			H/M up	+
P09411	ALES(ph)PERPFLAILGGAK	-0.6877	-0.0885	0.8785	SILAC 3 / Biological 4			H/M up	+
Q05A74	DKKS(ph)PLIESTANMENNQPQK	-0.3481	0.1582	1.3849	SILAC 1 / Biological 1			H/M up	+
Q05A74	DKKS(ph)PLIESTANMENNQPQK	-0.3481	0.1582	1.3849	SILAC 1 / Biological 1			H/M up	+
O35130	RFS(ph)VQEQDWETTPPK	-0.6077	0.2909	0.9290	SILAC 2 / Biological 3			H/M up	+
O35130	RFS(ph)VQEQDWETTPPK	-0.8969	0.2998	1.2588	SILAC 3 / Biological 4			H/M up	+
Q8BTI8	RSS(ph)SELS(ph)PEVVEK	-0.3613	0.5320	1.0711	SILAC 2 / Biological 3			H/M up	+
Q8BTI8	RSS(ph)SELS(ph)PEVVEK	-0.4603	0.5459	1.1010	SILAC 2 / Biological 3			H/M up	+
Q9JIX8	SQS(ph)PS(ph)PPPLPEDLEK	-0.7266	0.2373	0.7776	SILAC 1 / Biological 1			H/M up	+
Q9JIX8	SQS(ph)PS(ph)PPPLPEDLEK	-0.7414	0.2340	0.8010	SILAC 1 / Biological 1			H/M up	+
Q6P5B5	T(ph)DGSIS(ph)GDRQPVTVADYISR	-0.4448	0.2857	0.7638	SILAC 2 / Biological 3			H/M up	+
P43276	(ac)SETAPAETAAPAPVEKS(ph)PAK	-0.7883	-0.0773	0.8576	SILAC 1 / Biological 1			H/M up	
Q80ZA1	ALPTCTS(ph)ASPPQK	-0.6361	0.5939	2.4801	SILAC 1 / Biological 1			H/M up	
Q80ZA1	ALPTCTS(ph)ASPPQK	-0.6361	0.5914	2.4868	SILAC 1 / Biological 1			H/M up	
Q8R1Q8	DFQEYVEPGEDFPAS(ph)PQRR	-0.5766	-0.4103	0.7854	SILAC 1 / Biological 1			H/M up	
B2RRE7	EES(ph)S(ph)EDENEVSNILR	-0.3356	-0.2503	0.7754	SILAC 1 / Biological 1			H/M up	
B2RRE7	EES(ph)S(ph)EDENEVSNILR	-0.3356	-0.2503	0.7754	SILAC 1 / Biological 1			H/M up	
P07901	ES(ph)DDKPEIEDVGSDEEEEEKKDGDK	-0.3788	0.3657	0.7868	SILAC 1 / Biological 1			H/M up	
Q80TC1	ESSTNNSVS(ph)PSESLR	-0.3566	0.2365	0.7958	SILAC 1 / Biological 1			H/M up	
Q80TC1	ESSTNNSVS(ph)PSESLR	-0.3321	0.2365	0.7958	SILAC 1 / Biological 1			H/M up	
Q52KI8	KVELS(ph)ESEEDKGSK	-0.2524	0.0503	1.1974	SILAC 1 / Biological 1			H/M up	
Q52KI8	KVELS(ph)ESEEDKGSK	-0.2524	0.0503	1.1974	SILAC 1 / Biological 1			H/M up	
Q80Y44	LASGDGDEEQDEET(ph)EDEETEDHLGK	-0.4674	0.2033	1.0081	SILAC 1 / Biological 1			H/M up	
Q80Y44	LASGDGDEEQDEET(ph)EDEETEDHLGK	-0.4691	0.2015	1.1211	SILAC 1 / Biological 1			H/M up	
P58871	LDS(ph)PPPSPITEAS(ph)EAAEAAEADSWAVSGR	0.0777	0.3036	1.1949	SILAC 1 / Biological 1			H/M up	
P58871	LDS(ph)PPPSPITEAS(ph)EAAEAAEADSWAVSGR	0.0777	0.3036	1.1949	SILAC 1 / Biological 1			H/M up	
P62754	LSS(ph)LRASTSKSES(ph)SQK	-0.3885	0.5545	1.2873	SILAC 1 / Biological 1			H/M up	
P62754	LSS(ph)LRASTSKSES(ph)SQK	-0.3885	0.5545	1.2873	SILAC 1 / Biological 1			H/M up	
P49586	MLQAIS(ph)PK	-0.2873	0.6119	0.8074	SILAC 1 / Biological 1			H/M up	
Q8K019	NT(ph)PSQHSHSIQHS(ph)PER	-0.8099	-0.5585	0.9975	SILAC 1 / Biological 1			H/M up	
Q8K019	NT(ph)PSQHSHSIQHS(ph)PER	-0.8099	-0.5585	0.9975	SILAC 1 / Biological 1			H/M up	
Q8C9B9	NTTKPETIPDMEDS(ph)PPVS(ph)DSEEQQESVR	-0.7690	-0.3289	0.8449	SILAC 1 / Biological 1			H/M up	
Q8C9B9	NTTKPETIPDMEDS(ph)PPVS(ph)DSEEQQESVR	-0.7690	-0.3289	0.8541	SILAC 1 / Biological 1			H/M up	
Q8BGD9	RES(ph)EKS(ph)LENETLNK	-0.9545	0.0019	0.9306	SILAC 1 / Biological 1			H/M up	
Q8BGD9	RES(ph)EKS(ph)LENETLNK	-0.9545	0.0019	0.9306	SILAC 1 / Biological 1			H/M up	
Q8BGD9	RES(ph)EKS(ph)LENETLNK	-0.9545	0.0019	0.9306	SILAC 1 / Biological 1			H/M up	
Q8BGD9	RES(ph)EKS(ph)LENETLNK	-0.9545	0.0019	0.9306	SILAC 1 / Biological 1			H/M up	
Q8K3X4	RNS(ph)SS(ph)PVSPASVPGQR	-0.2390	-0.5708	0.8436	SILAC 1 / Biological 1			H/M up	
Q8K3X4	RNS(ph)SS(ph)PVSPASVPGQR	-0.2166	-0.5751	0.9931	SILAC 1 / Biological 1			H/M up	
Q9JIX8	S(ph)LSPLSGTTDTK	-0.0071	0.5935	0.9314	SILAC 1 / Biological 1			H/M up	
Q3UGP0	SGKS(ph)PSPSPTS(ph)PGSLR	-0.6252	0.5808	0.8574	SILAC 1 / Biological 1			H/M up	
Q3UGP0	SGKS(ph)PSPSPTS(ph)PGSLR	-0.6169	0.5781	0.8577	SILAC 1 / Biological 1			H/M up	
Q3UGP0	SGKS(ph)PSPSPTS(ph)PGSLR	-0.5393	0.5811	1.0860	SILAC 1 / Biological 1			H/M up	
Q3UGP0	SGKS(ph)PSPSPTS(ph)PGSLR	-0.5913	0.5825	1.1231	SILAC 1 / Biological 1			H/M up	
Q3UGP0	SGKSPS(ph)PSPT(ph)SPGSLR	-0.7184	0.0770	0.8105	SILAC 1 / Biological 1			H/M up	
Q3UGP0	SGKSPS(ph)PSPT(ph)SPGSLR	-0.6766	0.0900	0.8105	SILAC 1 / Biological 1			H/M up	
P31750	SGSPS(ph)DNS(ph)GAEEMEVSLAKPK	-0.7516	0.5013	1.1311	SILAC 1 / Biological 1			H/M up	
P31750	SGSPS(ph)DNS(ph)GAEEMEVSLAKPK	-0.9437	0.5013	1.1448	SILAC 1 / Biological 1			H/M up	
P31750	SGSPS(ph)DNS(ph)GAEEMEVSLAKPK	-0.5566	0.2863	1.1511	SILAC 1 / Biological 1			H/M up	
P31750	SGSPS(ph)DNS(ph)GAEEMEVSLAKPK	-0.6527	0.3362	1.1579	SILAC 1 / Biological 1			H/M up	
P97825	SNS(ph)SEASSGDFLDLK	-0.0553	0.5811	0.8149	SILAC 1 / Biological 1			H/M up	
P97825	SNS(ph)SEASSGDFLDLK	-0.0553	0.5875	0.9165	SILAC 1 / Biological 1			H/M up	
Q9QZQ1	SSPNVANQPPS(ph)PGGK	-0.4903	0.1516	0.8819	SILAC 1 / Biological 1			H/M up	
Q9QZQ1	SSPNVANQPPS(ph)PGGK	-0.4612	0.1631	0.8845	SILAC 1 / Biological 1			H/M up	
Q80X50	STSAPQMS(ph)PGSSDNQSSSPQPAQQK	-0.3625	0.1192	0.8089	SILAC 1 / Biological 1			H/M up	
Q80X50	STSAPQMS(ph)PGSSDNQSSSPQPAQQK	-0.3690	0.1033	0.8105	SILAC 1 / Biological 1			H/M up	
Q05D44	TARPNSEAPLS(ph)GSEDADDSNK	-0.7133	-0.1286	0.8575	SILAC 1 / Biological 1			H/M up	
Q05D44	TARPNSEAPLS(ph)GSEDADDSNK	-0.7345	0.0269	0.8575	SILAC 1 / Biological 1			H/M up	
Q6PDG5	TLT(ph)DEVNSPDSDRR	0.0263	0.1996	1.0129	SILAC 1 / Biological 1			H/M up	
Q6PDG5	TLT(ph)DEVNSPDSDRR	0.0263	0.1996	1.0129	SILAC 1 / Biological 1			H/M up	
Q6PDG5	TLTDEVNS(ph)PDSDRR	-0.0517	0.3437	0.9185	SILAC 1 / Biological 1			H/M up	
Q6PDG5	TLTDEVNS(ph)PDSDRR	-0.0517	0.3437	0.9185	SILAC 1 / Biological 1			H/M up	
Q8BKT7	ALFKPPEDS(ph)QDDES(ph)DS(ph)DAEEEQTTKR	-0.9033	0.7466	1.3601	SILAC 1 / Biological 2			H/M up	
Q9JIK5	EIITEEPS(ph)EEEADMPKPK	-0.7013	0.4695	0.9921	SILAC 1 / Biological 2			H/M up	
Q8CI11	ELS(ph)PEQSTAGKPSDGSSALDR	-0.2684	0.7180	0.7632	SILAC 1 / Biological 2			H/M up	
Q6ZPE9	ETVVESQSS(ph)QSPS(ph)PKR	-0.7283	0.2274	1.2393	SILAC 1 / Biological 2			H/M up	
Q61609	EVKSS(ph)PSES(ph)PLMEK	-0.9234	0.3680	1.5248	SILAC 1 / Biological 2			H/M up	
Q52KE7	GLNLDGTPALSTLGGFS(ph)PAS(ph)KPSSPR	-0.7265	0.6103	0.7624	SILAC 1 / Biological 2			H/M up	
Q52KE7	GLNLDGTPALSTLGGFS(ph)PAS(ph)KPSSPR	-0.6841	0.0933	0.7858	SILAC 1 / Biological 2			H/M up	
Q5SSI6	GQLHGS(ph)S(ph)DESEVENEAK	-0.0716	0.5993	0.7583	SILAC 1 / Biological 2			H/M up	
Q9ERU9	HSTPS(ph)PTKY(ph)SLSPSK	-0.2168	0.5594	0.7585	SILAC 1 / Biological 2			H/M up	

Uniprot	Modified Sequence	M/L Ratio	H/L Ratio	H/M Ratio	Experiment	iRapKO/Control	iRicKO/Control	iRicKO/iRapKO	Peptide array +
Q9ERU9	HSTPS(ph)PTKY(ph)SLSPSK	-0.2168	0.5594	0.7585	SILAC 1 / Biological 2			H/M up	
Q64337	IALESVGQPEEQMESGNCS(ph)GGDDDWTHLSSK	-0.8283	-0.0414	1.2000	SILAC 1 / Biological 2			H/M up	
Q64337	KIALESVGQPEEQMESGNCS(ph)GGDDDWTHLSSK	-0.7174	0.1442	1.3095	SILAC 1 / Biological 2			H/M up	
Q64337	KIALESVGQPEEQMESGNCS(ph)GGDDDWTHLSSK	-0.7174	0.1442	1.3095	SILAC 1 / Biological 2			H/M up	
Q8R1Q8	KPASVS(ph)PTTPT(ph)SPTEGEAS	-0.3553	0.4950	0.8792	SILAC 1 / Biological 2			H/M up	
P53986	LKS(ph)KES(ph)LQEAGK	-0.2598	0.6188	0.7925	SILAC 1 / Biological 2			H/M up	
P53986	LKS(ph)KES(ph)LQEAGK	-0.2598	0.6188	0.7925	SILAC 1 / Biological 2			H/M up	
Q3UAM3	PSAEQQEPVS(ph)PVVS(ph)PQQS(ph)PPT(ph)SPHTWR	-0.1367	0.5994	1.0119	SILAC 1 / Biological 2			H/M up	
A2A5R2	QS(ph)LSS(ph)ADNLEPDVQGHQVAAR	-0.4000	0.4509	0.7966	SILAC 1 / Biological 2			H/M up	
A2A5R2	QSLS(ph)S(ph)ADNLEPDVQGHQVAAR	-0.4564	0.5659	0.9747	SILAC 1 / Biological 2			H/M up	
A2A5R2	QSLS(ph)S(ph)ADNLEPDVQGHQVAAR	-0.5128	0.6810	1.1528	SILAC 1 / Biological 2			H/M up	
O35295	RGGGSGGGDES(ph)EGEEVDED	-0.2366	0.5886	0.8811	SILAC 1 / Biological 2			H/M up	
Q9Z1X4	RPMEEDGEEKS(ph)PSK	0.0860	0.7287	0.7982	SILAC 1 / Biological 2			H/M up	
P31750	SGS(ph)PSDNSGAEEMEVSLAKPK	-0.0798	0.4603	1.1794	SILAC 1 / Biological 2			H/M up	
P31750	SGSPS(ph)DNSGAEEMEVSLAKPK	-0.0169	0.4816	1.1264	SILAC 1 / Biological 2			H/M up	
Q9JIK5	SNSSDAPGEES(ph)SSETEKEIPVEQK	-0.5756	0.2878	1.1418	SILAC 1 / Biological 2			H/M up	
Q9EPU0	SQIDVALS(ph)QDS(ph)TYQGER	-0.0509	0.7766	0.9886	SILAC 1 / Biological 2			H/M up	
Q9EPU0	SQIDVALS(ph)QDS(ph)TYQGER	-0.0509	0.7766	0.9886	SILAC 1 / Biological 2			H/M up	
Q3UFM5	SRS(ph)S(ph)S(ph)EDDIEQQESHSVESGEK	-0.0484	0.7258	0.8942	SILAC 1 / Biological 2			H/M up	
Q7TPV4	(ac)AEMKSPTKAEPAT(ph)PAEAAQSDR	-0.9639	-0.3308	1.1457	SILAC 2 / Biological 3			H/M up	
Q3UJN1	(ac)AESSESLSAS(ph)S(ph)PAR	-0.3870	0.2107	0.7563	SILAC 2 / Biological 3			H/M up	
Q9DBR0	ADS(ph)DGDLS(ph)ENDDGAGDLRS(ph)GDEEFRGEDDLCDSR	-0.9418	-0.1121	0.8953	SILAC 2 / Biological 3			H/M up	
Q8BKT7	ALFKPPEDS(ph)QDDESDS(ph)DAEEEQTTKR	-0.7365	0.4784	1.6334	SILAC 2 / Biological 3			H/M up	
Q52KI8	APQT(ph)SSPPPVRR	-0.5666	0.4118	1.1250	SILAC 2 / Biological 3			H/M up	
P14873	AS(ph)LSPMDEPVPDS(ph)ESPVEK	-0.4779	0.6146	1.8246	SILAC 2 / Biological 3			H/M up	
Q8BT07	ATS(ph)PKS(ph)PSAALNDSLVECPK	-0.9627	0.0264	1.2675	SILAC 2 / Biological 3			H/M up	
Q9CXF4	DDSPTQTLAS(ph)PNACR	-0.7869	0.2010	0.9706	SILAC 2 / Biological 3			H/M up	
Q9JKV1	DKKDEEEDMS(ph)LD	-0.2882	0.2455	0.8931	SILAC 2 / Biological 3			H/M up	
Q99KK9	DLS(ph)PQQMVVR	-0.4121	0.1163	0.8723	SILAC 2 / Biological 3			H/M up	
A2A5R2	ELEKPMQS(ph)KPQSPVIQAT(ph)AGSPK	-0.2151	0.5246	1.1888	SILAC 2 / Biological 3			H/M up	
Q8CI11	ELS(ph)PEQSTAGKPSDGSSALDR	-0.6200	0.4028	1.2021	SILAC 2 / Biological 3			H/M up	
Q3UMF0	EQTAS(ph)APATPLVSK	-0.0548	0.6331	0.8577	SILAC 2 / Biological 3			H/M up	
Q6ZQH8	GAPSS(ph)PAAGVLPS(ph)PQGK	-0.6163	-0.0027	0.9392	SILAC 2 / Biological 3			H/M up	
Q6ZQH8	GAPSS(ph)PAAGVLPS(ph)PQGK	-0.6152	-0.0027	0.9586	SILAC 2 / Biological 3			H/M up	
P70698	GCRLS(ph)PR	-0.8077	0.0106	0.9067	SILAC 2 / Biological 3			H/M up	
Q99LL5	GKLQEEGGS(ph)EEEEAGNPSEDGMQSGPTQAPPR	-0.4259	0.3095	0.8461	SILAC 2 / Biological 3			H/M up	
O08539	GNKS(ph)PSPPPDGSPAATPEIR	-0.3780	0.3278	1.0233	SILAC 2 / Biological 3			H/M up	
O08539	GNKSPS(ph)PPPDGSPAATPEIR	-0.4349	0.3495	0.9435	SILAC 2 / Biological 3			H/M up	
Q9Z0U1	GSYGS(ph)DPEEEEYR	-0.0937	0.1474	0.8475	SILAC 2 / Biological 3			H/M up	
Q3THK3	GTS(ph)RPGTPS(ph)AEAASTSSTLR	-0.9599	-0.2206	1.0272	SILAC 2 / Biological 3			H/M up	
Q3THK3	GTS(ph)RPGTPS(ph)AEAASTSSTLR	-0.8562	-0.0641	1.0272	SILAC 2 / Biological 3			H/M up	
Q3THK3	GTSRPGT(ph)PS(ph)AEAASTSSTLR	-0.6354	-0.2026	0.8630	SILAC 2 / Biological 3			H/M up	
Q61990	GVT(ph)IPYRPKPSSSPVIFAGGQDR	0.3210	0.1793	0.7617	SILAC 2 / Biological 3			H/M up	
Q61990	GVTIPYRPKPS(ph)SSPVIFAGGQDR	0.1184	-0.4535	1.1003	SILAC 2 / Biological 3			H/M up	
A2A5R2	HLDVDLDRQS(ph)LS(ph)SIDR	-0.5226	0.3885	1.3417	SILAC 2 / Biological 3			H/M up	
A2A5R2	HLDVDLDRQS(ph)LS(ph)SIDR	-0.5677	0.3529	1.4055	SILAC 2 / Biological 3			H/M up	
A2A5R2	HLDVDLDRQS(ph)LSS(ph)IDR	-0.7424	0.4241	1.4191	SILAC 2 / Biological 3			H/M up	
Q8C2Q7	HTGPNS(ph)PDTANDGFVR	-0.7056	0.0473	0.9379	SILAC 2 / Biological 3			H/M up	
Q8C2Q7	HTGPNSPDT(ph)ANDGFVR	-0.6136	-0.1472	0.8111	SILAC 2 / Biological 3			H/M up	
Q6ZPV6	IKT(ph)EPS(ph)SPLSDPSDIIR	-0.0798	0.6412	0.8600	SILAC 2 / Biological 3			H/M up	
Q5U4B1	KDS(ph)EEGEESFSSVQDDLSK	-0.1552	0.6564	0.8659	SILAC 2 / Biological 3			H/M up	
Q8VDD5	KGT(ph)GDCSDEEVDGKADGADAK	-0.4292	0.0141	0.9644	SILAC 2 / Biological 3			H/M up	
Q76KJ5	KGTDASS(ph)DTQEAVNR	-0.4991	0.0532	0.8700	SILAC 2 / Biological 3			H/M up	
Q99L45	KKDAS(ph)DDLDDLNFFNQK	-0.6072	-0.0432	0.9813	SILAC 2 / Biological 3			H/M up	
Q8CI11	KLEVS(ph)PGDEQSNVETR	-0.6434	0.5017	1.1863	SILAC 2 / Biological 3			H/M up	
Q6ZQ58	KNTFTAWS(ph)EEDS(ph)DYEIDDR	-0.6020	0.0540	1.0669	SILAC 2 / Biological 3			H/M up	
Q8R1Q8	KPASVSPTT(ph)PT(ph)SPTEGEAS	-0.9363	-0.0407	0.9985	SILAC 2 / Biological 3			H/M up	
Q8R1Q8	KPASVSPTT(ph)PTS(ph)PTEGEAS	-0.9363	-0.0407	1.1752	SILAC 2 / Biological 3			H/M up	
Q8R1Q8	KPASVSPTTPTS(ph)PTEGEAS	-0.3897	0.1942	0.9308	SILAC 2 / Biological 3			H/M up	
Q6P9Q4	KPVS(ph)PPS(ph)PK	0.0818	0.7866	1.0781	SILAC 2 / Biological 3			H/M up	
Q6P9Q4	KPVS(ph)PPS(ph)PK	0.0818	0.7866	1.0781	SILAC 2 / Biological 3			H/M up	
Q9Z0U1	KVQVAPLQGS(ph)PPLSHDDR	-0.3441	0.4272	1.1741	SILAC 2 / Biological 3			H/M up	
Q80Y44	LASGDGDEEQDEET(ph)EDEETEDHLGK	-0.3129	0.3266	0.8729	SILAC 2 / Biological 3			H/M up	
Q924Z4	LIEDERS(ph)DREET(ph)ES(ph)S(ph)EGEETAAGAGAK	-0.1922	0.0306	1.2759	SILAC 2 / Biological 3			H/M up	
Q924Z4	LIEDERS(ph)DREET(ph)ES(ph)S(ph)EGEETAAGAGAK	-0.1922	0.0306	1.2759	SILAC 2 / Biological 3			H/M up	
Q924Z4	LIEDERS(ph)DREET(ph)ES(ph)S(ph)EGEETAAGAGAK	-0.1922	0.0306	1.2759	SILAC 2 / Biological 3			H/M up	
Q924Z4	LIEDERS(ph)DREET(ph)ES(ph)S(ph)EGEETAAGAGAK	-0.1922	0.0306	1.2759	SILAC 2 / Biological 3			H/M up	
Q8K019	LKELFDYS(ph)PPLHK	0.1862	0.5146	1.0847	SILAC 2 / Biological 3			H/M up	
P53986	LKS(ph)KES(ph)LQEAGK	-0.4138	-0.0032	0.8594	SILAC 2 / Biological 3			H/M up	
A6PW47	LLS(ph)SSDDDANILSSPTDR	-0.9535	-0.0453	1.0279	SILAC 2 / Biological 3			H/M up	
B2RRE7	LQRPKEESS(ph)EDENEVS(ph)NILR	-0.8392	0.5598	1.6293	SILAC 2 / Biological 3			H/M up	
P14873	LSPAKS(ph)PSLSPSPPS(ph)PIEK	0.3699	0.3665	0.7742	SILAC 2 / Biological 3			H/M up	
P58501	LVREDENDAS(ph)DDEDDDEKR	0.1358	0.7062	1.0356	SILAC 2 / Biological 3			H/M up	
Q68EF0	NKS(ph)TSSAMGGSHQDLSVIQPIVK	-0.9857	-0.8377	0.7899	SILAC 2 / Biological 3			H/M up	
Q8R2M2	NMPNVS(ph)DSETY(ph)NSDFDDSS(ph)PR	-0.2177	0.4392	0.8611	SILAC 2 / Biological 3			H/M up	
Q8R2M2	NMPNVSDSETY(ph)NSDFDDS(ph)SPR	-0.2507	0.5710	0.8924	SILAC 2 / Biological 3			H/M up	
Q8R2M2	NMPNVSDSETY(ph)NSDFDDSS(ph)PR	-0.2078	0.4392	0.8611	SILAC 2 / Biological 3			H/M up	
Q3UZ39	NMPSLSAATLASLGGTS(ph)SR	-0.5160	0.2822	1.4037	SILAC 2 / Biological 3			H/M up	
Q3UZ39	NMPSLSAATLASLGGTSS(ph)R	-0.4751	0.5427	1.3155	SILAC 2 / Biological 3			H/M up	
Q60875	QILSQS(ph)T(ph)DSLNMR	-0.4470	0.2958	0.8050	SILAC 2 / Biological 3			H/M up	
Q60875	QILSQS(ph)TDS(ph)LNMR	-0.6540	0.3026	1.1289	SILAC 2 / Biological 3			H/M up	
Q3UZ39	QNKVEEDGPTEGPTDILDQNS(ph)PQCEDR	-0.9832	0.4501	1.8697	SILAC 2 / Biological 3			H/M up	
Q99JF8	QSNAS(ph)SDVEVEEKETNVSKEDTDQEEK	-0.3457	0.6744	1.3272	SILAC 2 / Biological 3			H/M up	
Q04692	RNDS(ph)S(ph)ELEDLSELEDLK	-0.1237	0.5073	0.7873	SILAC 2 / Biological 3			H/M up	
Q04692	RNDS(ph)S(ph)ELEDLSELEDLK	-0.0801	0.4650	0.9074	SILAC 2 / Biological 3			H/M up	
Q04692	RNDSS(ph)ELEDLS(ph)ELEDLKDAK	-0.1721	0.4890	1.0091	SILAC 2 / Biological 3			H/M up	
Q810V0	RPDGEEEDEEDIDLFEDIDS(ph)DES(ph)EGGLFGR	-0.3933	0.2517	0.7881	SILAC 2 / Biological 3			H/M up	
Q810V0	RPDGEEEDEEDIDLFEDIDS(ph)DES(ph)EGGLFGR	-0.3933	0.2517	0.7881	SILAC 2 / Biological 3			H/M up	
A5D6P2	RSS(ph)DPALTGLSTSVSDNNFSSEEPSR	-0.2111	0.5040	0.9274	SILAC 2 / Biological 3			H/M up	
Q8BTI8	RSS(ph)S(ph)ELSPEVVEK	-0.8676	-0.1596	1.0707	SILAC 2 / Biological 3			H/M up	
Q58A65	S(ph)ASQSSLDKLDQELK	-0.9678	0.4889	1.3817	SILAC 2 / Biological 3			H/M up	
P58871	S(ph)PPSGSQSLLEGIMTASSSK	0.0816	0.6839	0.7989	SILAC 2 / Biological 3			H/M up	
Q9Z2B9	S(ph)S(ph)PPLRTPDVLESSGPAVR	-0.6875	0.5540	0.8346	SILAC 2 / Biological 3			H/M up	
Q9Z2B9	S(ph)S(ph)PPLRTPDVLESSGPAVR	-0.6875	0.5540	0.8346	SILAC 2 / Biological 3			H/M up	
Q9D1F4	S(ph)SDEENGPPSS(ph)PDLDR	-0.0124	0.6844	0.7612	SILAC 2 / Biological 3			H/M up	
Q5SNZ0	S(ph)SSQENLLDEVMK	-0.4867	0.5102	0.9131	SILAC 2 / Biological 3			H/M up	
Q58A65	SASQSS(ph)LDKLDQELK	-0.1680	0.5510	0.7638	SILAC 2 / Biological 3			H/M up	
Q8K019	SATSGDIWPGLSAYDNS(ph)PR	0.0206	0.4641	0.8536	SILAC 2 / Biological 3			H/M up	
P31750	SGSPS(ph)DNS(ph)GAEEMEVSLAKPK	-0.4849	0.2262	0.7534	SILAC 2 / Biological 3			H/M up	
P27546	SKVGST(ph)ENIK	-0.3606	-0.6415	1.5630	SILAC 2 / Biological 3			H/M up	
Q9EPU0	SQIDVALS(ph)QDS(ph)TYQGER	-0.7583	0.6667	1.6184	SILAC 2 / Biological 3			H/M up	
Q9EPU0	SQIDVALS(ph)QDS(ph)TYQGER	-0.7583	0.6667	1.6184	SILAC 2 / Biological 3			H/M up	
Q5BL07	SQS(ph)GEDESLNQPGPIK	0.1164	0.7549	0.8686	SILAC 2 / Biological 3			H/M up	
Q3UFM5	SRS(ph)S(ph)S(ph)EDDIEQQESHSVESGEK	-0.5253	0.4332	1.0111	SILAC 2 / Biological 3			H/M up	
Q3UFM5	SRS(ph)S(ph)S(ph)EDDIEQQESHSVESGEK	-0.5253	0.4332	1.0111	SILAC 2 / Biological 3			H/M up	
Q3UFM5	SRS(ph)S(ph)S(ph)EDDIEQQESHSVESGEK	-0.5253	0.4332	1.0111	SILAC 2 / Biological 3			H/M up	
Q5SXY1	SSKGSPT(ph)GSS(ph)PNNASELSLASLTEK	-0.4593	0.1314	0.8858	SILAC 2 / Biological 3			H/M up	
Q5SXY1	SSKGSPT(ph)GSS(ph)PNNASELSLASLTEK	-0.4593	0.1314	0.8858	SILAC 2 / Biological 3			H/M up	
Q3UHX0	SSMS(ph)DDDVDS(ph)EDELK	-0.5169	-0.0296	0.7851	SILAC 2 / Biological 3			H/M up	
Q9QZQ1	SSPNVANQPPS(ph)PGGK	-0.2621	0.6235	1.0547	SILAC 2 / Biological 3			H/M up	
Q9Z2B9	SSPPLRT(ph)PDVLESS(ph)GPAVR	-0.6589	0.2733	1.4248	SILAC 2 / Biological 3			H/M up	
Q6PDG5	TLTDEVNS(ph)PDSDRR	-0.6287	-0.0146	0.8995	SILAC 2 / Biological 3			H/M up	
O54774	VDIITEEMPENALPS(ph)DEDDKDPNDPYR	-0.3050	0.6283	1.2629	SILAC 2 / Biological 3			H/M up	
P35486	YGMGT(ph)SVER	-0.8951	0.7035	1.4608	SILAC 2 / Biological 3			H/M up	
P43277	(ac)S(ph)ETAPAAPAAPAPVEKT(ph)PVKK	-0.3173	0.4440	1.0329	SILAC 3 / Biological 4			H/M up	

Uniprot	Modified Sequence	M/L Ratio	H/L Ratio	H/M Ratio	Experiment	iRapKO/Control	iRicKO/Control	iRicKO/iRapKO	Peptide array +
P43274	(ac)SETAPAAPAAPAPAEKT(ph)PVK	-0.0748	0.7658	1.4272	SILAC 3 / Biological 4			H/M up	
P43277	(ac)SETAPAAPAAPAPVEKT(ph)PVK	-0.1962	0.6814	1.3997	SILAC 3 / Biological 4			H/M up	
P43276	(ac)SETAPAETAAPAPVEKS(ph)PAK	-0.2461	0.2733	0.7864	SILAC 3 / Biological 4			H/M up	
Q80TM9	ACSDS(ph)LES(ph)IPAGQVASDDLR	-0.6373	0.6997	1.1345	SILAC 3 / Biological 4			H/M up	
Q80TM9	ACSDS(ph)LES(ph)IPAGQVASDDLR	-0.6373	0.6997	1.1345	SILAC 3 / Biological 4			H/M up	
Q6Y7W8	AGAEASEEVPQTSLSSARPGT(ph)PSDHQPQEATQFER	-0.8047	0.3183	0.9266	SILAC 3 / Biological 4			H/M up	
Q9CXF4	ANDQDS(ph)LISGILR	-0.3302	0.5487	1.4582	SILAC 3 / Biological 4			H/M up	
Q8BT07	ATS(ph)PKSPS(ph)AALNDSLVECPK	-0.6335	-0.0930	2.5617	SILAC 3 / Biological 4			H/M up	
Q3UGP0	DLYRPLS(ph)SDDLDSVGDSV	-0.7072	0.4432	1.1550	SILAC 3 / Biological 4			H/M up	
P27546	DMS(ph)PLPESEVTLGK	-0.9327	0.0796	0.8716	SILAC 3 / Biological 4			H/M up	
Q04692	DTVIIVS(ph)EPSEDEES(ph)HDLPSVTR	-0.4813	0.3570	0.8043	SILAC 3 / Biological 4			H/M up	
Q99P72	ESET(ph)FSDSS(ph)PIEIIDEFPTFVSAK	-0.5128	0.1887	2.1928	SILAC 3 / Biological 4			H/M up	
Q61609	EVKSS(ph)PS(ph)ESPLMEK	-0.6201	0.6587	1.1216	SILAC 3 / Biological 4			H/M up	
Q61609	EVKSS(ph)PS(ph)ESPLMEK	-0.6072	0.6378	1.1610	SILAC 3 / Biological 4			H/M up	
P58871	GEGVSQVGPGT(ph)PPAPESPR	-0.4090	0.5228	0.8795	SILAC 3 / Biological 4			H/M up	
P09405	GFGFVDFNS(ph)EEDAK	-0.1828	0.6411	1.1446	SILAC 3 / Biological 4			H/M up	
Q9Z1D1	GIPLPT(ph)GDTSPEPELLPGDPLPPPK	-0.4099	0.1386	2.1894	SILAC 3 / Biological 4			H/M up	
Q9Z1D1	GIPLPTGDT(ph)SPEPELLPGDPLPPPK	-0.9604	0.6281	1.2614	SILAC 3 / Biological 4			H/M up	
Q9Z1D1	GIPLPTGDTS(ph)PEPELLPGDPLPPPK	-0.3795	0.5069	0.9998	SILAC 3 / Biological 4			H/M up	
Q52KE7	GLNLDGTPALSTLGGFS(ph)PAS(ph)KPS(ph)SPR	-0.8154	0.0242	0.8663	SILAC 3 / Biological 4			H/M up	
Q52KE7	GLNLDGTPALSTLGGFS(ph)PAS(ph)KPSS(ph)PR	-0.8154	0.0242	0.8663	SILAC 3 / Biological 4			H/M up	
Q8CHU3	GS(ph)SQPNLSTSYSEQEYGK	-0.6241	0.4300	1.4345	SILAC 3 / Biological 4			H/M up	
Q542W3	HLEELEEKS(ph)AT(ph)PPPAEPASLPQEPPKPR	-0.7103	0.2571	1.1186	SILAC 3 / Biological 4			H/M up	
Q3V1V3	IDSEIS(ph)PK	-0.8774	0.0131	0.7620	SILAC 3 / Biological 4			H/M up	
Q8BTM8	IPEISIQDMTAQVTS(ph)PSGK	-0.5171	0.2804	1.2862	SILAC 3 / Biological 4			H/M up	
Q9ESV0	KAQAVS(ph)EEEEEEEGQSSSPK	-0.6238	0.2006	0.8979	SILAC 3 / Biological 4			H/M up	
P43277	KAS(ph)GPPVSELITK	-0.3030	0.7548	1.3351	SILAC 3 / Biological 4			H/M up	
Q52KI8	KPPAPPS(ph)PVQSQS(ph)PSTNWSPAVPAK	-0.7346	-0.0478	1.0984	SILAC 3 / Biological 4			H/M up	
Q52KI8	KPPAPPS(ph)PVQSQSPS(ph)TNWSPAVPAKK	-0.8922	0.0963	0.9751	SILAC 3 / Biological 4			H/M up	
O08784	KSAEPLANTVLAS(ph)ET(ph)EEEGNAQALGPTAK	-0.6539	0.7342	1.6037	SILAC 3 / Biological 4			H/M up	
Q9QZQ1	LFS(ph)QGQDVSDKVK	-0.5049	0.0883	0.8684	SILAC 3 / Biological 4			H/M up	
P53986	LKS(ph)KESLQEAGK	-0.6777	0.3978	0.9243	SILAC 3 / Biological 4			H/M up	
Q3UH27	LLHEDLDES(ph)DDDVDEK	-0.8945	0.7771	1.4790	SILAC 3 / Biological 4			H/M up	
Q3UQN2	LSGINEIPRPFS(ph)PPVTSNT(ph)SPPPTAPLAR	-0.8196	0.5900	1.2307	SILAC 3 / Biological 4			H/M up	
Q6A006	LSTT(ph)PS(ph)PTNS(ph)LHEDGVDDFRR	-0.4745	0.3658	0.7544	SILAC 3 / Biological 4			H/M up	
P58501	LVREDENDAS(ph)DDEDDDEKR	-0.7261	0.0183	0.9562	SILAC 3 / Biological 4			H/M up	
A2BH40	NPQMPQYTSPQPGSALS(ph)PR	-0.6311	0.3157	2.5793	SILAC 3 / Biological 4			H/M up	
Q6ZQ58	NTFTAWSEEDS(ph)DYEIDDRDVNK	-0.8278	-0.2982	0.9018	SILAC 3 / Biological 4			H/M up	
A2A5R2	QSLSS(ph)ADNLEPDVQGHQVAAR	-0.5307	0.4784	0.9781	SILAC 3 / Biological 4			H/M up	
P28028	RDS(ph)SDDWEIPDGQITVGQR	-0.8119	-0.0660	0.8647	SILAC 3 / Biological 4			H/M up	
Q5SSI6	RRTS(ph)S(ph)DDES(ph)EEDEDDLLQR	-0.9140	0.0485	0.9363	SILAC 3 / Biological 4			H/M up	
A2AJI0	RSS(ph)QPS(ph)PTTVPASDSPPAK	-0.1391	0.5330	0.8785	SILAC 3 / Biological 4			H/M up	
A2AJI0	RSS(ph)QPSPT(ph)TVPASDSPPAK	-0.4384	0.5584	1.1686	SILAC 3 / Biological 4			H/M up	
A2AJI0	RSS(ph)QPSPT(ph)TVPASDSPPAK	-0.4384	0.5584	1.1686	SILAC 3 / Biological 4			H/M up	
Q3UK83	S(ph)ESPKEPEQLR	-0.6963	-0.0554	0.8420	SILAC 3 / Biological 4			H/M up	
Q8CI95	S(ph)FSLASSGNSPISQR	-0.5307	0.0996	0.8867	SILAC 3 / Biological 4			H/M up	
Q9D1F4	S(ph)LPVSVPVWAFK	-0.9896	-0.1486	0.8640	SILAC 3 / Biological 4			H/M up	
P58871	S(ph)PPSGSQSLLEGIMTASSSK	-0.9657	-0.2282	0.7775	SILAC 3 / Biological 4			H/M up	
Q52KI8	S(ph)PS(ph)PAPPPPPPPPPR	-0.7923	0.6467	1.2660	SILAC 3 / Biological 4			H/M up	
Q52KI8	S(ph)PS(ph)PAPPPPPPPPPR	-0.7923	0.6467	1.2660	SILAC 3 / Biological 4			H/M up	
Q9CT10	S(ph)PSESAEETHTLEEK	-0.3627	0.2361	0.8220	SILAC 3 / Biological 4			H/M up	
Q3UFM5	S(ph)RSSS(ph)EDDIEQQES(ph)HSVESGEK	-0.6554	0.1941	0.9074	SILAC 3 / Biological 4			H/M up	
Q3UFM5	S(ph)RSSS(ph)EDDIEQQES(ph)HSVESGEK	-0.6554	0.1941	0.9074	SILAC 3 / Biological 4			H/M up	
Q61609	S(ph)SPSES(ph)PLMEK	-0.5112	0.7478	1.2029	SILAC 3 / Biological 4			H/M up	
Q9Z0U1	SFS(ph)PEER	-0.3578	0.4126	1.2633	SILAC 3 / Biological 4			H/M up	
Q9JIK5	SNSSDAPGEES(ph)SSET(ph)EKEIPVEQK	-0.8286	0.0181	1.0028	SILAC 3 / Biological 4			H/M up	
P58871	SPPS(ph)GSQSLLEGIMTASSSK	-0.9215	-0.2744	0.8116	SILAC 3 / Biological 4			H/M up	
Q80WJ7	SQEPISNDQKVS(ph)DDDKEK	-0.4061	0.5971	0.9968	SILAC 3 / Biological 4			H/M up	
Q61609	SS(ph)PSES(ph)PLMEK	-0.5721	0.7137	1.1425	SILAC 3 / Biological 4			H/M up	
Q9D1F4	SSDEENGPPS(ph)SPDLDR	-0.8821	0.2186	1.0345	SILAC 3 / Biological 4			H/M up	
Q5SXY1	SSKGS(ph)PT(ph)GSSPNNASELSLASLTEK	-0.8309	0.1481	0.9731	SILAC 3 / Biological 4			H/M up	
Q9QZQ1	SSPNVANQPPS(ph)PGGK	-0.5612	0.4981	1.2954	SILAC 3 / Biological 4			H/M up	
Q80X50	STSAPQMSPGSSDNQSS(ph)SPQPAQQK	-0.8433	0.0896	0.9742	SILAC 3 / Biological 4			H/M up	
Q6ZQ61	SY(ph)SPDGKESPS(ph)DKK	-0.9191	0.2056	0.9700	SILAC 3 / Biological 4			H/M up	
Q7TSC1	TAS(ph)ETRS(ph)EGSEY(ph)EEIPK	-0.9400	0.0749	0.7942	SILAC 3 / Biological 4			H/M up	
Q7M739	TDGFAEAIHS(ph)PQVAGVPR	-0.6196	0.4656	1.1478	SILAC 3 / Biological 4			H/M up	
Q9D1F4	TEARSS(ph)DEENGPPSS(ph)PDLDR	-0.6470	0.3781	1.0038	SILAC 3 / Biological 4			H/M up	
Q9QYB5	TEEVLSPDGS(ph)PSKS(ph)PSK	-0.6511	0.6360	1.0395	SILAC 3 / Biological 4			H/M up	
Q9QYB5	TEEVLSPDGS(ph)PSKS(ph)PSK	-0.6511	0.6360	1.0395	SILAC 3 / Biological 4			H/M up	
P14873	TPGDFNYAYQKPENAAGS(ph)PDEEDYDYESQEK	-0.5344	0.4387	1.1693	SILAC 3 / Biological 4			H/M up	
O08784	TVVHLLSGKS(ph)PK	-0.4358	0.4262	0.9588	SILAC 3 / Biological 4			H/M up	
Q921K9	VDSSTNSSPS(ph)PQQSESLS(ph)PAHTSDFR	-0.4390	0.7085	0.9615	SILAC 3 / Biological 4			H/M up	
P08775	Y(ph)SPTSPTYSPTS(ph)PVYTPTS(ph)PK	-0.6225	0.8033	1.2863	SILAC 3 / Biological 4			H/M up	
Q68G59	YGLQDS(ph)DEEEEEHPPK	-0.5396	0.4942	0.9667	SILAC 3 / Biological 4			H/M up	
P35822	YLCEGT(ph)ESPYQT(ph)GQLHPAIR	-0.3183	0.6012	0.7785	SILAC 3 / Biological 4			H/M up	
P35822	YLCEGTES(ph)PYQT(ph)GQLHPAIR	-0.3183	0.5144	0.7785	SILAC 3 / Biological 4			H/M up	
P08775	YS(ph)PTSPTYSPTSPVYTPTS(ph)PK	-0.8969	0.7791	1.6337	SILAC 3 / Biological 4			H/M up	