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Genomic Sequencing Data Analysis Workflow for Bioinformatics Core Facilities

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From Sequencing to Discovery

Genomic Sequencing Data Analysis Workflow for Bioinformatics Core Facilities

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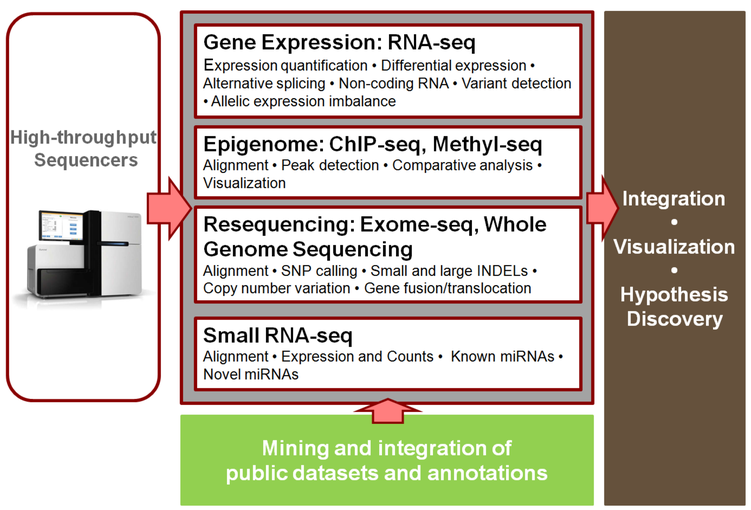
The James

THE OHIO STATE UNIVERSITY COMPREHENSIVE CANCER CENTER

Introduction

The Biomedical Informatics Shared Resource (BISR) at the Ohio State University Wexner Medical Center focuses on

What?	*Why?*	*How?*
High-throughput genomic sequencing data analyses	To answer an increasingly diverse range of biological questions	Using state-of-the-art informatics tools and high-quality informatics analysis



Applications of Next Generation Sequencing (NGS)

Motivation, Challenges and Goals

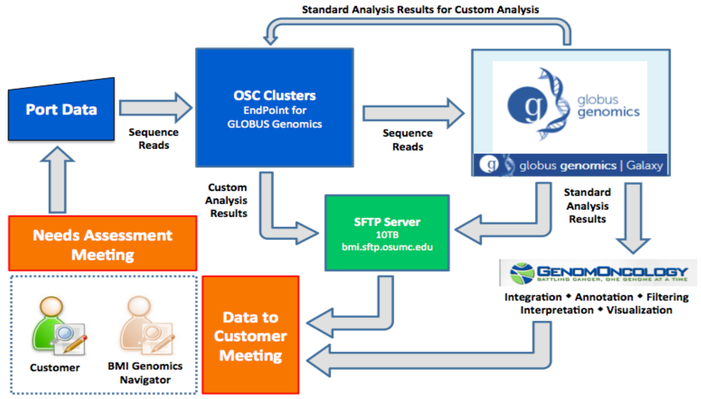
Motivations:

- Next Generation Sequencing (NGS) is becoming a common tool in the practice of biomedical research and is the future of how medicine will be practiced.
- Decreased cost in NGS technologies lead to increased amount of data generated both in size and complexity.

Challenges are big data analysis, management , interpretation, mining, visualization and sharing.

Our **goal** is to develop scalable, extendable pipelines and data workflows that support large-scale re-sequencing experiments which in turn will provide high quality, standardized, low-cost NGS data analysis in a reasonably short turnaround time to all investigators.

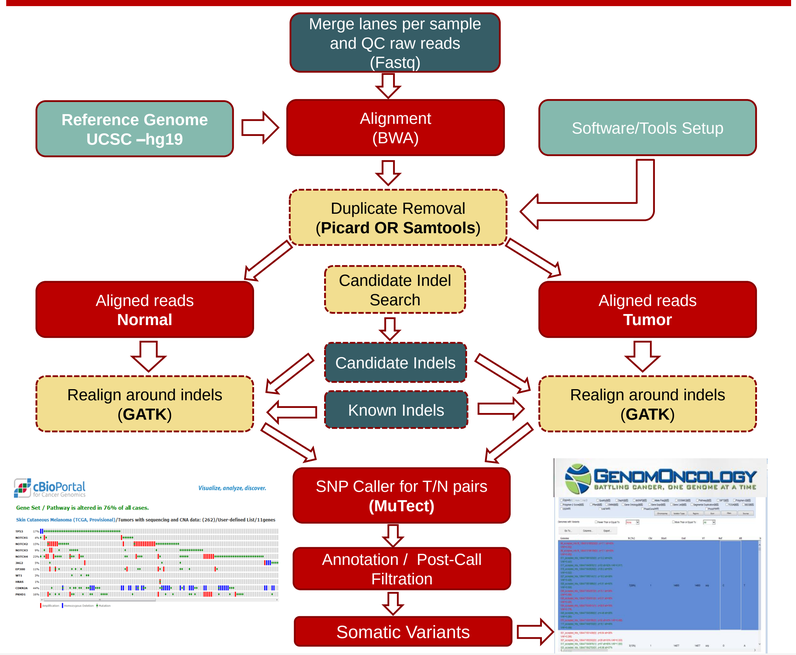
Data Workflow and Management



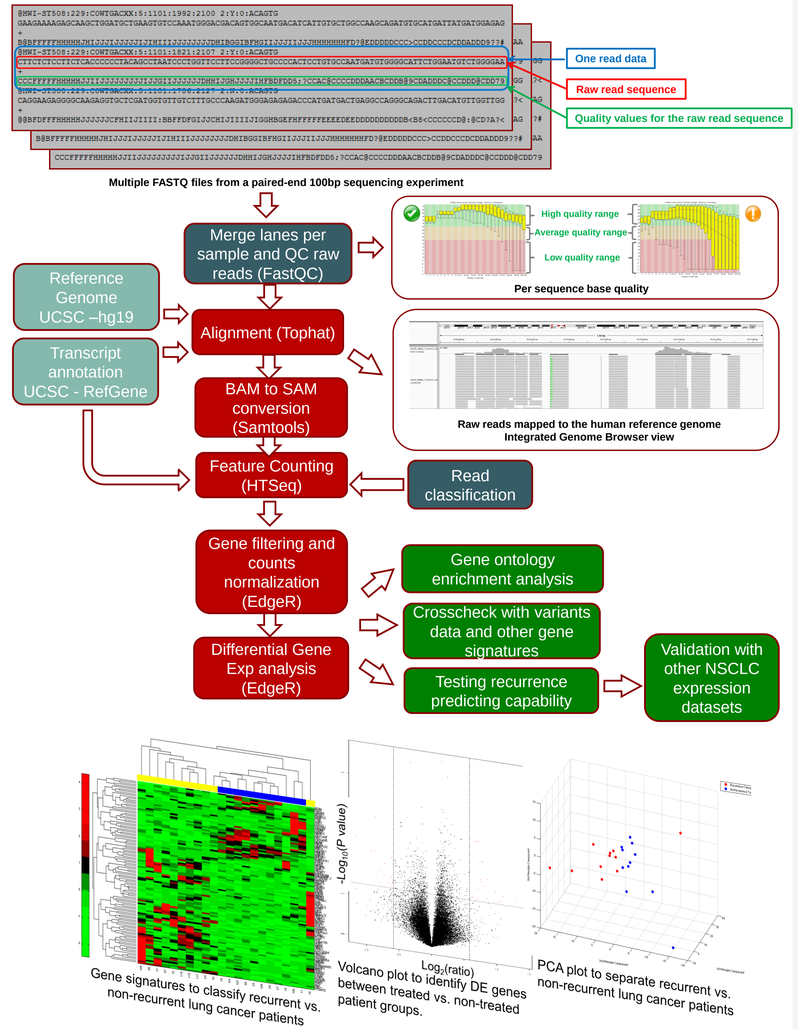
Globus Genomics: An end-to-end sequencing analysis framework, which leverage advanced tools and data management through Amazon **cloud computing** to provide cost-effective services that meet bioscience researchers' needs.

GenomAnalytics : A web-based interface to annotate, interpret, visualize and share the NGS analysis results from human samples through an integrated, intuitive and interactive platform.

Mutation Analysis on DNA Sequencing Data



Gene Expression Analysis on RNA-Seq Data



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