

# Biostatistics Shared Resource Facility

## Overview of Services

# Goals

- Innovation in clinical and pre-clinical experimental design
- Support for education and unfunded research
- Expertise in analysis of multi-channel and high-throughput platforms
- Integration of Biostatistics and Bioinformatics
- Expand UPCI's externally funded support

# Current Personnel

Each UPCI Program and major research center has an assigned statistician:

- Daniel Normolle, PhD (**CVP, CIP, AF, CF, Hematology, GI, Brain, Trial Design**)
- Brenda Kurland, PhD (**BOP, LCP, Imaging**)
- William Gooding, MS (**HNCP, CIP, Trial Design**)
- Yan Lin, PhD (**MP, CTP, CGF, CBS, MCCBP**)
- Hong Wang, PhD (MCCBP, **Radiation Oncology, Urologic Cancers**)
- Brenda Diergaarde, PhD (**CEPP, MCCBP, HNCP, LCP, CBS, Genomics**)
- John Wilson, PhD (**BOCP (Breast)**)
- Yongli Shuai, MS (LCP, Hematology, **Surgical Oncology, CTMA Interface**)
- Fei Ding, MS (MP, LCP, *Genomics*)
- Shira Abberbock, MS (LCP, **Trainees**)
- Ying Ding, PhD (**CPF, Surgical Oncology, Proteomics**)
- Yong Seok Park, PhD (**BOCP (Ovarian), HNCP, Genomics**)

**Bold=Lead Statistician**

*Italics=Area of Technical Expertise*

# Portfolio Statisticians

- Specialized scientific knowledge of the Program
- Is aware of the active scientific projects of the Program
- Manages analysis projects, but does not necessarily perform them
- Serves as contact for both Biostatistical and Bioinformatical analyses

# Support for education and unfunded research

- Attend journal clubs & writing group
- Assist fellows and post-docs in closed-end projects
  - Design
  - Analysis
  - Presentation
- Design and analyze research in preparation for submission of grant proposals

# Innovation in clinical and pre-clinical experimental design

- Bayesian and sequential trial designs
  - CRM and TITE-CRM for Phase I trials
  - Continuous monitoring for Phase II trials
  - Group sequential designs with floating interim analyses for Phase II trials
- Group sequential and multi-factorial designs for *in vivo* experiments
- Consideration of multiple sources of variation at the design stage

# Expertise in analysis of multi-channel and high-throughput platforms

- Genomics: Yan Lin and Brenda Diergaarde
- Imaging: Brenda Kurland
- Proteomics: Ying Ding
- Multiplex Protein Assays: Yan Lin
- Flow Cytometry: Daniel Normolle
- NanoString: Kristi Cooper (on leave)
- qPCR: Daniel Normolle
- Seahorse: Yan Lin and Daniel Normolle

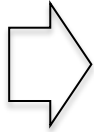
# Expertise in analysis of multi-channel and high-throughput platforms

- Analysts in the Biostatistics and Bioinformatics facilities work closely together to ensure that UPCI investigators get complete analyses of genomics studies
- Portfolio statisticians serve as primary contacts for UPCI investigators who want to initiate genomics studies
- They present projects to Drs. Chandran, Lin and Diergaarde, who assign the work based on technical ability, interest and workload



# Integration of Biostatistics and Bioinformatics

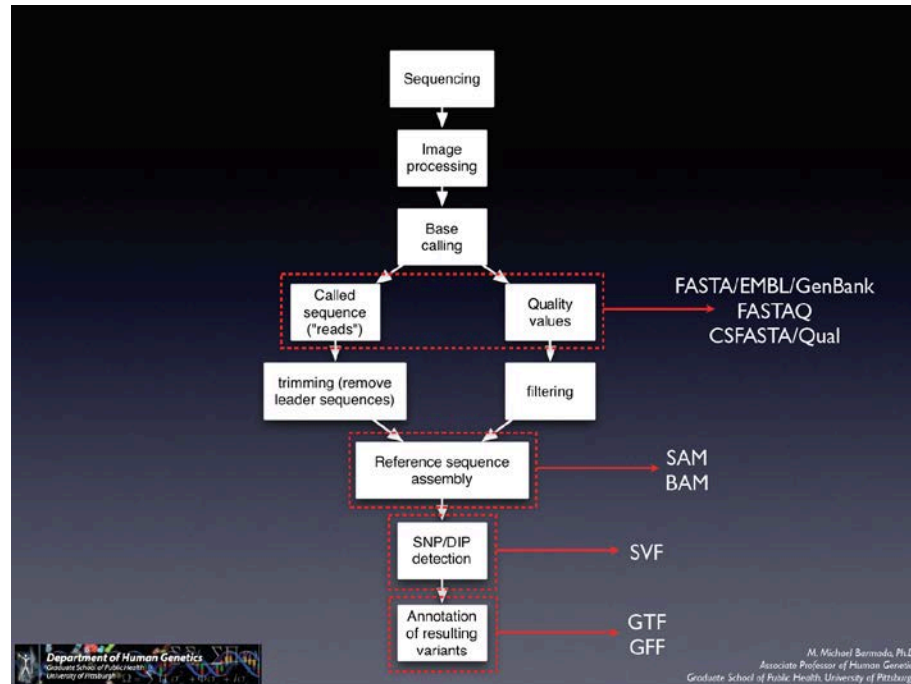
Formulate Hypothesis



Determine Design & Sample Size



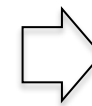
Specify Controls



Merge Phenotypic Data



Perform Hypothesis Tests



Present the Analysis