Planning for informatics in your grant applications

Samuel Volchenboum, MD, PhD

August 1, 2017
At the end of this talk, you will...

- Know what parts of a grant need informatics consideration
- Understand how important it is to seek help early
- Feel comfortable reaching out to CRI and asking for help
The idealized process…

- Have an idea
- Get preliminary data
- Write a proposal
- Get funding
- Do work
- Repeat
A more realistic process

- Have an idea or an extension of current work
- Apply for grant using old preliminary data
- Get award for new work
- Figure out how to actually do (and pay for) the work
Scenario #1 - The sequencer

- Researcher gets a pilot grant to study colon cancer patients using ChIP-Seq
- Pilot grant only for cost of sequencing
- No provisions made for analysis and interpretation
Scenario #2 - The multi-center trial

• Researcher gets U grant for testing a new survey tool at 30 cooperative sites
• Grant has no provisions for any research informatics support
Scenario #3 - The Big Data™ user

- Researcher gets funding to sequence 1000 whole genomes
- Gets funding for sequencing but then needs 20TB of storage space
- No grant provisions for storage or backup
Scenario #4 - The simulator

• Researcher gets funding to design, perform, and test molecular simulations on millions of drug-target combinations
• Requires millions of hours of HPC usage
• No funding for HPC
Scenario #5 - The analyzer

• Funding secured for pulling a large comprehensive data set from the data warehouse to perform disease modeling

• Data is pulled and given to research team but there is no one to analyze the data
There are many opportunities to consider informatics resources.

The best time is when you’re just thinking about a project or writing about it.
Getting informatics help

http://cri.uchicago.edu

slv@uchicago.edu

support@rt.cri.uchicago.edu
Common to all proposals

- IRB writing and positioning
- Contracts, data use agreements
- Data storage, movement, backup
- Letters of support
- Facilities and resources documentation
- Data governance and stewardship
- Data sharing / software dissemination
IRB writing / positioning

• CRI has extensive experience in writing IRB protocols and shepherding them through the process
• Many of the issues have already been encountered for other proposals
• Engage the CRI early on in the process
Contracts and data use agreements

- Sharing data outside the BSD requires an agreement
- Contracts may be needed for IP, data use, etc.
- Monthly meeting with CRI, OCR, IRB, legal, and security to discuss and address these issues proactively
Data storage, movement, backup

• CRI has extensive storage and backup capabilities
• Every investigator gets 2TB storage and backup for “free” as a lab share
• More extensive data usage needs to have a budget
A word about storage

These aren’t good places to store your data. Why?

• Not HIPAA compliant
• Insecure
• No redundant backup
• Little chance of recovery if loss
Letters of support

• General letter from CRI
• Specific support for project from CRI leadership
• Contact the CRI director service line director for any LoS issues
• Do this early. A draft is always appreciated.
Facilities and resources pages

CRI has boilerplate language for grants
Data governance and stewardship

• Grant readers are now looking for documentation of data governance procedures

• CRI can help document these procedures for your proposal
Examples of data governance considerations

- Why controls access to data?
- How is security documented?
- Will people have encrypted laptops?
- Is the storage HIPAA compliant?
- Are data being backed up regularly?
- How is data being moved securely between researchers?

Failure to address these questions adequately can doom a proposal.
Data sharing plan

• Data sharing
  • Discussion of how data will be deposited in common repositories and shared

• Software dissemination
  • How will software be shared?
  • What kind of license will be used?

• CRI will help with this
Bioinformatics considerations

- Methods and study design
- Budget planning for data generation
- Grant writing - preliminary data, methods, research plan
- Data storage, movement, backup
- Analysis and interpretation
- Integration of multiple data sources
- Manuscript preparation and submission
Bioinformatics - Methods and study design

• What kind of analysis?
  RNA-Seq? ChIP-Seq? WGS? WES?

• What depth of coverage?

• Power calculations: How many samples?
  Technical replicates? Biological replicates?
Bioinformatics - Budget planning for data generation

• How many chips? What cost to run?
• How about sample collection and preparation?
• CRI can help broker this process
Bioinformatics - Grant writing

- CRI can help with all phases of grant writing
  - Background
  - Preliminary data
  - Methods
  - Research plan
Bioinformatics - Data storage, movement, backup

• How much storage is needed?
• How will data be transferred between investigators?
• Is data being redundantly backed up?
• CRI can help ensure that all phases are secure
Bioinformatics - Analysis and interpretation

• Best to involve a bioinformatician from the start
• Partnership is key for a successful collaboration
• Project time is charged on an hourly basis or through dedicated time on grants
• Co-authorship is expected, where appropriate
Publications

2015

2017

2016
Bioinformatics - Data integration

• Consider both phenotype and genotype data
• How will the clinical data be collected?
• Who is integrating these data into the analysis?
• CRI can get the clinical data and integrate it with the genomics information - this may require engaging the CRDW