

NCI-Supported Informatics Technology Development

Juli Klemm, Ph.D.

*NCI Center for Biomedical Informatics and Information Technology
(CBIIT)*

Agenda

1. *Funding Mechanisms for Informatics Technology Development*
2. *Motivation for the ITCR Program*
3. *Key tenants of the ITCR Program*
4. *Successes, Goals, Challenges*

How Does NCI Fund Informatics Technology Development?

Contracts

- Procurement with requirements specified by the Government
- Governed by federal statutes, rules, regulations (e.g., FAR, FISMA)
- Generally limited flexibility to change the scope of work
- Significant reporting requirements

Grants

- Need is specified by the applicant
- Flexibility to change the scope of work
- Reporting is annually

Cooperative agreements

- Similar to a grant, but with significant involvement of program staff during the performance of work activities

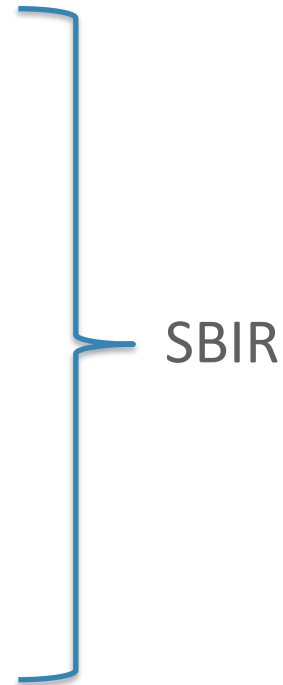
Examples

Contracts

- Cancer Genomics Cloud Pilots
- Genomic Data Commons
- CTRP, NBIA

Grants and Cooperative Agreements

- ITCR Program
- Genome Data Analysis Network (GDAN)
- BD2K & BISTI Programs (trans-NIH)



Motivations for ITCR

Internal Motivations (from 2011 portfolio analysis)

- NCI invests heavily in informatics development (contracts, FOAs)
- NCI issued and participated in over 14 FOAs related to informatics
- Lack of an Institute-wide informatics program for investigator-initiated software development
- NCI was not benefiting significantly from NIH-wide BISTI informatics initiative

External Motivations

- March 2011: Release of NCI's BSA Working Group assessment and report on caBIG
- Feb 2012: Institute of Medicine Workshop on Informatics Needs and Challenges in Cancer Research
- 2011-2012: NIH Advisory Council to the Director's Informatics Working Group Recommendations

ITCR Overview

Initiated May, 2012
Renewed May, 2015

- 33 funded projects
- 29 tools released
 - 13 OMICS
 - 8 Imaging
 - 5 Data standards
 - 4 Clinical
 - 1 Network biology

<http://itcr.nci.nih.gov>

Home

About ITCR

Informatics Tools

Funding Opportunities

Related Programs

About ITCR

The central mission of ITCR is to promote research-driven informatics technology across the development lifecycle to address priority needs in cancer research.

[Learn more about ITCR](#)

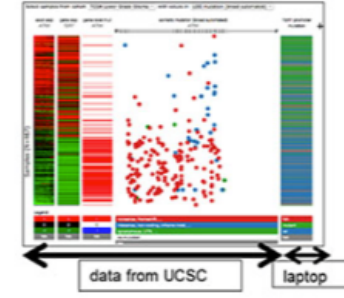


Featured ITCR Tool

UC Santa Cruz Xena

Securely integrate and visualize your private functional genomics data with data from large consortiums such as TCGA and ICGC. Xena is also integrated with Galaxy, allowing access to a myriad of bioinformatics tools.

[Click on the image to learn more about Xena](#)



News



ITCR Session at the AACR Annual Meeting on Tuesday, April 19th from 4:15PM – 5:45 PM in Room-C, 269.
[Session Agenda](#)

The next application receipt date is June 14, 2016.

2016 ITCR Annual Meeting hosted by the Broad Institute is scheduled for June 13th-14th, followed by a FireCloud Workshop on June 15th.

Informatics Tools



ITCR supports a wide range of informatics tools to serve current and emerging needs across the cancer research continuum.

[Browse the list of informatics tools](#)

Short introductory videos for many of the ITCR Tools are available on the [NCIP Hub](#)

Funding Opportunities

ITCR has issued four Funding Opportunity Announcements aimed at successive stages of informatics technology development.

Algorithm Development

PAR-15-334 Development of Innovative Informatics Methods and Algorithms for Cancer Research and Management (R21)

Prototyping & Hardening

PAR-15-332 Early-Stage Development of Informatics Technologies for Cancer Research and Management (U01)

Enhancement & Dissemination

PAR-15-331 Advanced Development of Informatics Technologies for Cancer Research and Management (U24)

Sustainment

PAR-15-333 Sustained Support for Informatics Resources for Cancer Research and Management (U24)

Latest Tweets #nciitcr

#nciitcr

Embed

[View on Twitter](#)

Key Tenants of the ITCR Program

1: Research Driven

- The potential impact to cancer research
- The significance of the proposed informatics technology to the collaborating cancer research projects
- The level of interaction with collaborators in the cancer research field
- The level of innovation of the proposed informatics technology and the advantage over competing technologies

Example: TIES
Research Network



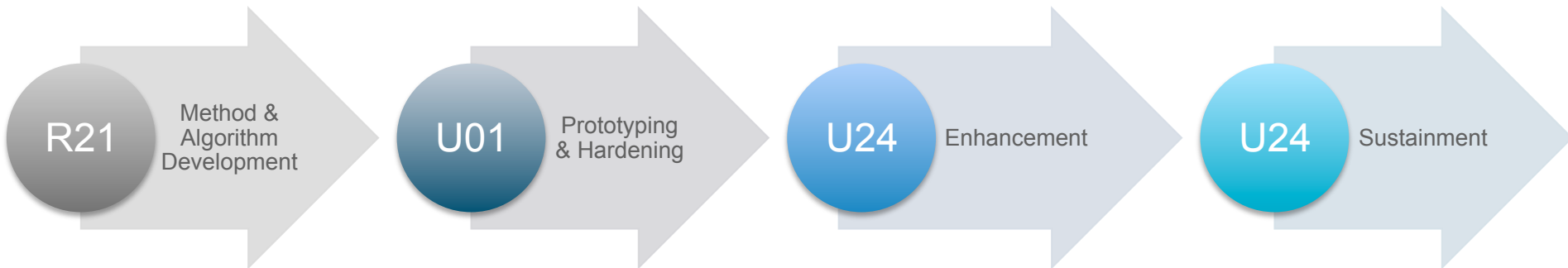
Through the ITCR U24 grant, users of TIES have formed a federated research network in which they share more than 5 million clinical documents and associated FFPE samples.

*Active Sites:
Georgia Regents University
Roswell Park Cancer Center
University of Pennsylvania
University of Pittsburgh*

Key Tenants of the ITCR Program

2: *Support All Stages of the Informatics Technology Lifecycle*

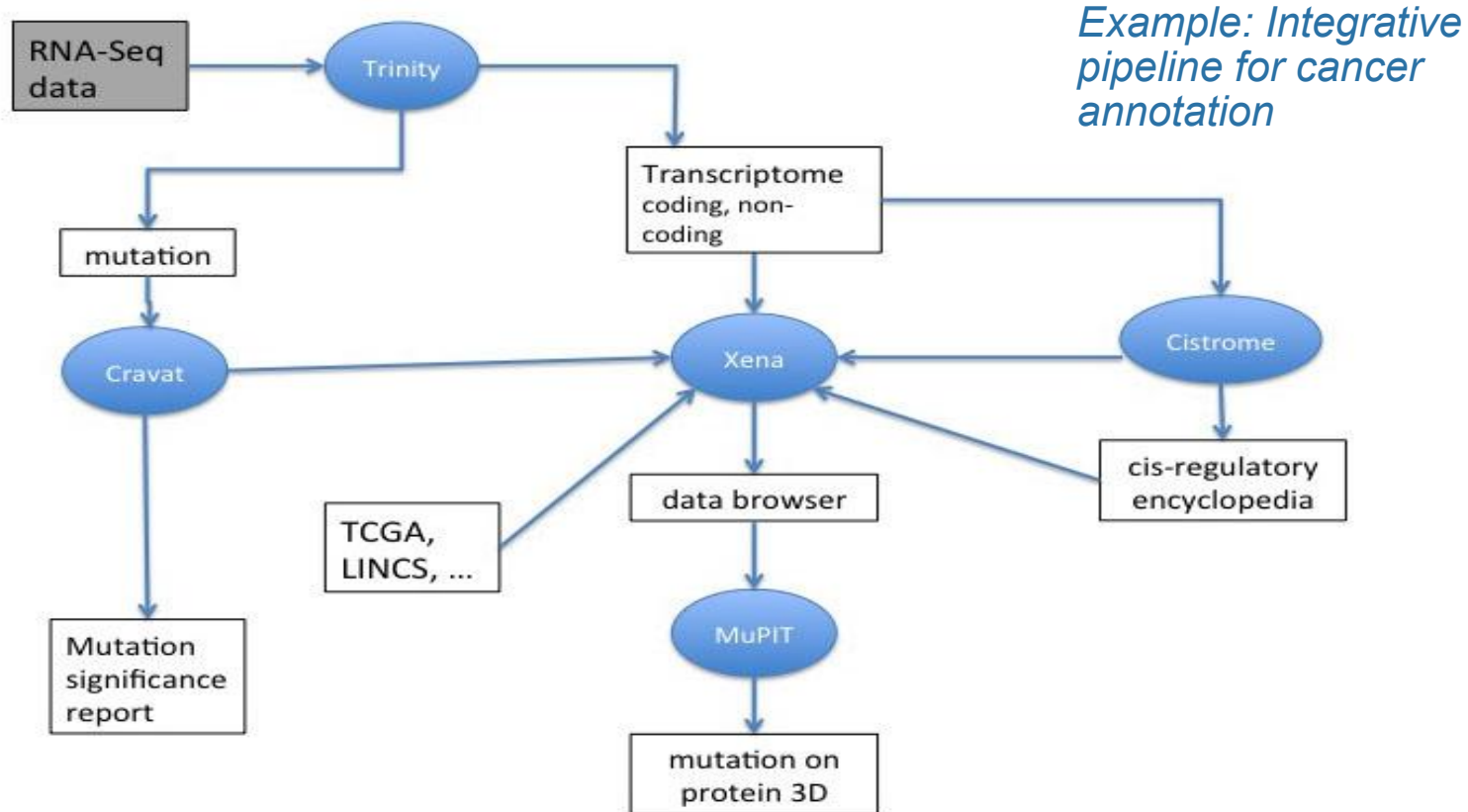
- Development support at all stages of the informatics technology lifecycle
- Can participate in the program at any point in the cycle. Existing technology funding outside of NCI can be supported through any of the U awards.



Key Tenants of the ITCR Program

3: *Inter-project collaboration to enhance interoperability*

- Working groups: Training and Outreach, Technical
- Administrative supplements
- 10% budget set-aside for collaborative projects



Key Tenants of the ITCR Program

4: *Software Dissemination Requirements*

- The software should be **freely available** to biomedical researchers and educators in the non-profit sector, such as institutions of education, research institutions, and government laboratories.
- The terms of software availability should **permit the dissemination and commercialization** of enhanced or customized versions of the software, or incorporation of the software or pieces of it into other software packages.
- To preserve utility to the community, the software should be **transferable** such that another individual or team can continue development in the event that the original investigators are unwilling or unable to do so.
- The terms of software availability should include the **ability of researchers to modify the source code** and to share modifications with other colleagues.
- To further enhance the potential impact of their software, applicants may consider proposing a plan to **manage and disseminate the improvements or customizations of their tools** and resources by others...Accordingly, awardees are encouraged to manage and disseminate their source code through an open revision control and source code management system such as [GitHub](#).

ITCR Successes

- ✓ Connecting informatics tool development with cancer research needs
- ✓ Focused collaborative projects
- ✓ Support informatics tool needs of NCI programs (e.g., QIN)
- ✓ Coordinated outreach and training
- ✓ Improved adoption and citation of software tools

ITCR Goals and Challenges

Goals

- Larger collaborative efforts among this highly diverse set of informatics resources to advance integrative cancer research
- Collaboration with NCI programs such as the Innovative Molecular Analysis Technologies (IMAT) Program

Challenges

- Clinical application of these tools, outside of research
 - Effort and activities to meet compliance requirements is not generally well-suited to the academic research environment
- Long-term sustainment
 - Beyond the 5-yr Sustainment U24



**NATIONAL
CANCER
INSTITUTE**

www.cancer.gov

www.cancer.gov/espanol