Innovative Molecular Analysis Technologies (IMAT) Program Overview

Office of Technology and Industrial Relations

and

Office of Biorepositories and Biospecimen Research

National Cancer Institute

IMAT Mission and Goals

Program Mission:

To support the development, maturation, and dissemination of new technologies and knowledge that significantly impact and transform the abilities of researchers to identify molecular and cellular changes that distinguish pre-cancerous and cancerous cells from normal cells.

Program Goals:

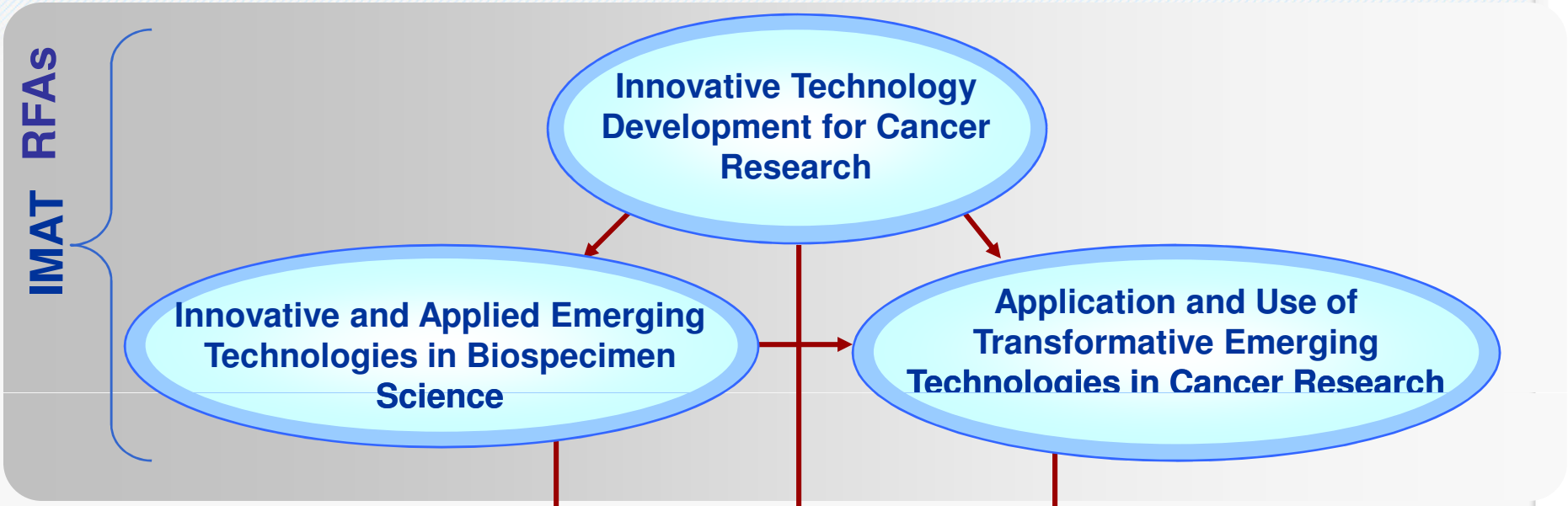
- To focus innovative technology development on cancer
- To solicit highly innovative technology development projects from the scientific and medical communities
- To accelerate the maturation of meritorious technologies from feasibility to development
- To support the development of a diverse, qualified workforce to accomplish the above goals and mission

Why The IMAT Program Was Established

IMAT
Innovative Molecular Analysis Technologies

- **Established to encourage highly innovative cancer technology development projects that:**
  - Address the complexity of cancer, including myriad molecular and cellular processes
  - Understand relevant genes and roles of nucleic acids, proteins, and other cellular factors and modifications
  - Interrogate the cell at multiple levels (genomic, epigenomic, proteomic, metabolomic, kinomic)
- **Provides novel mechanisms, program, and review structures to:**
  - Support innovative cancer-relevant technology from inception
  - Support development of novel applications for those technologies that uniquely enable research by R01 investigators
  - Support and promote the dissemination of innovative and emerging devices, instruments, platforms, tools, and strategies to empower researchers in the fields of cancer detection, treatment, and diagnosis
- **Ensures that resulting technologies are robust and appropriate for intended applications in basic, preclinical, and clinical settings**

IMAT Development Pathway



NCI Biological and Clinical Research Programs, Public/Private Partnerships, or Commercialization

Dissemination of Technologies, Approaches, and Knowledge to Understand, Prevent, Detect, Diagnose, and Treat Cancer

Life Cycle of an IMAT Technology Development Project

IMAT
Innovative Molecular Analysis Technologies

Separate Application Process

R21/Phase I

Mechanism:

Exploratory/pilot phase; requires innovative technology/approach; no preliminary data required

Requirements:

- Description of study
- Relevance to cancer
- Quantitative milestones
- Novel research tool, new detection methodology, or treatment technology
- Improvement over state-of-the-art

R33/Phase II

Mechanism:

Developmental phase; requires feasibility data

Requirements:

- Plan for developing the technology
- Description of potential impact
- Description of completed milestones or evidence of technical feasibility

Technology Dissemination via:

- NCI Programs and Initiatives
- Collaboration
- Publication
- Licensing
- Commercialization

Technology Tools for Researchers:

- Gene expression arrays
- Clinical specimen preservation
- Ultra-high-throughput molecular detection
- Multi-dimensional protein identification
- Photo-stable labels

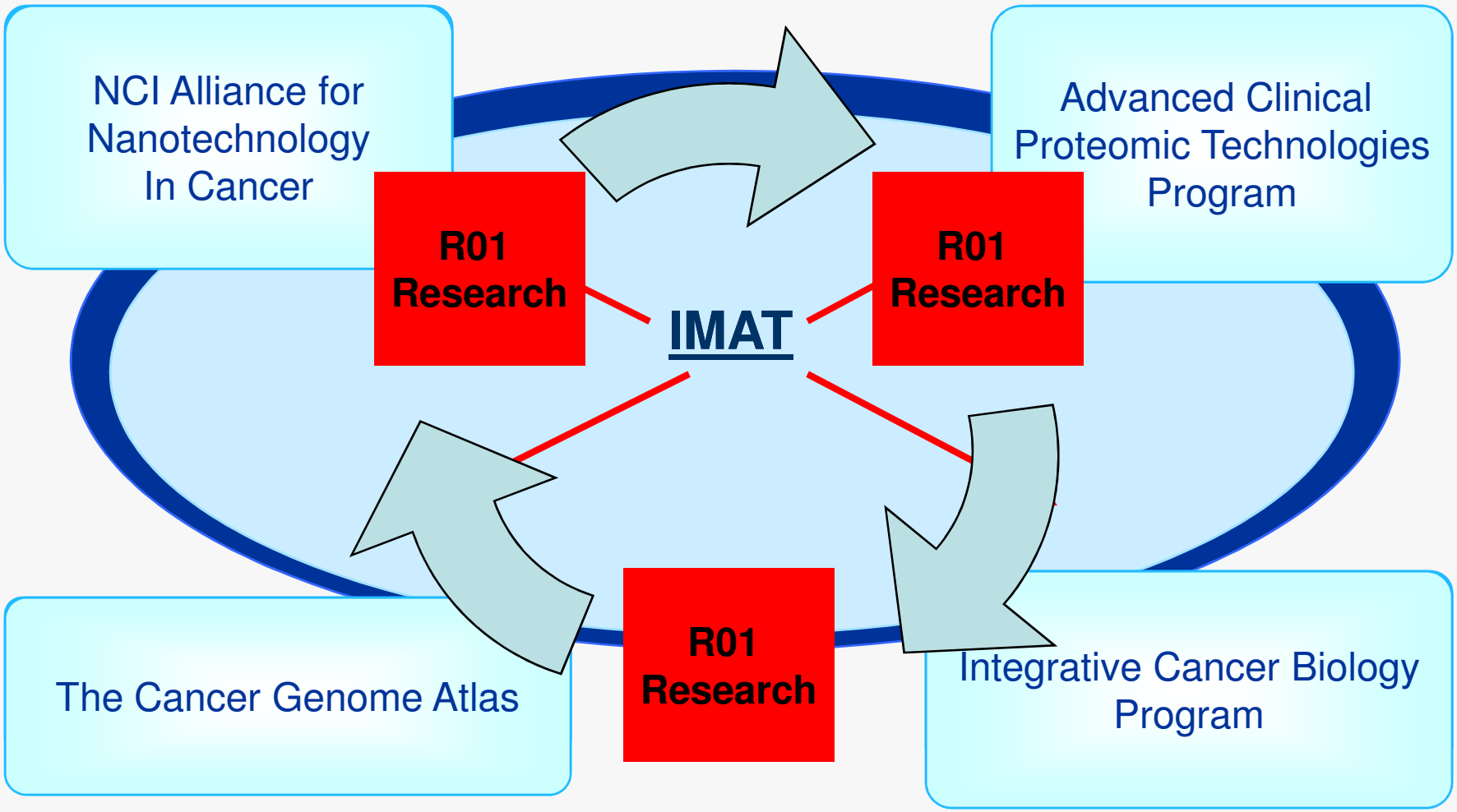
Unique Attributes of IMAT

- **Emphasis on high-risk, high-impact, but also potentially high-payoff technology**
- **Emphasis on technology development vs. hypothesis-driven research**
- **Milestone-based, with performance milestones that *quantitatively* address measures such as specificity, sensitivity, speed, and similar performance parameters**
- **Staged process requiring quantitative evidence of progress or feasibility before advancement to the next stage**
- **Review process focused on milestone review and improvements and whether technology represents an improvement over state of the art**
- **Solicited and funded technologies are multidisciplinary**

IMAT Review Process: Another Unique Feature

- Focus on technology development vs. hypothesis-driven research
- Milestones reviewed; improvements recommended
- Use of Special Emphasis Panels to ensure appropriate focus, control, and adequate representation of multiple fields and technologies
- Reviewers represent multiple educational backgrounds and fields of expertise
- Focus on whether technology represents an improvement over state-of-the-art and the potential impact of the technology on cancer
- Provides for consistency and continuity of review by using both previous IMAT reviewers and successful grantees in addition to new reviewers and experts
- All applications screened prior to review to ensure responsiveness and fit to IMAT RFAs and programmatic objectives, thus ensuring accountability

IMAT Feeds Into Other Strategic Initiatives and Provides Tools that Empower R01 Research



IMAT
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More Information at:

http://innovation.cancer.gov