

Pre-Application Webinar for NCI's Innovative Molecular Analysis Technologies (IMAT) Program

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January 25, 2022

Webinar Logistics

Questions

Submit questions at any time using the Chat. You may chat with “Everyone” or with the panelists.

A moderator will ask the question on your behalf during the Q & A portion at the end of the webinar.



This webinar is being recorded and will be posted on the IMAT website at a later date.

Agenda

1. *Description of the IMAT R61*
2. *Details of Requests for Applications*
3. *Questions*
 - *NOTE: Questions about specific aims will not be addressed today.*

Remember to read the entire RFA before applying!

IMAT Mission and Structure

Program Mission:

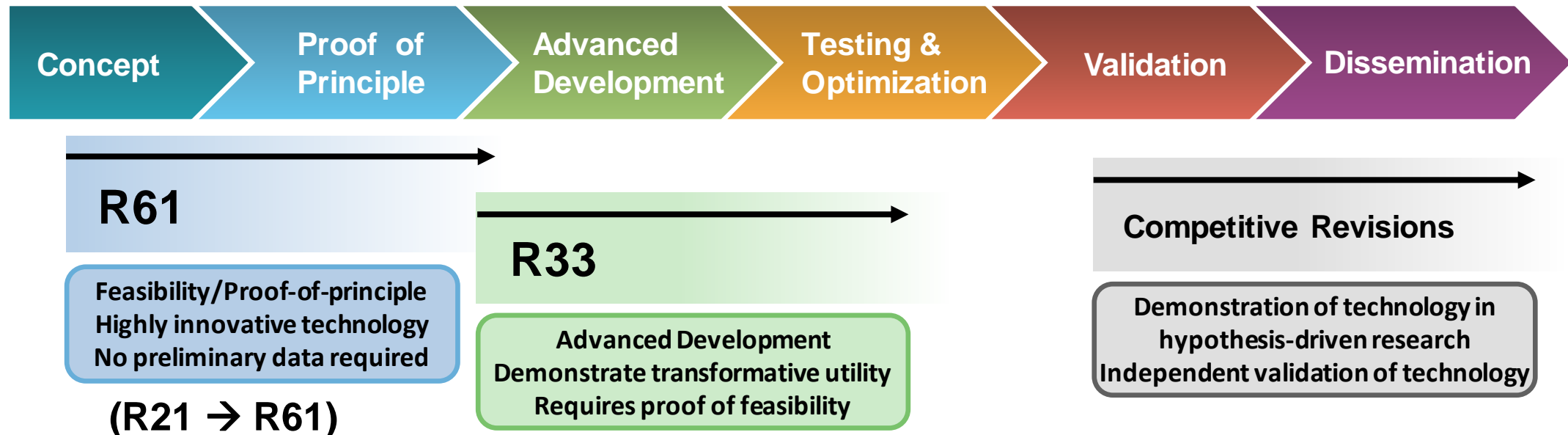
Catalyze multidisciplinary development of highly innovative technologies to grapple with the complexity of cancer biology and to create new possibilities for the fight against cancer.

IMAT Mission and Structure (cont)

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Catalyze multidisciplinary development of highly innovative technologies to grapple with the complexity of cancer biology and to create new possibilities for the fight against cancer.

Technology Development Pipeline



Unique Aspects of the IMAT Program

- Emphasis on *innovative technology* with *transformative potential*. Applications must be focused on further development of the technology, not application of an existing technology.
- Applications solicited through Requests for Applications (RFAs)
 - Special Due Dates: April 22 and September 22, 2022.
 - Annual set aside budget
 - Reviewed by a Special Emphasis Panel

What is the R61?



R61

Feasibility/Proof-of-principle
Highly innovative technology
No preliminary data required

The R61 provides support for early-stage exploratory research. This activity code is used in lieu of the R21 activity code when larger budgets and/or project periods are required to establish feasibility for the project.

What is the R61? (cont)



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Both the R21 and R61 grant mechanisms are intended

- to encourage novel exploratory/developmental research by providing support for the early and conceptual stages of project development.
- to support exploratory high risk/high reward studies that may lead to a breakthrough or result in novel techniques, agents, methodologies, models, or applications that will impact biomedical, behavioral, or clinical research.

The IMAT R61

- RFA-CA-22-001: Innovative Molecular and Cellular Analysis Technologies for Basic and Clinical Cancer Research
- RFA-CA-22-003: Innovative Biospecimen Science Technologies for Basic and Clinical Cancer Research
- Early-stage feasibility studies to demonstrate the core functional capabilities of the proposed technology.
- Due dates: April 22 and September 22, 2022
- Direct costs are limited to \$150,000 per year.
- Project period may not exceed 3 years

Previous applicants CANNOT resubmit an R21 application as an R61.

Two Technology Themes

- Molecular and Cellular Analysis Technologies (RFA-CA-22-001)
 - Emphasis on novel capabilities for targeting, probing, or assessing molecular and cellular features of cancer biology.
- Biospecimen Science Technologies (RFA-CA-22-003)
 - Emphasis on technologies to preserve or protect sample integrity, establish verification criteria for quality assessment/quality control, and improve handling of cancer-relevant biospecimens under diverse conditions.

Technologies may target the needs of basic, diagnostic, translational, epidemiological, and/or clinical cancer research or otherwise address issues associated with cancer health disparities.

Responsive Criteria

- Projects must be focused on developing novel technologies, including relevant techniques, tools, instrumentation, devices, and associated methods.
- There must be a significant question of feasibility in the proposed technology or methodology to justify use of the R61 mechanism
- Applications must include quantitative performance measures
 - Performance measures are a means of judging the success of the project.
 - They are the *target* of performance the investigators aim to achieve.
- Preliminary data are not required, but are accepted if available.

Non-Responsive Projects

Outside the scope of the IMAT technology development RFAs:

- Projects proposing to pursue biological or clinical hypotheses
- Use of existing technologies for which proof-of-concept has already been demonstrated
- Instrumentation for whole-body or *in vivo* imaging
- Development of probes or tagging agents for ***specific*** target molecules (though generalizable agents with broad targeting capabilities are allowed)
- Biomarker discovery or development of drugs/therapies
- Projects focused *primarily* on software/informatics technologies
- An application that lacks quantitative performance measures is considered non-responsive.

Alternative Funding Opportunities

- Technology development projects for which proof-of-concept has been demonstrated (but additional development is still required)
 - Related IMAT R33: RFA-CA-22-002 and RFA-CA-22-004
- Technology projects focused on new bioinformatics or statistical techniques, tools, and/or software development solutions
 - Informatics Technologies for Cancer Research (<https://itcr.cancer.gov>)
- Technology projects focused on the assessment of whole-body or *in vivo* imaging technologies
 - The Cancer Imaging Program (<https://imaging.cancer.gov>)
- Applying a novel technology to exploratory hypothesis-driven research
 - NCI Clinical and Translational Exploratory/Developmental Studies (PAR-20-292)
 - Exploratory/Developmental Bioengineering Research Grants, EBRG (PAR-22-091)

Research Strategy in Application

- Limited to 6 pages
- Must describe:
 - Further development of the innovative, cancer-relevant technology
 - The substantial improvement and/or new capabilities the proposed technology offers
 - The unmet technical need and anticipated transformative potential
 - Performance measures

Individually Scored Review Criteria

1. Significance

- **Specific to this FOA:** If successful, would the proposed technology offer a transformative capacity for a cancer-relevant field of research or clinical care? Does the proposed technology have the potential to be widely adopted by the relevant research community?

2. Investigators

3. Innovation

- **Specific to this FOA:** Will the proposed technology offer new possibilities for cancer research or clinical care relative to the current methods? If the project focuses on a new cancer-relevant application of an existing technology, how innovative are the expanded capabilities and use of the technology?

4. Approach

5. Environment

Additional Scored Review Criteria

- **Performance Measures**

- Are the proposed performance measures adequate based on the specific requirements defined in the FOA? Are they sufficiently realistic and do they adequately address key risk factors for the project? Will the proposed measures allow determination of whether or not the specific aims of the R61 project have been accomplished? Would meeting the proposed measures be sufficient to establish the feasibility of the proposed technology and serve as a foundation for next phase developmental efforts (such as a future R33 project or equivalent)?

- **Protections for Human Subjects**

- **Inclusion of Women, Minorities, and Individuals Across the Lifespan**

- **Vertebrate Animals**

- **Biohazards**

IMAT Portfolio



Microscopy

Stimulated Raman scattering to visualize metabolites and small molecules
TIRF microscopy for epigenetic detection and tracking
Longitudinal, multi-scale microscopy



Immuno-Oncology

Improved CAR-T cell manufacturing
Characterize neoepitope-specific T cells



Organoid and tumor-on-a-chip platforms

Interrogate the tumor microenvironment
Testing response to drug panels
Microbiome-crosstalk



Mass Spec

New techniques to ionize samples
New approaches for single cell MS
MS for certain types of enzymes/proteins
Purify and analyze protein complexes of interest



Biospecimen Science

Chemical test to assess biospecimen integrity
New material to preserve biospecimens



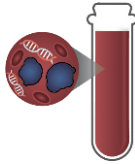
Sequencing

Microfluidics for single cell sequencing
Lineage tracing
Epigenetic screening



Synthetic Biology

Precision control of gene expression
Targeted protein degradation



Biomarker detection

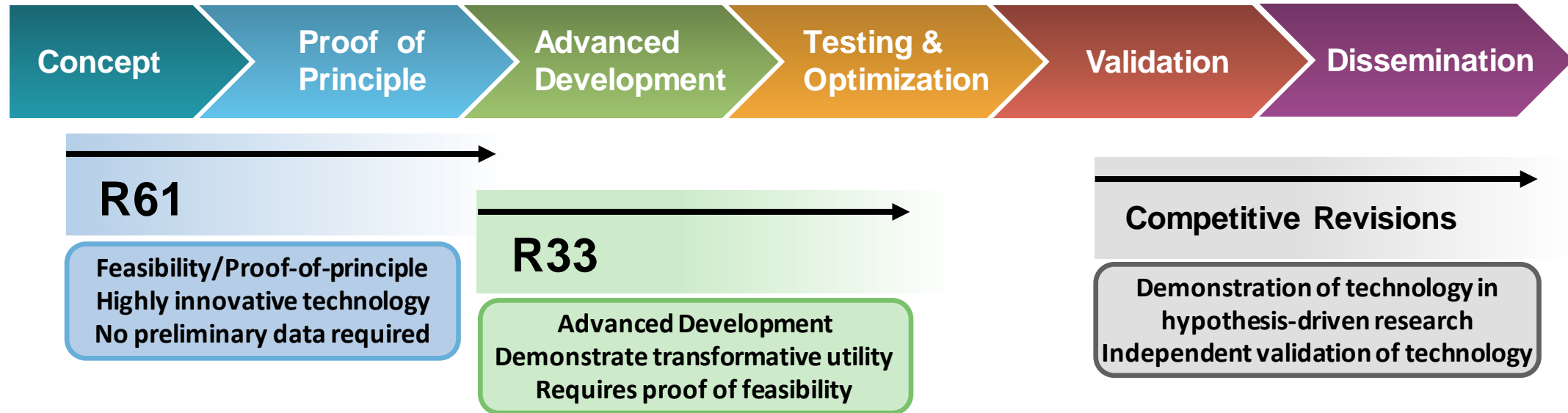
Liquid biopsy technologies
High throughput exosome analysis

Areas of Targeted Interest

- Notice of Special Interest (NOSI): RNA Modifications in Cancer Biology (NOT-CA-22-003)
- Seeking Input on Technology Needs for Cancer Control and Population Sciences Researchers
 - Rapid, affordable, at-home tests for population-level cancer screening
 - Technologies to measure exposure to carcinogens, both environmental or habitual risk factors
 - At-home specimen collection with robust preservation methods
- Expired NOSI: Innovative Molecular Analysis Technologies for Low-Resource Settings Globally (NOT-CA-21-025)

Other Aspects of the IMAT Program

Technology Development Pipeline



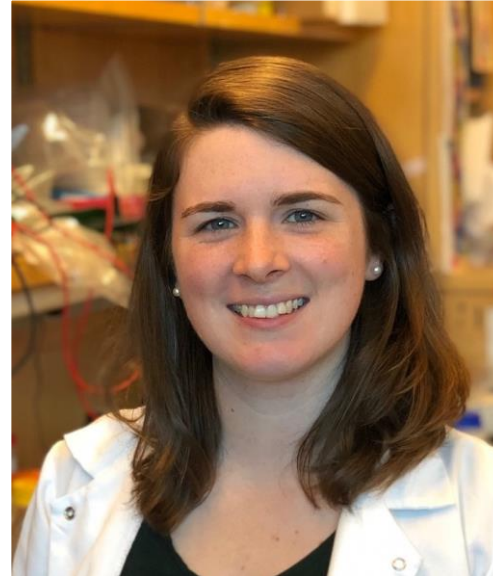
- **R33**: Advanced development of technologies
- **Competitive Revisions**: currently funded NCI grantees can expand their current hypothesis-driven work by incorporating an IMAT-funded technology into their research
- Annual PI Meeting with all IMAT grantees

Questions?

Please enter your questions in the chat



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<https://imat.cancer.gov>

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