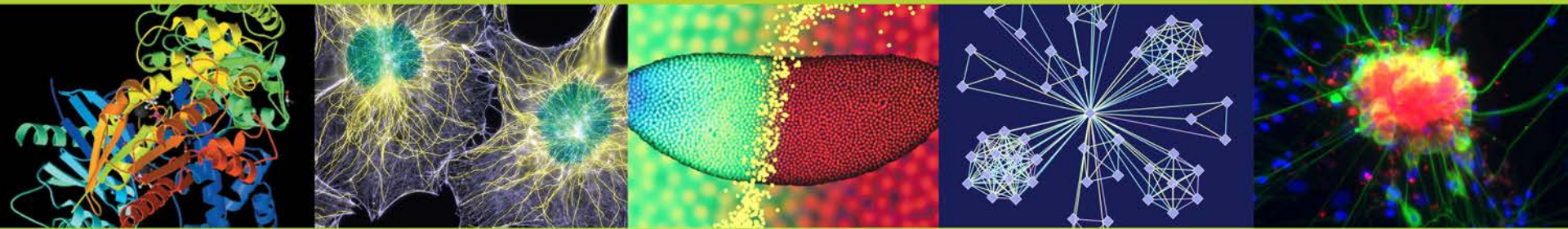


Paul Sammak, Ph.D.
Biomedical Technology,
Bioinformatics, and Computational
Biosciences
NIGMS

Miles Fabian, Ph.D.
Pharmacology, Physiology, and
Biological Chemistry,
NIGMS

NIGMS Technology Development Funding Opportunity Announcements (R01 and R21)

Contact:
NIGMS_TechDev@nigms.nih.gov



Purpose of this Webinar

- NIGMS Technology Development funding opportunity announcements (FOAs)
- R21 ([PAR-19-254](#))
- R01 ([PAR-19-253](#))
- NIGMS Feedback loop blog post on these funding opportunities:
- <https://loop.nigms.nih.gov/2019/05/funding-opportunity-nigms-technology-research-and-development/#more-12313>

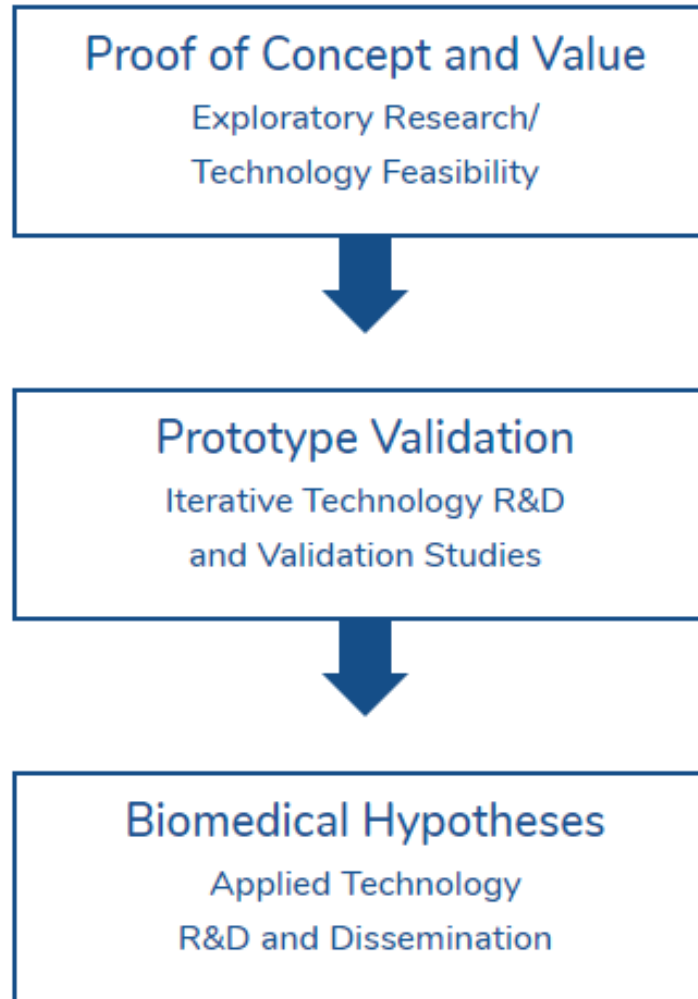


NIGMS Supports Technology development

- Technology research and development grants that support biomedical research areas within the NIGMS mission.
- Tools that enable discovery of new biomedical knowledge
- Generally, projects with significance for specific disease diagnosis or intervention are not eligible
- NIGMS systemic clinical areas include wound healing sepsis, innate immunity, pain and anesthesia



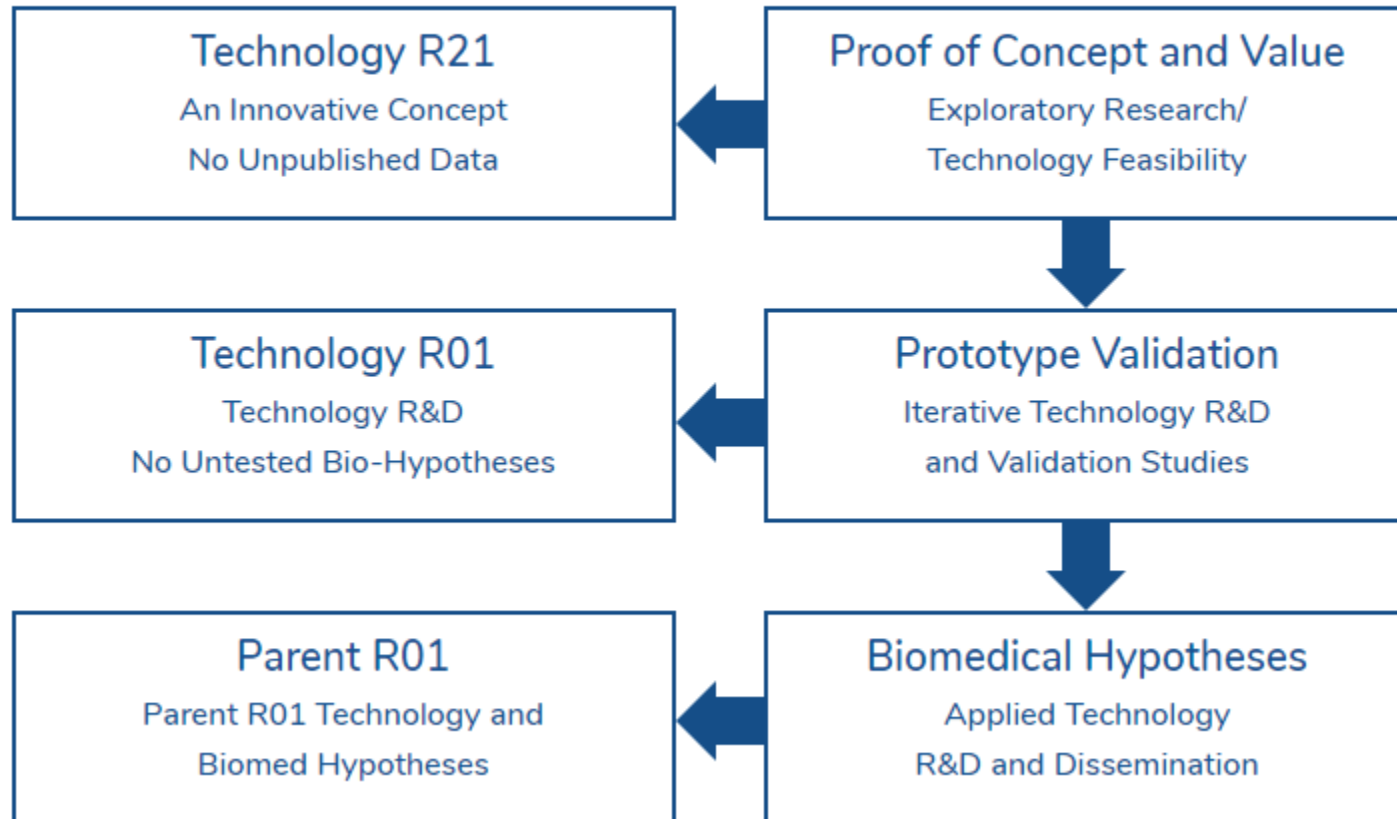
Technology Stages



Funding for Each Development Stage

Funding Opportunities

Technology Stages



Qualities Valued at Each Stage

- **Novelty** - Evaluating new, unrevealed concepts for feasibility or [proof of concept](#) ([R21](#))
- **Innovation** - Inventive research and development for proving value of a [Prototype](#) ([R01](#))
- **Utility** - First biological applications of validated tools to solve unknown [biomedical hypotheses](#) ([NIH parent R01](#))

- Innovation over state of the art is a major criteria at all stages
- Novelty, Innovation and Utility are criteria for patentability



R01 and R21 FOA Notes

- Examples would include instruments, devices, processes, algorithms, software, chemicals, biomolecules, or cells that have potential value for enabling new basic biomedical research.
- Applicants should not include use of the technology to solve biological hypotheses in their applications.
- Validation with well-characterized models or gold-standard biological samples is encouraged.
- The research plan should be rigorous, with defined objectives.



R21 (PAR-19-254) FOA Notes

- Exploratory Research for Technology Development
- Two-year grants that support innovative, high-risk concepts for developing a new technology or radically improving an existing one.
- The R21 supports only novel concepts that haven't yet been tested for feasibility, thus unpublished data are not allowed.
- Because proof of concept must not already be developed, NIGMS expects the projects to be high risk.



R01 (PAR-19-253) FOA Notes

- Focused Technology Research and Development
- Four-year grants that support development projects to validate and optimize a new technology.
- The R01 is for technologies that already have been shown to be feasible but need further technical work to produce a useful prototype.
- Projects with partial demonstration of feasibility but with substantial risk remaining could be submitted as a 3-year R01 with a reduced budget under this FOA



Key Differences

KEY DIFFERENCES	R21 (<u>PAR-19-254</u>)	R01 (<u>PAR-19-253</u>)
Years of support	2-year award	3-5-year award
Criteria	Novel, and innovative	Innovative with future utility
Feasibility	Not yet tested	Already established
Unpublished data	Not allowed	Encouraged
Final objectives	Proof of concept	Working prototype



Key Similarities

Applications should:

- Show significant advance over state-of-the-art technology
- Have future utility for NIGMS-funded research
- Have rigorous research plans and defined intermediate and final objectives
- Exclude untested biological hypotheses, which won't be funded



R21 application eligibility

R21 Application Requirements	or the application will be
No unpublished data	withdrawn
No forecasting proof of concept	withdrawn
Support future NIGMS biomedical research	withdrawn
No biological hypotheses	not funded



Review Criteria

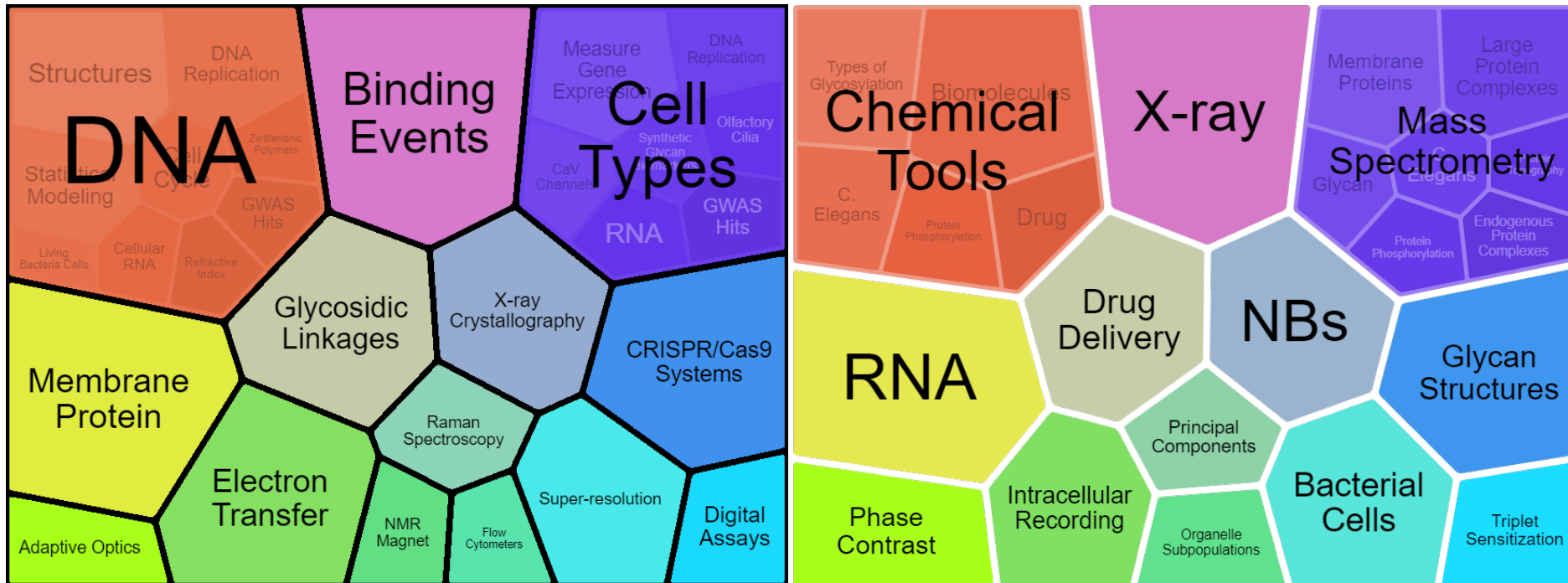
- Intended for high risk project that are not ready for testing biological hypotheses
- Applications should be innovative, rigorous, with measurable intermediate and final objectives
- Risk in the ([R21](#)) can be mitigated with theoretical evaluation, alternative approaches and well described criteria for success and failure
- Feasibility in the([R01](#)) can be demonstrated with unpublished data for prototype development
- Innovation is measured by the increment of advance over state of the art.
- The significance should describe how the technical advance would impact future NIGMS biological research



A Few Example Research Areas Supported by Technology Development

R21 Areas

R01 Areas



These examples illustrate the variety of grant applications received, but do not indicate a preference for research areas.



Technology Career Funding Opportunities

- [Parent R01](#) for long-term career support.
- NIGMS' Maximizing Investigators' Research Award ([R35, MIRA](#)) for early stage
- [R35, MIRA](#) for established investigators with prior NIGMS R01 support.
- Product feasibility and commercial development can be supported through the [SBIR/STTR](#) program.
- Established technology developers might consider the [P41 Biomedical Technology Research Resource](#) program for development and dissemination.



NIGMS Home > Grants and Funding > NIGMS Technology Development Programs (R21 and R01)

NIGMS Home

Research Areas

Research Training

Capacity Building

Grants and Funding

Funding Opportunities

Current NIGMS Funding Opportunities

Parent Announcements for Investigator-Initiated Applications

Research Funding

Research Project Grants (NIH Parent R01)

Maximizing Investigators' Research Awards (MIRA)

Undergraduate-Focused Institutions

Small Business Research

Multidisciplinary Teams/Collaborative Research

Clinical Studies and Trials

Conferences and Scientific Meetings

Administrative Supplements

All Funding Opportunities

Grant Application and Post-Award Information

How to Apply

Grant Application and Review

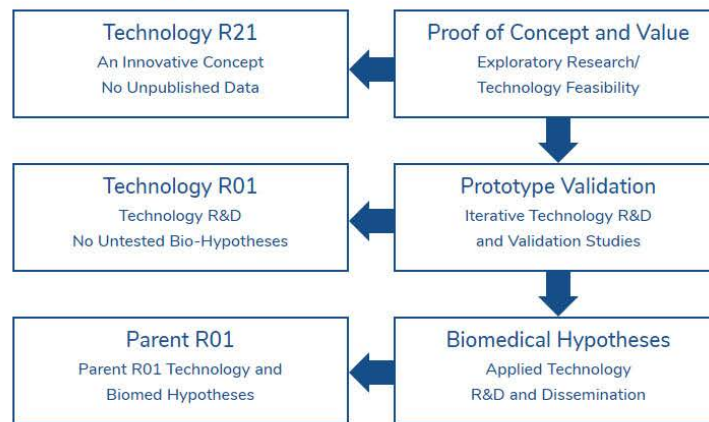
NIGMS Technology Development Programs (R21 and R01)

The technology development R21 and R01 funding opportunity announcements (FOAs) encourage evaluation of technological hypotheses without the pressure to additionally test unknown biological questions. Technologies might originate from biomedical disciplines or from engineering and the physical sciences. Examples include instruments, devices, processes, algorithms, software, chemicals, biomolecules, or cells that have potential value for generating new basic biomedical research. Applications that include untested biological hypotheses would not be funded with these FOAs.

NIGMS R21 and R01 research project grants support technology development from concept, feasibility, and prototype, to demonstrations of biological utility. There are 3 critical stages of early technology development:

Funding Opportunities

Technology Stages



Video Overview of Technology Development Process

NIGMS_TechDev@nigms.nih.gov

