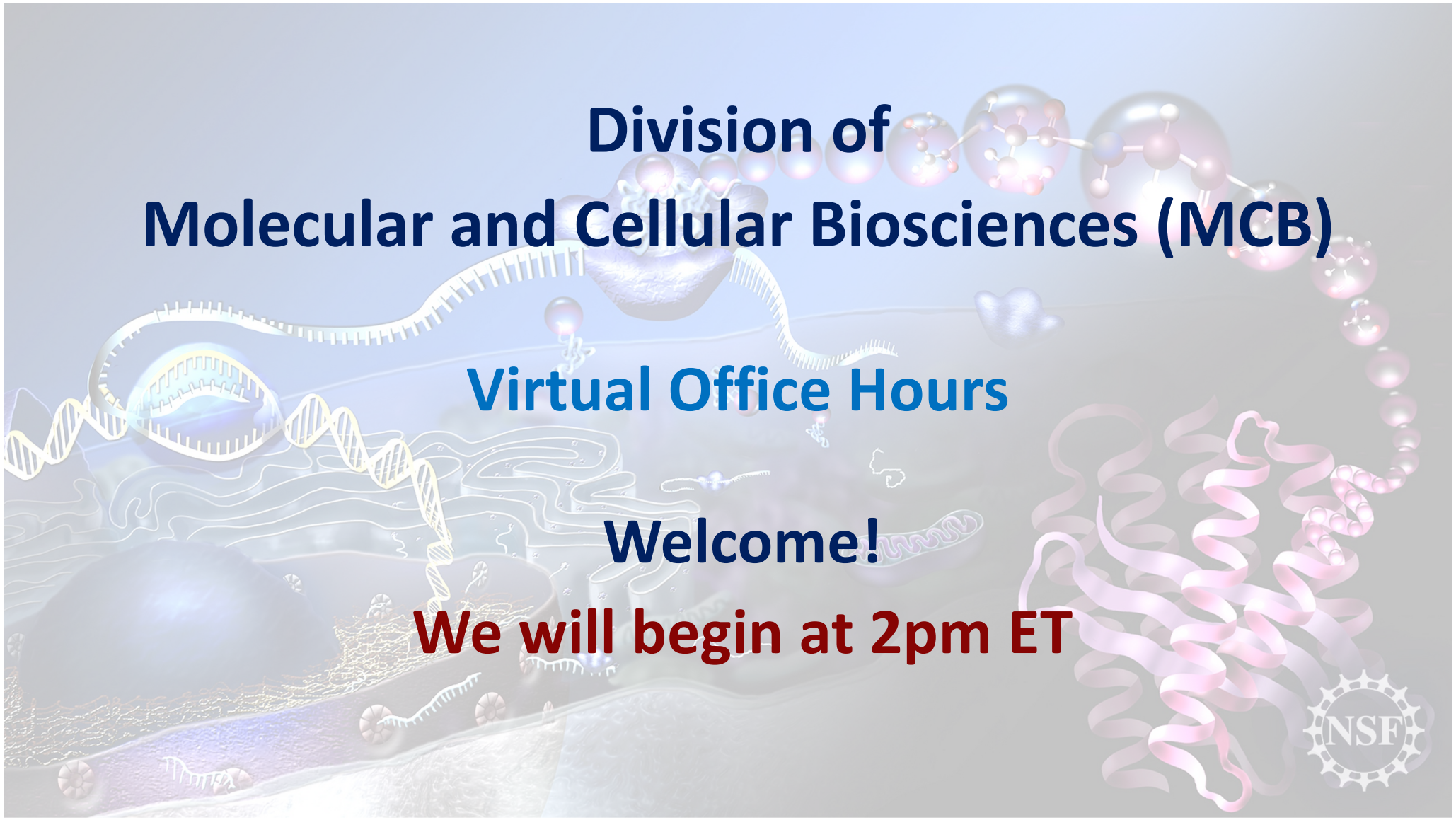

Division of
Molecular and Cellular Biosciences (MCB)
Virtual Office Hours
Welcome!
We will begin at 2pm ET
NSF

Questions and Answers

Submit your questions via the Q&A box on your screen

- You may elect to submit your question anonymously.
- For specific questions about your project, please contact a Program Director.

Next MCB Virtual Office Hours

November 8, 2023: Meet MCB Program Directors
(Core Programs: NSF 23-548)

December 13, 2023: Taking a break – see you in 2024!

MCB Virtual Office Hour

Today's Topic:

Tool Development for Molecular and Cell Biology

(Tools4Cells: NSF 23-121)

Richard Cyr (MCB) - rcyr@nsf.gov
Robert Fleischmann (DBI) - rfleisch@nsf.gov

Slides and recordings of past presentations at

https://mcbblog.nsfbio.com/office-hours/2/

Note: underlined text = hyperlinks

What is the Tools4Cells program?

Dear Colleague Letter (MCB+DBI)

NSF 23-121

- Importance of tools in advancing science.
- Innovations in gene-editing, high-resolution imaging, molecular dynamics simulations, and other tools have revolutionized molecular and cell biology.
- New ideas are invited that push the frontiers and potentially open new avenues of inquiry.
- Call for EAGER (MCB) or Regular (MCB, DBI) proposals

What constitutes a tool?

- New reagent
- New instrumentation or significant modification of existing instrument
- New method or significant modification/adaptation of protocol from another discipline
- New algorithm or significant modification of existing analytical tool to advance the field
- New approaches that leverage multiple disciplines
- Combination of above

Must identify the biological problem the tool will address

What kinds of problems would be appropriate?

Newly identified/long-standing, intransigent problems that require technological breakthroughs for:

- Improved quantification
- Deeper mechanistic understanding
- Greater predictability
- Enhanced control

Tool may be useful for more than one question, but the core biological problem driving tool development must be clear and compelling.

What kinds of problems would be unexciting:

Problems that require incremental technological advances, and/or ones where new tools will yield:

- Better descriptive understanding
- Confirmation of relatively non-controversial knowledge
- Limited new knowledge or application

What if my idea is risky?

Risk is inherent in any advance

- If risk is great, potential reward should be high
- Potential to transform research area
- Emphasis on creativity and originality
- Approach should be logical and reasonable
- Access to resources and expertise should be evident

Project need not be high risk

- A proposal may be relatively low risk, but must be impactful

See slides on EAGER v/s Regular proposals

EAGER v/s Regular proposals

EAGER proposals

(EArly-concept Grants for Exploratory Research)

- Research on untested but potentially transformative research ideas or approaches
- Not intended for collection of preliminary data
- Must have especially forward-thinking approach – "High-risk/High payoff"
- Should not be project appropriate for regular proposal
- Limited funding: $300K over 2 years

See NSF PAPPG 23-1, Ch.2-F3 on guidance for EAGER proposals

Regular proposals

- Larger scale projects than EAGER
- Reasonable amount of preliminary/proof-of-concept data available
- High impact, but risk may be relatively lower

EAGER: Can submit to all MCB Core programs but NOT to DBI

Regular: Can submit to all MCB Core programs and to DBI Innovation programs

How to apply for an EAGER v/s Regular

EAGER proposals

- By invitation only
- Submit idea using ProSPCT
- Can also contact Program directly via email (send 1-page description)
- Program will discuss if project:
  - is appropriate for an EAGER
  - has potential for high impact on scientific field and community
  - could open new fields of inquiry

  and advise PI accordingly

Important Considerations

- EAGERs have limited support
  $300K direct & indirect/2 years
- EAGER may be subject to external review
- Regular proposals can be 2-4 years with higher budgets
- Panels are given specific instructions for T4C proposals
- No invitation required for regular proposals – use Research.gov or Grants.gov

Molecular and Cellular Biosciences (MCB)

MCB supports research that promises to uncover the fundamental and emergent properties of living systems from atomic to cellular scales, and efforts to enable full participation of diverse individuals and institutions in STEM.

Core Programs: NSF 23-548

Molecular Biophysics

Supports computational and experimental research on the structure, dynamics and function of biomolecules, supramolecular assemblies and their interactions.

Genetic Mechanisms

Supports research on fundamental mechanisms involved in the organization, dynamics, processing, expression, regulation and evolution of genetic and epigenetic information in diverse organisms.

Cellular Dynamics and Function

Supports interdisciplinary research aimed at mechanistic understanding of the structure, function and evolution of cellular and subcellular systems across the tree of life.

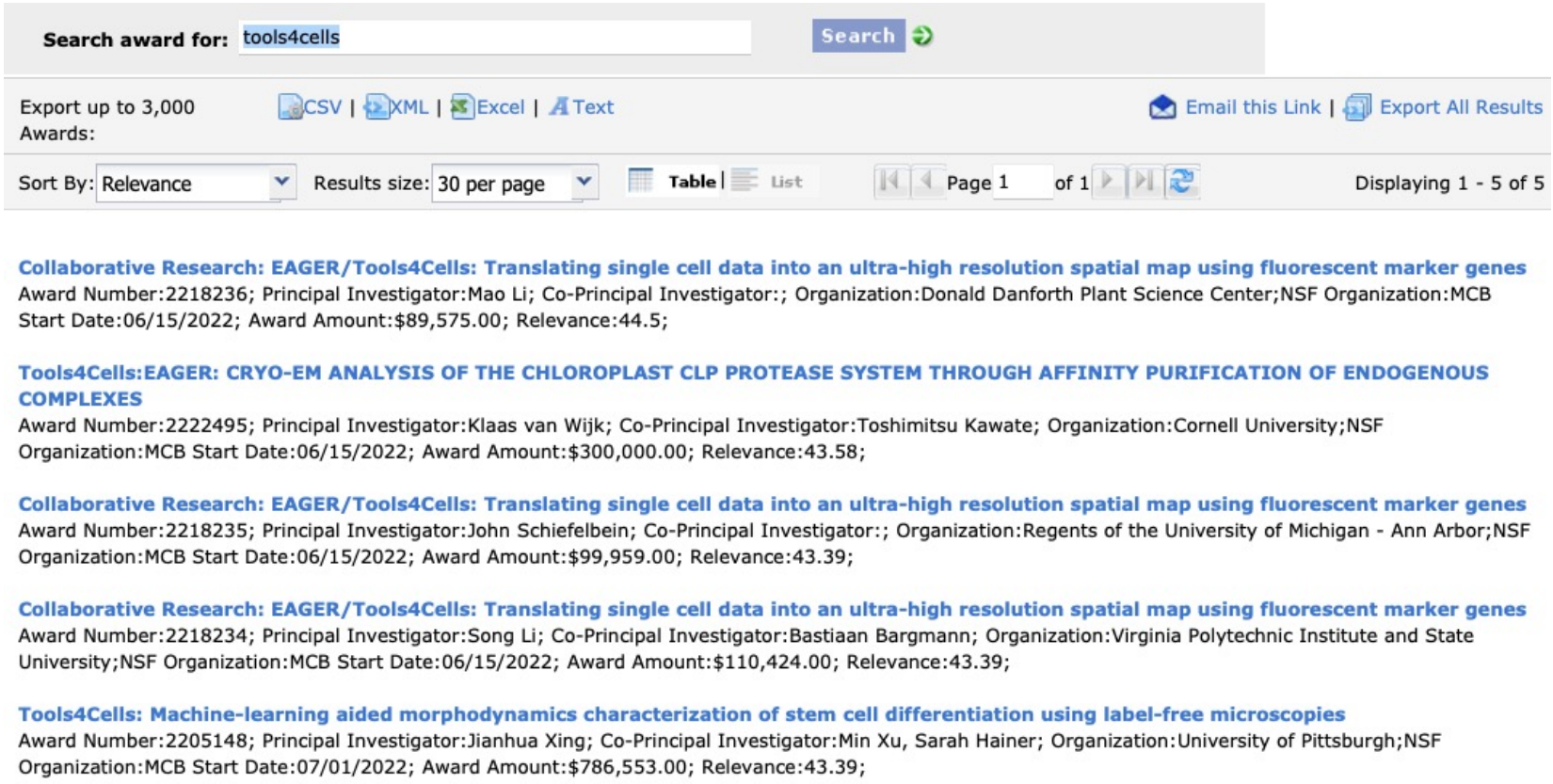
Systems and Synthetic Biology

Supports research that employs systems biology or synthetic biology approaches to to understand molecular and cellular mechanisms in established, new, or emerging model systems.

No deadline for submitting proposals to core programs

What has been funded?

NSF Award Search: https://www.nsf.gov/awardsearch/
Use keyword “Tools4Cells”
For additional relevant tool development EAGERs, use keyword “EAGER” and NSF Organization “MCB”



Infrastructure Innovation for Biological Research (Innovation, NSF 23-578)

- **Synopsis**
  - Support research to design novel or greatly improved research tools and methods that advance contemporary biology

- **Programmatic Areas**
  - Innovation: Bioinformatics
  - Innovation: Instrumentation
  - Innovation: Research Methods

- **Program Information**
  - Duration of projects: usually 3 years
  - Anticipated Number of Awards for FY24: 20 to 40

Tools 4 Cells – Division of Biological Infrastructure Innovation Program

- **Evaluation criteria:**
  - Applicable to a broad class of biological research questions or topics.
  - Will meet the needs of a well-defined community of researchers.
  - Responsiveness to a broadly applicable research question in BIO.
  - Relevant to a specific BIO-funded research community.
  - Innovation will represent an advance over currently available tools and methods.

Innovation: Instrumentation and Research Methods

- **Goal**

  Supports the design of novel and innovative instrumentation and/or methods

- **Priorities**
  - **The instrumentation should be responsive to a broad class of biological research questions or topics**
  - Potential to be used by a community of researchers beyond a single research team
  - Instrumentation and Methods should target research in molecular and cellular biology in new and creative ways
  - Not supported: refinement, optimization, or scaling of existing methods and validation of new reagents for standard approaches (e.g., new antibodies or fluorescent tags).

- DBIInstrumentation@nsf.gov
- DBIInnovationMethods@nsf.gov

Innovation: Bioinformatics

- **Goal**

  Seeks to pioneer new approaches to the application of informatics to biological problems

- **Priorities**
  - Creating computational/informatics tools and database architectures that are applicable to a ***broad range*** of biological research questions
  - High degree of novelty and potential impact
  - Publication of new methodologies, proof of concept, or production of a prototype for further development
  - Solve challenging, high-risk problems

- **Contact:** DBIBioinformatics@nsf.gov

Tools4Cells: Take-home messages

EAGER or Regular?

- EAGER projects are considered especially "high risk-high payoff", are small scale, short duration, and are by invitation only.
- MCB will consider EAGER proposals, not DBI.

Submit to MCB or DBI?

- MCB – if tool is primarily for use by molecular and cellular bioscience researchers to address specific biological question(s).
- MCB – if appropriate as an EAGER or Regular proposal.
- DBI – if tool is useful to a larger, well-defined biological science research community, is applicable to a broad range of research questions, and is a substantive advance over currently available tools.

Contact a Program Director?

- DBI and MCB – if unsure which program is more appropriate (email project summary).
- MCB – if the project is appropriate as an EAGER (send summary via email or ProSPCT).

NSF proposal writing guidance?

- See slides/recording from April 12, 2023 MCB virtual office hour.

Next MCB Virtual Office Hours

- Wednesday November 8th, 2023, 2-3 pm ET
  Meet MCB Program Directors
- December break
  See you in 2024!

All BIO Divisions host monthly VOH

Biological Infrastructure: 3rd Tuesday (3-4 pm)

Environmental Biology: 2nd Monday (1-2 pm)

Integrative Organismal Systems: 3rd Thursday (1-2 pm)

Molecular and Cellular Biosciences: 2nd Wednesday (2-3 pm)

SCIENCE HAPPENS HERE

Share your story!

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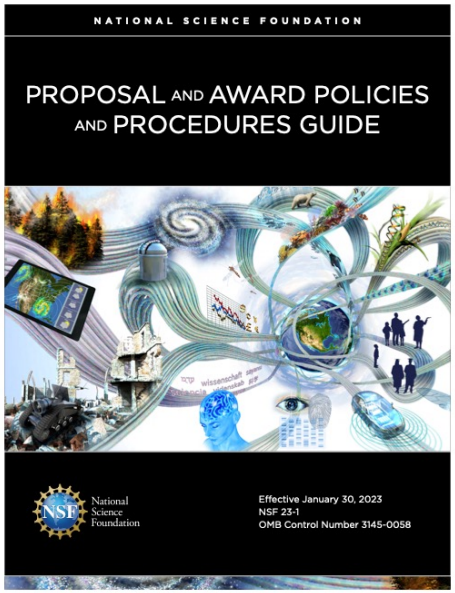
- ☑ We will amplify your posts and share your stories. We will also share your stories at events, hold competitions, feature on our blog and more!

Toolkit: nsf.gov/ScienceHappensHere

New requirements!

New PAPPG 23-1 is in Effect



NSF 23-1: FAQ

NSF 23-1 - effective date January 30, 2023

Summary of Changes: https://beta.nsf.gov/policies/pappg/23-1/summary-changes

- Safe and Inclusive Working Environments for Off-campus/Off-site Research:
  After April 18, 2023, **BIO and GEO proposals** that involve off-campus or off-site research must submit a plan for safe and inclusive research (PAPPG II.E.9). This requirement reflects NSF's efforts to foster safe and harassment-free environments wherever science is conducted. Feb 7th, 2023, webinar recording.
- Potential Life Sciences Dual Use Research of Concern (DURC):
  Proposals that could potentially be considered DURC or involve enhanced potential pandemic pathogens must self-identify and comply with US Govt. policy requirements (PAPPG II.E.6). Governed by policies released in 2014 and 2017.
- Biographical Sketch and Current and Pending Statement:
  After October 23, 2023, biosketches and C&P statements must use SciENcv format (PAPPG II.D.2.h).