

**NSF FUNDING OPPORTUNITIES
FOR RESEARCH AT THE
INTERFACE OF THE BIOLOGICAL
AND MATHEMATICAL SCIENCES**

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National Science Foundation | Mathematical & Physical Sciences (MPS)



PROGRAM

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DMS-MCB MODULUS

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Math Biology

DMS-NIGMS

MODULUS

The Mathematical Biology Program at NSF/MPS/DMS supports research in areas of applied and computational mathematics with significant relevance to the biological sciences. Successful projects are mathematically innovative and address challenging problems of interest to members of the biological community. Full proposal submission window: 08/20/2020 – 09/08/2020, and 08/20 – 09/05 annually thereafter.

The Joint DMS/NIGMS Initiative is a collaborative program between the Division of Mathematical Sciences of NSF and the National Institute of General Medical Sciences (NIGMS) at the National Institutes of Health (NIH). The program supports novel fundamental research in mathematics and statistics necessary to answer questions in the biological and biomedical sciences. Full proposal submission window: 09/01 – 09/18 annually.

Models for Uncovering Rules and Unexpected Phenomena in Biological Systems (MODULUS): The Division of Mathematical Sciences (DMS) and the Division of Molecular and Cellular Biosciences (MCB) jointly support non-medically motivated interdisciplinary research that enables novel mathematical and computational approaches that capture and explore the full range of mechanisms and biological variability needed to better understand biological systems behavior across multiple scales. Successful projects should include innovative mathematical approaches that will drive biological discovery. For proposal submission instruction, see <https://www.nsf.gov/pubs/2019/nsf19054/nsf19054.jsp>

Division of Mathematical Sciences (DMS) | Mathematical Biology

<https://www.nsf.gov/mps/dms>

MATHEMATICAL BIOLOGY PROGRAM

- The Math Biology Program is a **core program of DMS** (Division of Mathematical Sciences)
- What do we fund?
 - Support research in areas of **applied and computational mathematics** with significant relevance to the biological sciences.
 - Successful projects are **mathematically innovative** and address **challenging problems of interest to members of the biological community.**
 - All biological areas
- **Full proposal submission window:**
 - 08/20/2020 – 09/08/2020,
 - and 08/20 – 09/05 annually thereafter
 - Very likely to be changed for future competitions
- https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5690

DMS/NIGMS PROGRAM GOAL

- **Jointly between NSF/DMS and NIH/NIGMS**
- Was initiated in FY 2002 as part of the Mathematical Sciences Priority Areas
- **The Goal** is to promote research at the interface between mathematical and life sciences:
 - bring mathematics/statistics into the core of biological research
 - broaden the use of **innovative mathematics** in understanding life processes
 - support scientists with quantitative skills to conduct biomedical research

PROGRAM CHARACTERISTICS

- Encouraging **collaboration** between scientists from the life sciences community and the mathematical and/or statistical sciences communities
- Bringing **mathematicians/statisticians/engineers** to biomedical and fundamental biological research
- Promoting **quantitative biological methods** in life sciences
- Revealing a continuous critical need to support research focused on complex biological systems that include both **modeling and experimental components**

PROGRAM SNAPSHOTS

- **High-risk, high-reward** exploratory projects, or those from new teams of collaborators
 - \$100K - \$200K (total budget) per year for 3 years
 - Started from FY2019
- **Larger scope projects** from well-established teams
 - \$200K - \$400K (total budget) per year for 3-4 years.
- No set-aside funding but program typically funds up to \$5,000,000 per year for new applications
 - up to \$2M from NSF and up to \$3M from NIGMS
 - average yearly budget is ~\$7M from NSF and ~\$11M from NIGMS
- **Proposal Submission:** September 01-18 annually
- **Awards are made by either NSF or NIH at the option of the agencies, not the grantee**

NSF-SIMONS MATHBIOSYS CENTERS



NSF-SIMONS CENTERS IN MATHEMATICS OF COMPLEX BIOLOGICAL SYSTEMS

- NSF - Simons Foundation Collaboration
- Collaborative research at the intersection of mathematics and molecular, cellular, and organismal biology
 - emergent properties of complex biological systems
- Establish new connections between mathematics and biology
- Interdisciplinary education and workforce training; building capacity
- Four MathBioSys centers funded in FY2018
 - Each center has explicit outreach/visiting plans
 - \$10M each for 5 years
- **Phase II is under consideration** – **New Funding Opportunities**

NSF-SIMONS MATHBIOSYS CENTERS

- NSF-Simons Southeast Center for Mathematics and Biology
 - **Georgia Institute of Technology**
 - <https://scmb.gatech.edu/>
- NSF-Simons Center for Quantitative Biology
 - **Northwestern University**
 - <https://www.quantitativebiology.northwestern.edu>
- NSF-Simons Center for Multiscale Cell Fate Research
 - **University of California at Irvine**
 - <http://cellfate.uci.edu/>
- NSF-Simons Center for Mathematical and Statistical Analysis of Biology
 - **Harvard University** <https://quantbio.harvard.edu/>