Ad hoc Council Participants

• Vera Moiseenkova-Bell, Ph.D.
  Professor of Pharmacology
  Department of Pharmacology
  University of Pennsylvania

• Christopher W. Seymour, M.D., M.Sc.
  Associate Professor of Critical Care Medicine
  and Emergency Medicine
  Department of Critical Care Medicine
  University of Pittsburgh
Early Career Investigator *Ad hoc* Council Participants

- **Sarah Cohen, Ph.D.**  
  Assistant Professor  
  Department of Cell Biology and Physiology  
  School of Medicine  
  University of North Carolina at Chapel Hill

- **Paul Sigala, Ph.D.**  
  Assistant Professor  
  Department of Biochemistry  
  University of Utah
NIGMS Personnel Changes

New Hire

• Chi-Wing Chow, Ph.D., Program Officer, Cell Biology Branch, Division of Genetics and Molecular, Cellular, and Developmental Biology

Departures

• Behrous Davani, Ph.D., Program Officer, Division for Research Capacity Building (move to the National Cancer Institute)
• Hongwei Gao, M.D., Ph.D., Program Officer, Division for Research Capacity Building (move to the National Institute on Aging)
NIGMS Personnel Changes (cont.)

Departures

• **Tanya Hoodbhoy, Ph.D.,** Program Officer, Division of Genetics and Molecular, Cellular, and Developmental Biology (move to the National Institute of Dental and Craniofacial Research)

• **Gary Marlowe,** Division of Extramural Activities (move to the National Institute of Neurological Disorders and Stroke)
NIH Departure

Norman E. “Ned” Sharpless, M.D.

- Stepped down as director of the National Cancer Institute (NCI) in April; had held position since 2017
- Served as acting commissioner for Food and Drugs at the U.S. Food and Drug Administration for 7 months in 2019
- Advocated for policies to ensure continued support for investigator-initiated cancer research and diversity in the cancer research workforce
- NCI Principal Deputy Director Douglas R. Lowy, M.D., serving as acting director
Save the Dates: Upcoming NIGMS Lectures

Judith H. Greenberg Early Career Investigator Lecture
• Cesar de la Fuente, Ph.D., University of Pennsylvania
• September 28, 1–2 p.m. ET

DeWitt Stetten Jr. Lecture
• Sally Hodder, M.D., West Virginia University
• November 30, 3–4 p.m. ET

Both lectures will stream via NIH Videocast: videocast.nih.gov
STEM Teaching Resources Portal

• NIH-wide collection of free, easy-to-access materials educators can use to engage K–12 students in science
• Launched in April; managed by NIGMS (along with new NIH STEM coordinating committee)
• Features educational materials from across NIH, as well as many SEPA-funded resources
• Featured in the National Science Teaching Association newsletter (235,000+ subscribers)
• Shared on social media by a variety of stakeholder groups outside of NIH
• See more: science.education.nih.gov
Vaccine science issue published in April!

- In partnership with the Office of the Vice President
- Reached an estimated 2.5 million middle and high school students and 19,000 teachers across all 50 states
- Includes online activities featuring NIGMS-funded scientists and research, a Kahoot! vaccine science quiz, and lesson plans that map to curricular standards
- See more: scholastic.com/pathways
UNITE Initiative: Expansion of Science Education Partnership Awards (SEPA) Program

• NOT-HG-22-017: Participation of Additional NIH Institutes and Centers in SEPA

• Sixteen NIH Institutes and Centers (ICs) have Joined NIGMS to fund SEPA awards

• All applications will be submitted to NIGMS. Participating ICs may select applications they are interested in funding after review

• SEPA awardees funded by all ICs will participate in program-wide activities led by NIGMS

• Goal is to fund more SEPA grants

• We want to see MORE SEPA applications!
MOSAIC Scholars Updates

- Maximizing Opportunities for Scientific and Academic Independent Careers (MOSAIC) program has welcomed 12 scholars so far in 2022
- Goal is to enhance diversity of faculty at research-intensive positions
- 23 NIH institutes, centers and offices now participate in MOSAIC
- K99 applications due three times per year (February, June, October)
- Learn more: go.usa.gov/xuR35
Request for Information

- Seeking input from students and trainees on how to improve research training, career progression, and the educational environment
- Especially interested in hearing from those in NIGMS-funded training programs
- Comment deadline is May 28; learn more by visiting the Feedback Loop blog post: go.usa.gov/xugc7
Cloud-Computing Could Democratize Data Science

- NIGMS supports capacity building and training at many under-resourced institutions
  - ~400 institutions in the 24 IDeA states
  - ~100 Minority Serving Institutions

- The cloud can allow access to high-performance computing, advanced data science tools (e.g., AI, ML, etc.), and Big Data for researchers and students at any institution
Cloud Computing RFI and Workshop

- Collaboration with NIH Office of Data Science Strategy and NIMHD
- RFI - Seek input on current and future needs and utilization of cloud computing from institutions within IDeA-eligible states, RCMIs, and MSIs.
  - Released: July 8, 2021
  - Response period: July 8-September 30, 2021
- NIH Workshop on Broadening Cloud Computing Usage in Biomedical Research (Sept 13 – 14, 2021)
- Clear need: More training opportunities
An NIGMS Cloud “Sandbox” with Multiple Learning Modules

NIGMS Biomed Research Learning Sandbox

Basics of Cloud Computing (Google/Amazon)
MassSpec Data Analysis
University of Arkansas Med Sci
RNA-Seq Analysis
University of Maine, MDIBL

1 2 3 4 5

By NIH STRIDES
By NIGMS Pilots

New Learning Modules

Work in Progress: 1. Funding 10 investigator teams to build additional learning modules
2. Developing a platform to deploy the Sandbox
# Ten Additional Modules to Be Built in 2022

<table>
<thead>
<tr>
<th>Topic</th>
<th>Project Lead(s)</th>
<th>Applicant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fundamentals of Bioinformatics (Configuration, data manipulation, Genome Assembly)</td>
<td>Shannon Soucy</td>
<td>NH-INBRE</td>
</tr>
<tr>
<td>DNA Methylation Sequencing Data Analysis (Sequence processing and analysis)</td>
<td>Yujia Qin, Youping Deng</td>
<td>HI-INBRE</td>
</tr>
<tr>
<td>Consensus Pathway Analysis (High throughput data processing, differential gene expression, Gene set enrichment, consensus analysis and visualization)</td>
<td>Tin Nguyen, Julia Petereit</td>
<td>NV-INBRE</td>
</tr>
<tr>
<td>Assay for Transposase Accessible Chromatin (ATAC-seq) to identify open/accessible regions of the genome</td>
<td>Babu Guda, Jordan Rowley</td>
<td>NE-INBRE</td>
</tr>
<tr>
<td>AI/ML (Python/Pytorch, BigData, Deep Learning, Hadoop and Map Reduce, Image analysis)</td>
<td>Justin Zhan, Kyle Quinn,</td>
<td>AR-INBRE</td>
</tr>
<tr>
<td>Biofilm-Microbiome Composition [16S and Metagenomics], Diversity, and Function</td>
<td>Etienne Zohim, Carol Lushbough</td>
<td>SD-INBRE</td>
</tr>
<tr>
<td>Data Science for biology (Introduction to R and R Studio, creating plots, statistical model)</td>
<td>Pleuni Pennings, Megumi Fuse</td>
<td>SFSU</td>
</tr>
<tr>
<td>Transcriptome (QC, preprocessing, and Normalization, Assembly, Annotation, Differential expression analysis)</td>
<td>Joel Graber, Christian Wilson, Nathaniel Maki</td>
<td>ME-INBRE</td>
</tr>
<tr>
<td>Biomarker Discovery from Proteomics, metabolomics, and transcriptome data</td>
<td>Christopher Hemme</td>
<td>RI-INBRE</td>
</tr>
<tr>
<td>Integrating multi-omics (transcriptome, epigenetics and proteomics datasets)</td>
<td>Sandeep Singhal</td>
<td>ND-INBRE</td>
</tr>
</tbody>
</table>
MIRAs vs. R01s: Take Aways from February Meeting

- EI and ex-ESI MIRA renewals and conversions have higher award rates than R01 renewals

- Both R01 and MIRA renewals received budget increases
  - ex-ESI and lower budget MIRA renewals received the largest increases

- R01 to MIRA conversions overall received significant budget increases
  - PIs with R01s <$250k in direct costs were brought up to $250k
  - PIs with large budgets (>=$400k) were generally cut by ~12%

Some Additional Questions About MIRA

- Are PIs still applying for MIRAs?
  - Strategic Goal: ≥60% of R01-equivalent pool will be MIRAs by 2025

- What are the demographics of MIRA PIs?

- Do the restrictions of MIRA make PIs more likely to apply for additional funding from other NIH Institutes and Centers (ICs)?

- How does the productivity and scientific importance of MIRA PIs’ research compare to similar R01-funded PIs?

Analysis: Travis Dorsey
Interest in MIRA

- MIRA has become an increasingly large component of the NIGMS portfolio, and interest in the program continues to be high, especially among ESIs.
- More than half of the competing ESI RPG awards in each year are now MIRAs.

For more information, read our Feedback Loop post: https://loop.nigms.nih.gov/2022/04/application-and-funding-trends-in-fiscal-year-2021/
MIRA Demographics

Gender Breakdown of MIRA and R01 Awards
Excludes Unknown/Withheld

<table>
<thead>
<tr>
<th></th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>EI MIRA</td>
<td>73%</td>
<td>27%</td>
</tr>
<tr>
<td>EI R01</td>
<td>79%</td>
<td>21%</td>
</tr>
<tr>
<td>ESI MIRA</td>
<td>68%</td>
<td>32%</td>
</tr>
<tr>
<td>ESI R01</td>
<td>73%</td>
<td>27%</td>
</tr>
</tbody>
</table>

UR Status Breakdown of MIRA and R01 Awards

<table>
<thead>
<tr>
<th></th>
<th>White</th>
<th>Asian</th>
<th>Hispanic or Black</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>EI MIRA</td>
<td>72%</td>
<td>20%</td>
<td>23%</td>
<td>5%</td>
</tr>
<tr>
<td>EI R01</td>
<td>67%</td>
<td>23%</td>
<td>7%</td>
<td>11%</td>
</tr>
<tr>
<td>ESI MIRA</td>
<td>56%</td>
<td>27%</td>
<td>10%</td>
<td>35%</td>
</tr>
<tr>
<td>ESI R01</td>
<td>49%</td>
<td>35%</td>
<td>5%</td>
<td>11%</td>
</tr>
</tbody>
</table>
Subsequent Applications to Other NIH ICs

- MIRA investigators submit post-award competing applications to other NIH ICs less often than do NIGMS R01 investigators

For more information, read our Feedback Loop post: https://loop.nigms.nih.gov/2022/03/do-mira-investigators-apply-for-more-grants-from-other-nih-institutes-and-centers-than-r01-investigators/
Publications and Citations

• More average annual publications from EI MIRA and Early Cohort ESI MIRA investigators than NIGMS R01 Comparators

• Similar trends seen in Citations and Field-Normalized Citations
Key Findings

• MIRA has become an increasingly large component of the NIGMS portfolio, and interest in the program continues to be high, especially among ESIs

• ESI MIRA PIs are more diverse than EI MIRA PIs, but still well below the level for Ph.D. graduates in the life sciences

• MIRA investigators have submitted fewer subsequent applications to other NIH institutes and centers than NIGMS R01 investigators

• EI MIRA investigators have slightly higher productivity and citations than comparable EI R01 investigators
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