NIBIB Grant Mechanisms for New Investigators

The 61st ENC March 9, 2020

Guoying Liu, Ph.D.

Program Director– Magnetic Resonance Imaging & Spectroscopy

National Institute of Biomedical Imaging and Bioengineering

National Institutes of Health

Overview

- NIH Priority: New and Early Stage Investigators
- Biomedical Imaging & NIBIB
- NIBIB Specific Funding Opportunities
- Other Relevant NIH Funding Opportunities

Overview

- **NIH Priority: New and Early Stage Investigators**
- Biomedical Imaging & NIBIB
- NIBIB Specific Funding Opportunities
- Other Relevant NIH Funding Opportunities

NIH Priority: Continued Focus on New and Early Stage Investigators

NIH Remains Committed to Identifying and Attracting New Biomedical Researchers

- Assisting New and Early Stage Investigators
- Considering career stage during review and funding stages
- Individual NIH Institute Has Specific Policies

NIH Definition: New and Early Stage Investigators

- **New Investigator (NI)** – Applicant has not previously been a PD/PI on a significant NIH independent research grant.
- **Early-Stage Investigator (ESI)** – New Investigator within 10 years of completing their terminal degree or medical residency.
- For R01s: Peer reviewers are instructed to focus more on the approach than on their track record and expect less preliminary data.
- NIBIB New Investigator R01 Policy

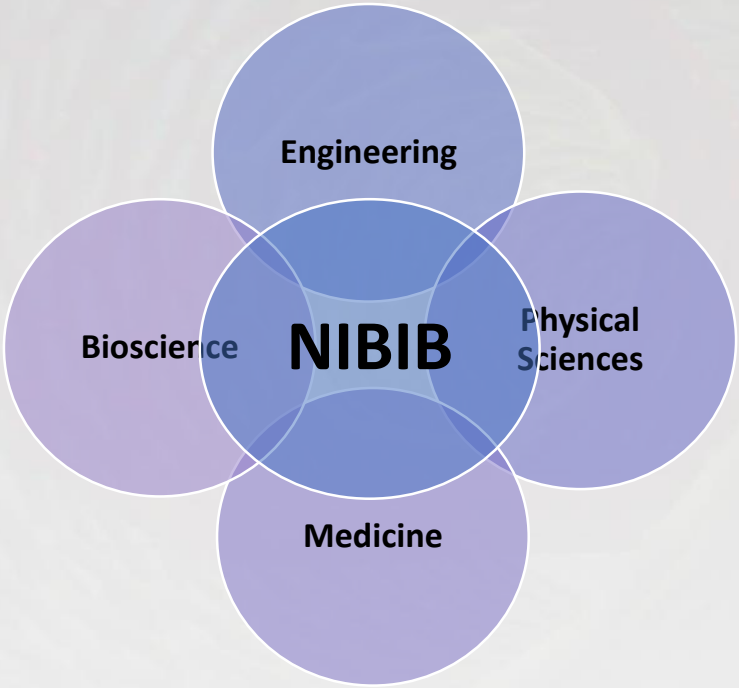
  5 percentile points beyond the regular Institute payline
- Some NIH Institutes may consider only ESIs
- Although policies may differ, most ICs want to support ESIs

Overview

- NIH Priority: New and Early Stage Investigators
- **Biomedical Imaging & NIBIB**
- NIBIB Specific Funding Opportunities
- Other Relevant NIH Funding Opportunities

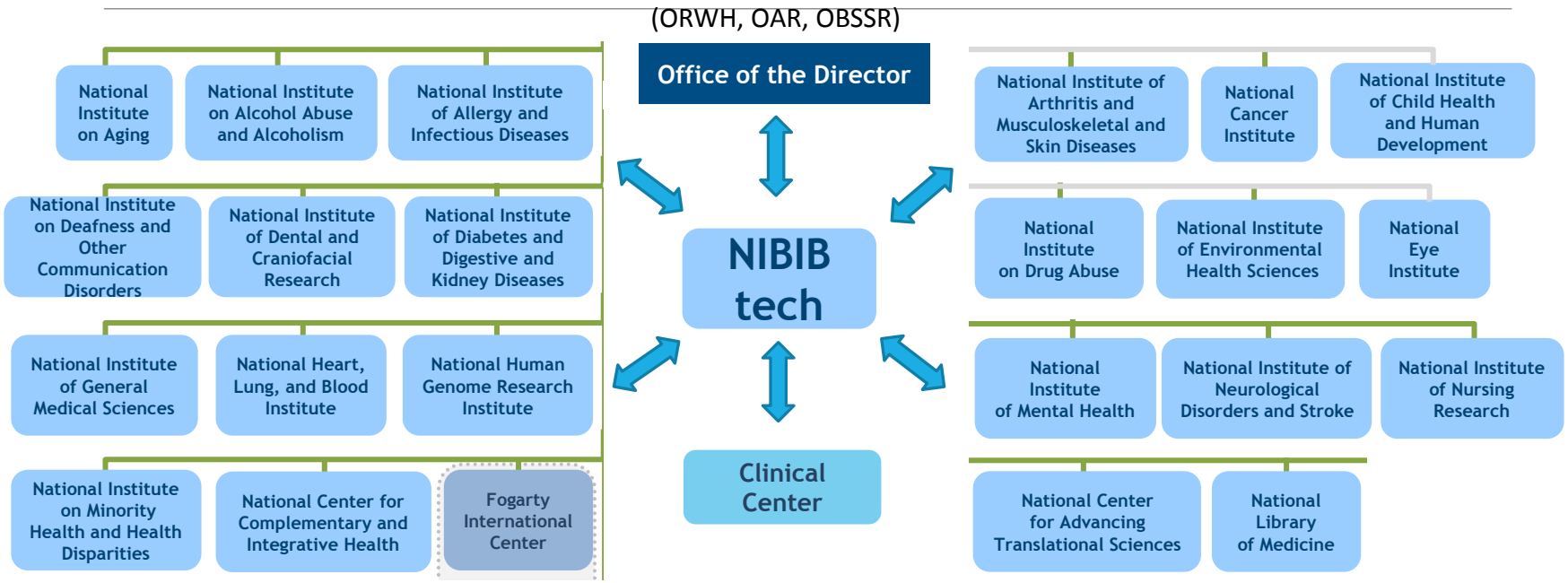
National Institute of Biomedical Imaging and Bioengineering (NIBIB)

- **Mission:** Create New Technologies to Improve Health
- Technology Institute
- No disease or tissue/organ
- Specialize in enabling tools/approaches with broad application to multiple diseases or biological processes
- Catalyzes innovation across NIH and beyond
- Support design- and needs-driven research, not just hypothesis-driven research
- Operates at the interface of physical sciences, life sciences and engineering



https://www.nibib.nih.gov/

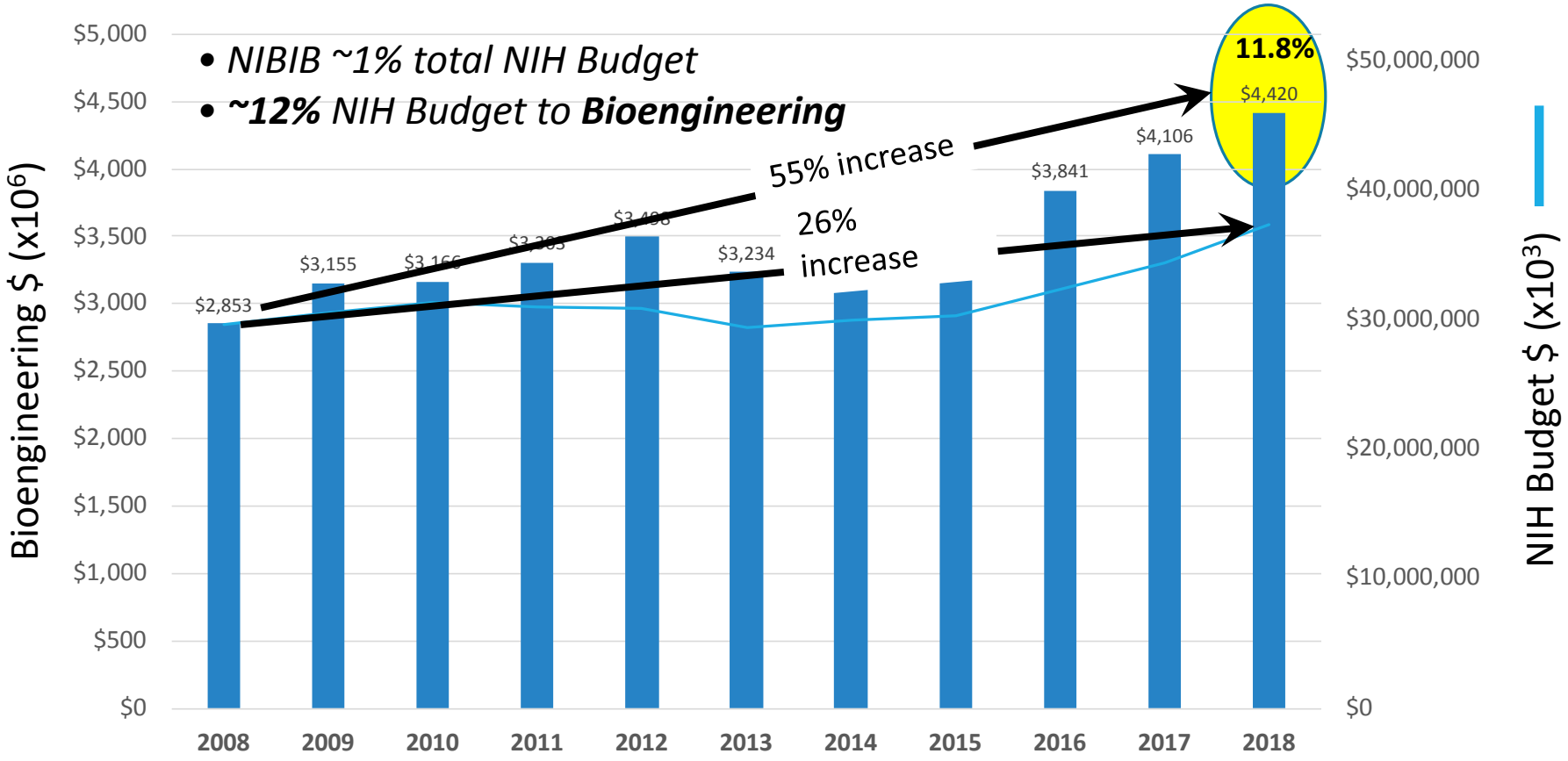
Engineering the Future of Health



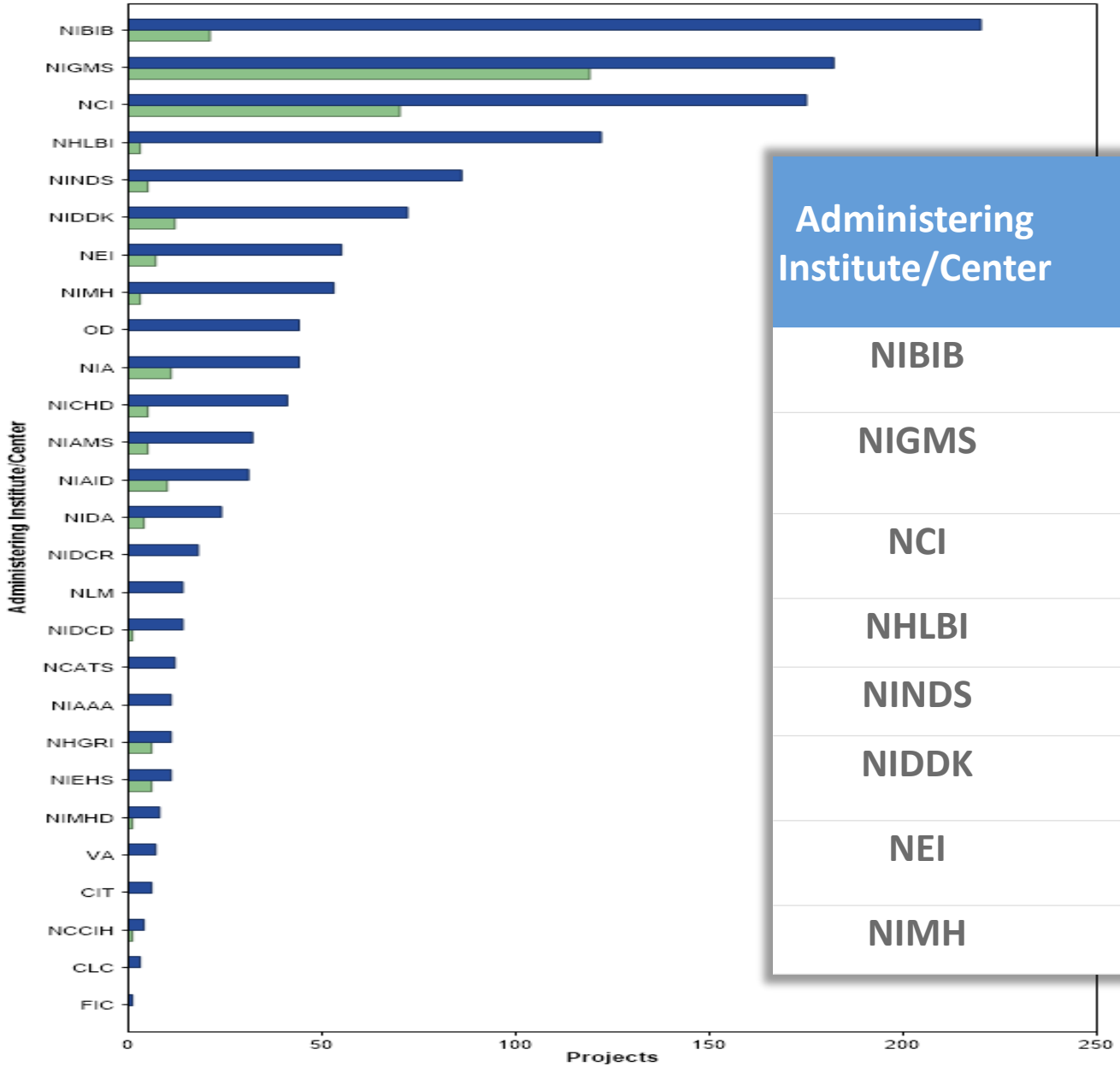
NIBIB: ~$400M, ~1000 grants

Support the missions of our sister ICs

NIBIB: *Bioengineering Impact at NIH*

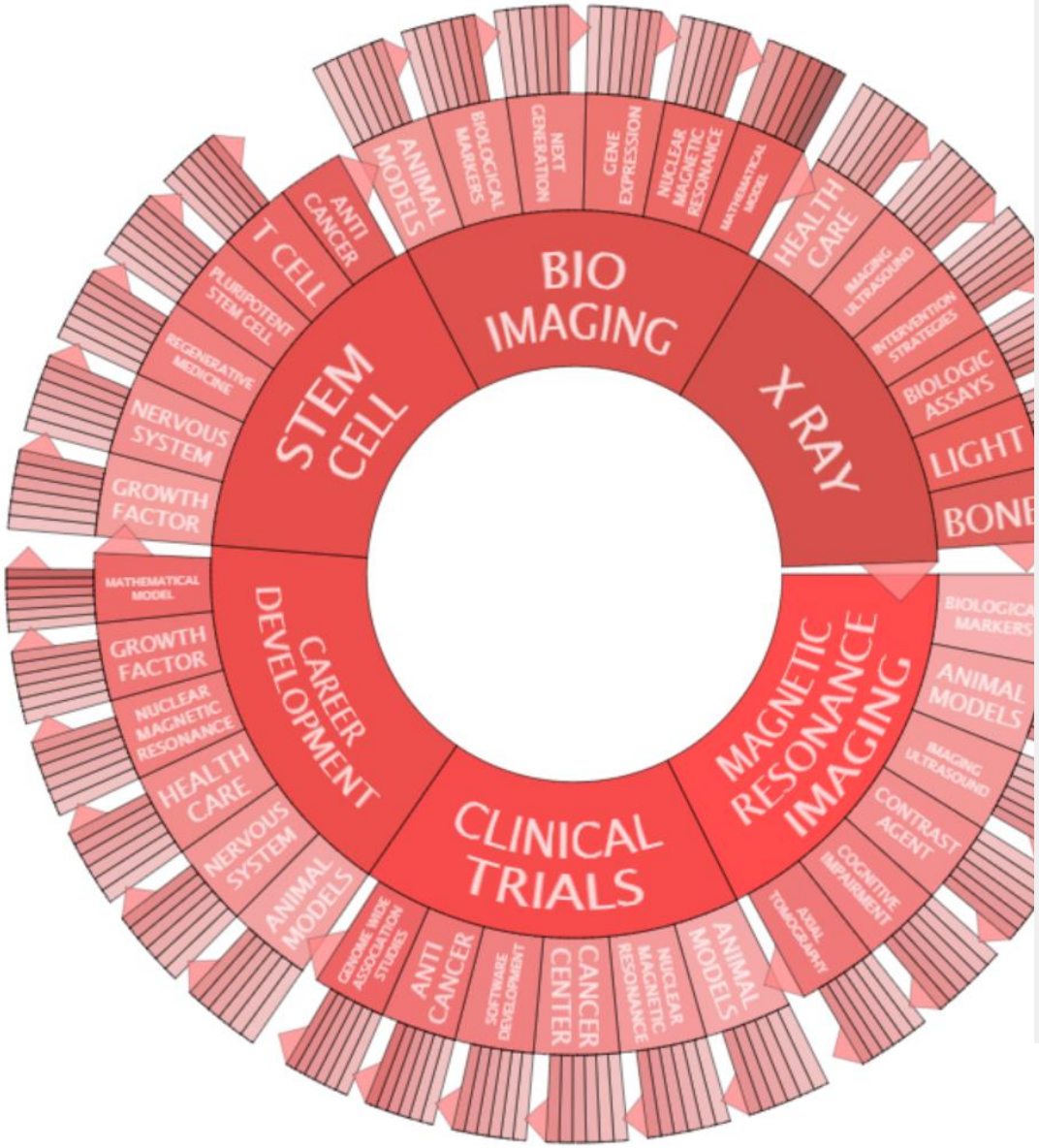


Who is funding biomed imaging?



Administering Institute/Center	Projects	Total Funding
NIBIB	220	$106,422,070
NIGMS	182	$143,474,592
NCI	175	$186,062,789
NHLBI	122	$60,329,791
NINDS	86	$31,839,460
NIDDK	72	$41,960,201
NEI	55	$28,355,811
NIMH	53	$23,905,024

What is being funded?



Clusters

- Magnetic Resonance Imaging (874)
- Clinical Trials (577)
- Career Development (608)
- Stem Cell (314)
- Bio Imaging (367)
- X Ray (361)
- RNA (308)
- High Throughput (301)
- Infectious Diseases (169)
- Confocal Microscopy (176)
- Big Data (122)
- Parkinson Disease (87)
- Mass Spectrum (124)

Overview

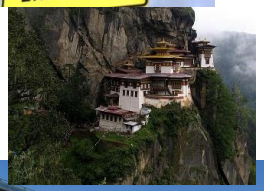
- NIH Priority: New and Early Stage Investigators
- Biomedical Imaging & NIBIB
- **NIBIB Specific Funding Opportunities**
- Other Relevant NIH Funding Opportunities

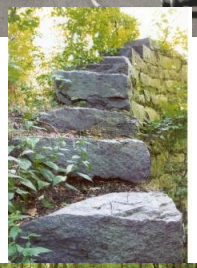
Key Grant Mechanisms supported by NIBIB:

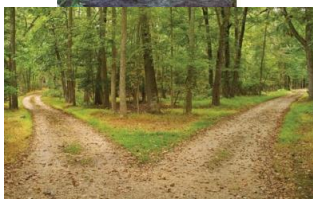
- **R01**
  - **NIH's most commonly used grant, highly valued by peers**
  - **An outline for continuing rigorous investigation and is used to support a discrete, specified, circumscribed research project**
  - **Based on solid preliminary data**
  - **3-5 years, renewable, generally $250-$499K per year**
  - **<u>NOTE</u>: NIBIB funds R01s for only 4 years, renewable.**

- **R03 (Small Grant Program)**
  - **Self-contained: data analysis, pilots, methods development**
  - **$50K per year for two years**

- **R21 (Exploratory/Developmental Grant Program)**
  - **Ideal for High Risk/High Reward (HR^2)**
  - **Innovation is a key, no or very limited preliminary data**
  - **NOT renewable**







Two NIBIB R21 FOAs

Trailblazer Award (PAR-20-084):

- For New (thus including Early-Stage) Investigators Only
- Can be High-Risk/High-Reward, or
- Early Stage Technology Development (exploratory, developmental, proof of concept)
- Innovation is a key
- Minimal (half page, one figure) or no preliminary data
- Three years / $400K direct costs

Exploratory/Developmental (PAR-18-433):

- Established or New Investigators
- High Risk/High Reward
- Exploratory, developmental research
- Innovation is a key
- Preliminary data not allowed
- Two years /$275K direct costs

Overview

- NIH Priority: New and Early Stage Investigators
- Biomedical Imaging & NIBIB
- NIBIB Specific Funding Opportunities
- **Other Relevant NIH Funding Opportunities**

BRAIN Initiative Funding Opportunities – Yes, for New Investigators Too

RFA-EB-19-002: Phase II - Development of Next Generation Human Brain Imaging Technologies (U01)

- Goal: support full-scale development of entirely new or next generation noninvasive human brain imaging tools and methods
  - Must have demonstrated feasibility
  - Must be applicable to normal human subjects
- U01 requires significant program oversight
- Budget: no cap, up to 5 years

RFA-NS-20-006: Biology and Biophysics of Neural Stimulation and Recording Technologies (R01)

Goal: (1) characterize, model, and validate the membrane, cellular, circuit, and adaptive-biological responses of neuronal and non-neuronal cells to various types of stimulation technologies; (2) understand the biological and bioinformatic content of signals recorded from neuronal and non-neuronal cells and circuits.

- Budget: no cap, up to 5 years

HEAL Initiative Funding Opportunities:
HEAL: Helping to End Addiction Long-term

NIH HEAL: To speed scientific solutions to stem the national opioid crisis

RFA-EB-18-003: Translational Development of Devices to Treat Pain (U18)

- Goal: support device-based technologies and approaches to treat pain
- Budget: no cap, up to 3 years

Other HEAL Initiative Funding Opportunities can be found at : https://www.nih.gov/research-training/medical-research-initiatives/heal-initiative/funding-opportunities

PAR-19-156: Bioengineering Research Partnerships (U01)

- Goal: accelerate the development and adoption of promising tools and technologies that can address important biomedical problems.
- Emphasizing technical solutions for unmet needs
- Supporting multidisciplinary teams
- Review: include criteria that emphasize ways in which a project may incorporate bioengineering principles to drive new understanding or changes in clinical practice.
- To deliver practical solutions within timeframe of 5-10 years
- encourage collaborations and partnerships among allied quantitative and biomedical disciplines

PAR-19-158: Bioengineering Research Grants (BRG) (R01

- Goal: to encourage collaborations of quantitative and physical scientists with biomedical researchers
- Tools development: to solve important problems
- Apply a multidisciplinary bioengineering approach to solve a biomedical problem.

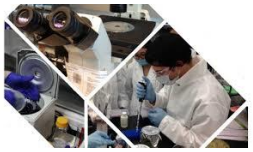
PAR-18-530: Academic-Industrial Partnerships for Translation of Technologies for Diagnosis and Treatment (R01)

- Technology translation to solve a targeted problem
- Specifies a partnership structure between academic and industrial investigators
- Including technical enhancement, adaptation, optimization, and validation, and otherwise translation of technologies to deliver a new capability to end users
- To deliver practical solutions within timeframe of 5-10 years
- encourage collaborations and partnerships among allied quantitative and biomedical disciplines

PAR-18-433: Synthetic Biology for Engineering Applications (R01)

- Development of innovative tools and technologies in synthetic biology and their application in biomedical research and human health
- Collaborations of synthetic biologists with computational scientists, cell biologists, engineers, and/or physician scientists is strongly recommended
- Early Stage Investigators in Synthetic Biology are especially encouraged to apply

Training / Early Career Development Opportunities



Undergraduate Training:

- Team-Based Design Projects in BME Education (R25)
- Design by Biomedical Undergraduate Teams (DEBUT) Challenge
- Biomedical Engineering Summer Internship Program (BESIP) for undergraduate biomedical engineering rising senior students to participate in research projects under the mentorship of scientists in NIH laboratories in Bethesda

Predoctoral and Postdoctoral Training:

- Individual Fellowships (Diversity F31, F32, F30)

Career Development Awards - Basic Research

- Mentored Research Scientist Development Award (Parent K01)
- Mentored Quantitative Research Development Award (Parent K25)
- **Postdoctoral Career Transition Award (K99/R00)**
- Maximizing Opportunities for Scientific and Academic Independent Careers (MOSAIC)

Thank you!

Contact Information:

Guoying Liu, Ph.D.
Program Director
Magnetic Resonance Imaging & Spectroscopy

301-594-5220
liug@mail.nih.gov
www.nibib.nih.gov