NIH Program Perspectives

RSNA 2022 Meeting
NIH Grantsmanship Workshop

Tina Gatlin, Ph.D.
Program Director
Division of Interdisciplinary Training (DIDT)
National Institute of Biomedical Imaging and Bioengineering (NIBIB)
gatlincl@nih.gov

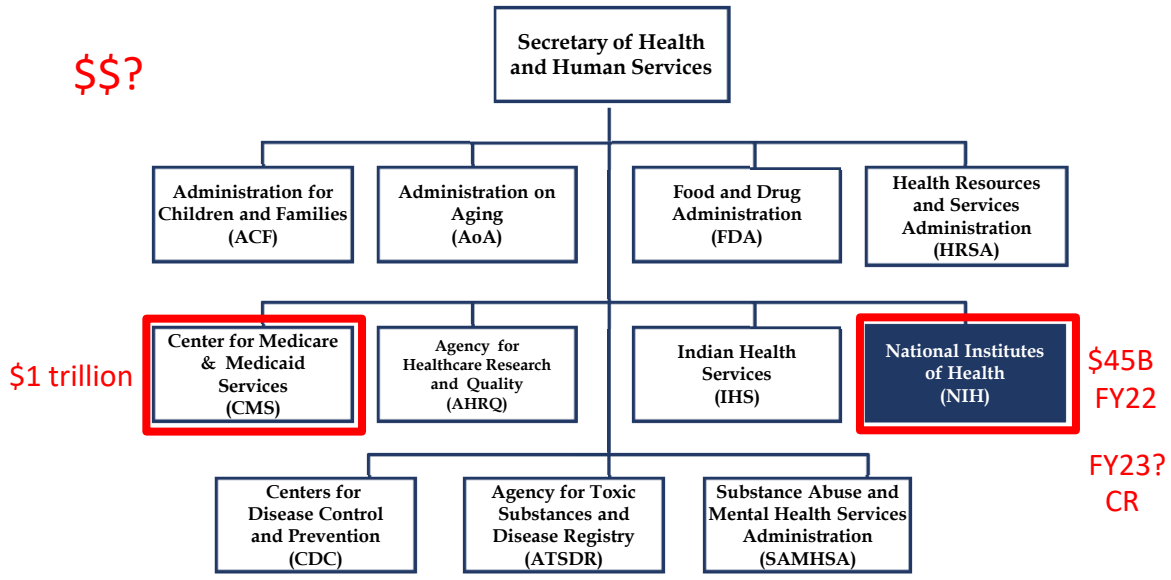
1

Overview

- Introduction to NIH and NIBIB
- Grant mechanisms
- Preparing your grant application
- Understanding NIH review and funding process

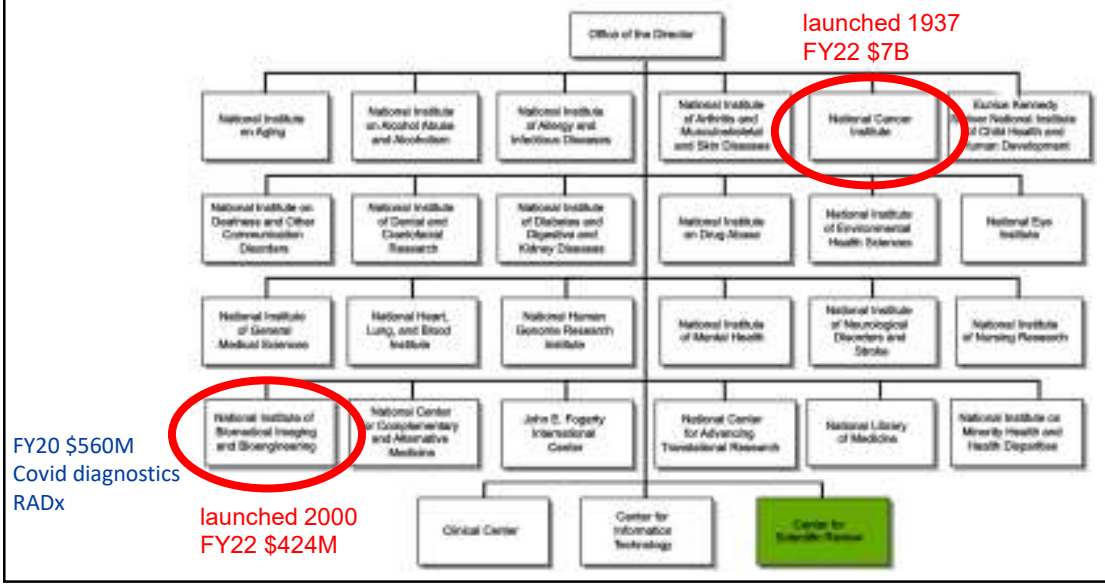
2

U.S. Department of Health and Human Services



3

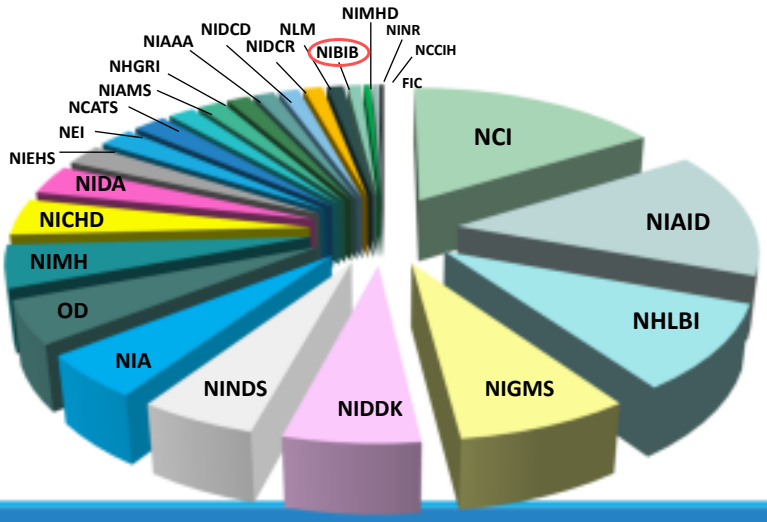
NIH: 27 Institutes/Centers (ICs)



4

NIH Budget

About 85% distributed via Extramural grants, contracts, cooperative agreements

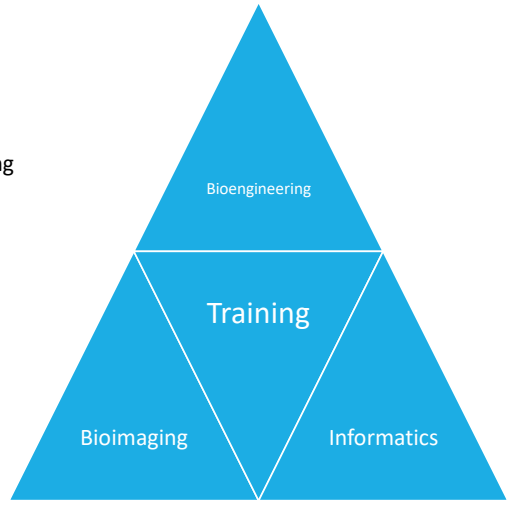


5

NIBIB Organization– 4 Divisions

Division of Discovery Science & Technology Development
Development of biomedical technologies through engineering

Division of Applied Science and Technology
Development of innovative biomedical imaging technologies.

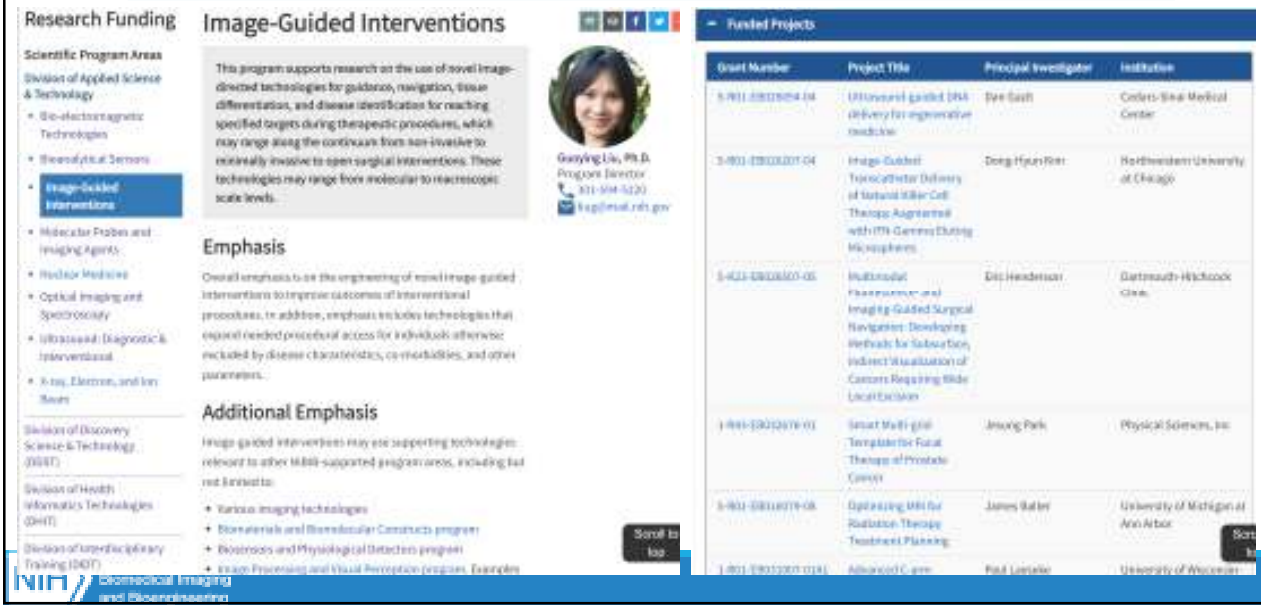


Division of Interdisciplinary Training
Development of a competent and diverse workforce that can address bioengineering challenges of the future.

Division of Health Informatics Technologies
Development of technologies for processing and evaluating complex biomedical information.

6

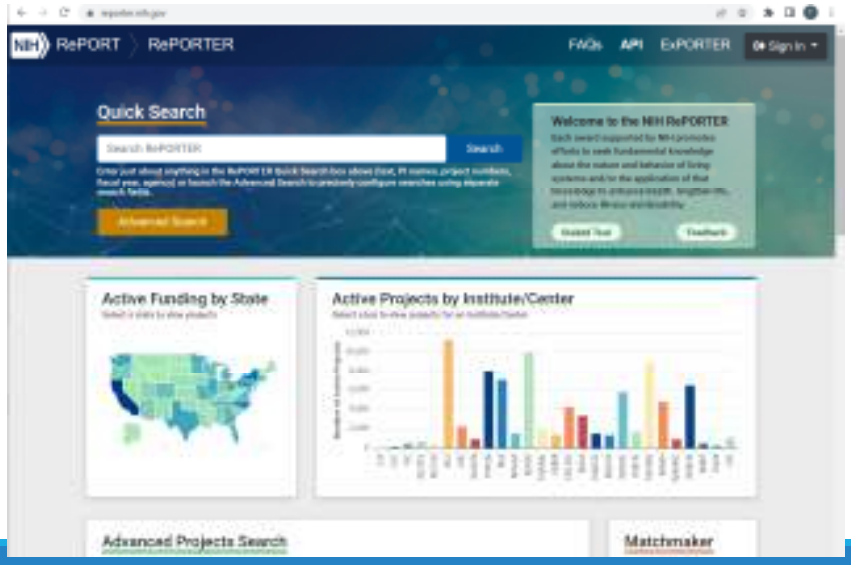
What does NIBIB fund?



7

What does NIBIB/NIH fund?

NIH Reporter



NIH National Institute of Biomedical Imaging and Bioengineering

8

Grant Mechanisms

More than 200 different grant mechanisms

Which one fits you?

- Scope of research
- Eligibility
- Competitiveness

NIH National Institute of Biomedical Imaging and Bioengineering

9

Key NIH Research Grant Mechanisms

- **R01** – Research Project Grant
  - NIH's most commonly used grant, highly valued by peers
  - Supports a discrete, specified, circumscribed research project
  - Based on solid preliminary data
  - Typically $250-$500k per year, 3-4 years, renewable
- **R21** – Exploratory Research Grant
  - Support for early and conceptual stages
  - May or may not require preliminary data
  - Typically up to $275 total for 2 years
- **R03** – Small Grant Program
  - Small projects – e.g. data analysis, pilots, methods development
  - $50k per year for two years, not renewable

10

NIBIB R21: Trailblazer

- New and Early-Stage Investigator
- Enhanced R21 Exploratory/Developmental Grant
  - Pursue an innovative research project of high interest to NIBIB
  - Technology design-directed, discovery- or hypothesis-driven
- $400,000 in direct costs over 3 years
- *No preliminary data are required, expected or encouraged.*
- Successful results → solid foundation for other mechanisms (eg. R01)
- Next due date 1/8/2023; PAR-20-084

11

Diversity R21 and R01

New Investigators to Promote Workforce Diversity in Genomics, Bioinformatics, or Bioengineering and Biomedical Imaging Research (R01 Clinical Trial Optional) - RFA-HG-21-041

Small Grants for New Investigators to Promote Diversity in Health-Related Research (R21 Clinical Trial Optional) - PAR-21-313

Technology Development to Reduce Health Disparities (R01 Clinical Trial Optional) - RFA-EB-21-001

Encourages grant applications to develop and translate medical technologies aimed at reducing disparities in healthcare access and health outcomes. Appropriate medical technologies should be effective, affordable, culturally acceptable, and deliverable to those who need them.

12

NIH Training-Related Funding Mechanisms

with NIBIB contacts

F — **Individual Fellowships**
Dave Gutekunst, Ph.D.

K — **Individual Career Development**
Tina Gatlin, Ph.D.

T — **Institutional Training Grants**
Zeynep Erim, Ph.D.

LRP — **Loan Repayment Program**
Tina Gatlin, Ph.D.

R15 — **Academic Research Enhancement Research Enhancement**
Tina Gatlin, Ph.D.

R16 — **Support for Research Excellence (SuRE)**
Dave Gutekunst, Ph.D.

R25 — **Research Education Programs**
Tina Gatlin, Ph.D.
Dave Gutekunst, Ph.D.

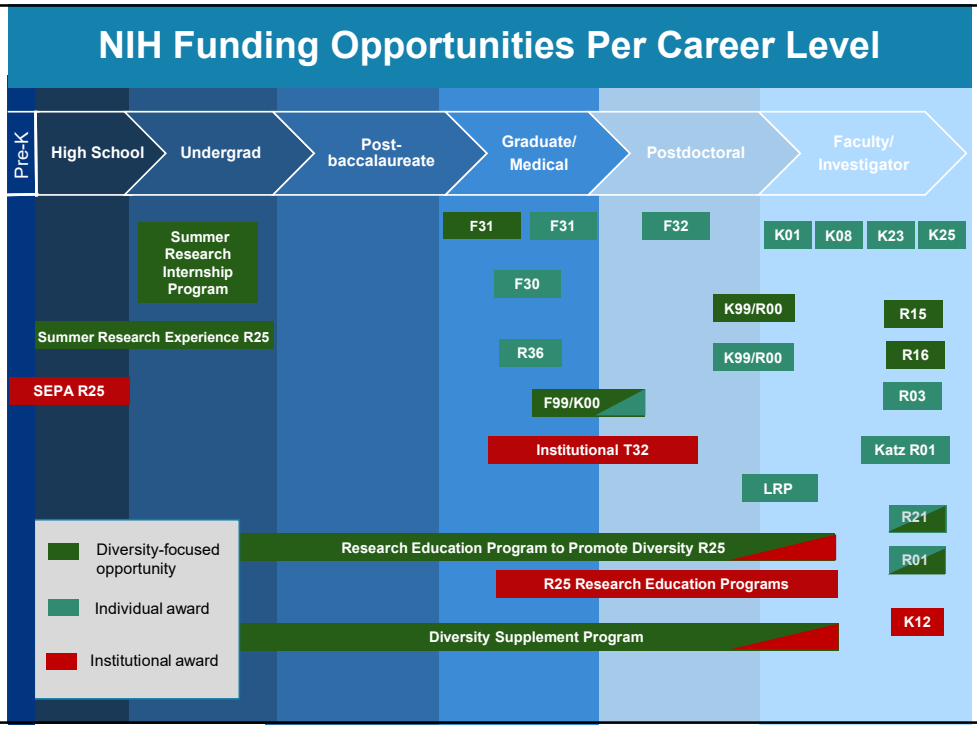
R13 — **Support for Conferences and Meetings**
Khalil Chughtai

Supplements
Dave Gutekunst, Ph.D.
Tina Gatlin, Ph.D.

NIH National Institute of Biomedical Imaging and Bioengineering

13

NIH Funding Opportunities Per Career Level



14

K99/R00

Pathway to Independence Awards

Up to 2 years of **K99** - postdoc, up to 3 years of **R00** - faculty

- **K99/R00 (parent)**
  - <4 years of post-doc
  - There is no US citizenship requirement
- **MOSAIC K99/R00 to Promote Diversity**
  - <4 years of post-doc
  - Must be citizen, non-citizen national, or permanent resident
- **BRAIN K99/R00 to Promote Diversity**
  - <5 years of post-doc
  - Must be citizen, non-citizen national, or permanent resident

F99/K00

Individual Predoctoral to Postdoctoral Fellow Transition Award

To encourage and retain outstanding graduate students who have demonstrated potential and interest in pursuing careers as independent researchers. The award will facilitate the transition of talented graduate students into successful research postdoctoral appointments.

Up to 2 years of support for dissertation research (F99)

Up to 3 years of support for postdoctoral research (K00)

Loan Repayment Programs



- Clinical Research
- Pediatric Research
- Health Disparities Research
- Contraception & Infertility Research
- Clinical-Disadvantaged Backgrounds
- REACH (new)

To recruit and retain highly qualified health professionals into biomedical research careers.

Eligibility:

- **M.D., Ph.D.**, or equivalent
- U.S. citizen or permanent resident
- Educational debt at least **20%** of applicant's annual base income
- At least 20 hours/week on research
- Domestic nonprofit, university, or government organization
- NIH grant support **not** required

1 or 2-year contracts
$50,000 annually

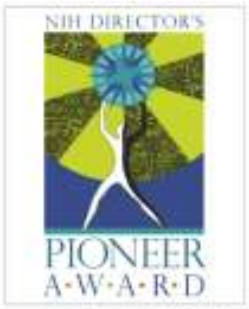
Number of Applications	Number of Awards	Success Rate
2,253	1,301	57%

Mean Award	Mean Age of Awardees	Total Funding
$70,345	38 Years	$91,518,282

17

17

High-Risk High-Reward Programs









Annual funding opportunities for exceptionally innovative research from scientists at all career stages

NIH
The Common Fund

NIH National Institute of Biomedical Imaging and Bioengineering

18

Small Business (SBIR/STTR)

https://seed.nih.gov/
https://www.nibib.nih.gov/research-program/small-business-programs



19

Administrative Supplements

Diversity in Health-Related Research:

To enhance the diversity of the research workforce by recruiting and supporting students, postdoctorates, and eligible investigators from diverse backgrounds.

Re-Entry and Re-integration into Biomedical and Behavioral Research Careers:

To support doctoral-level individuals to re-enter an active research career after an interruption for family responsibilities or other qualifying circumstances or safely re-integrate into a supportive research environment after being adversely affected by unsafe or discriminatory environments resulting from unlawful harassment.

20

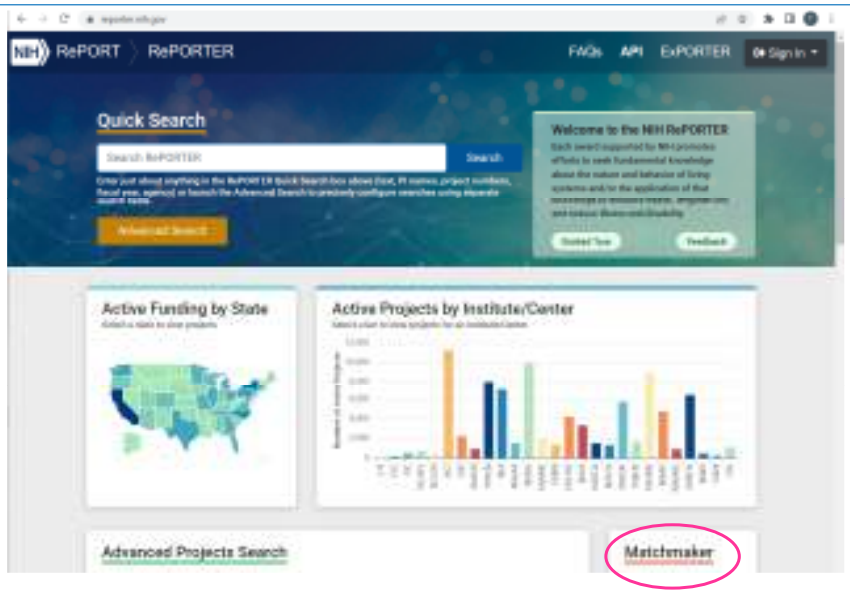
Continuity and Retention Supplements

To ensure continuity of research among recipients of mentored career development (K) awards by providing supplemental research support to help sustain the investigator's research during critical life events.

- For K awardees
- For first-time recipients of NIH grants

21

NIH Reporter

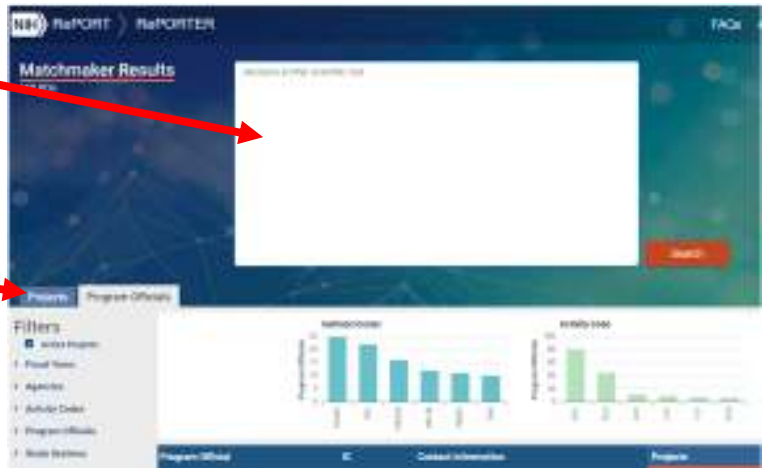


22

NIH Matchmaker

Specific Aims
Abstract of one of your papers

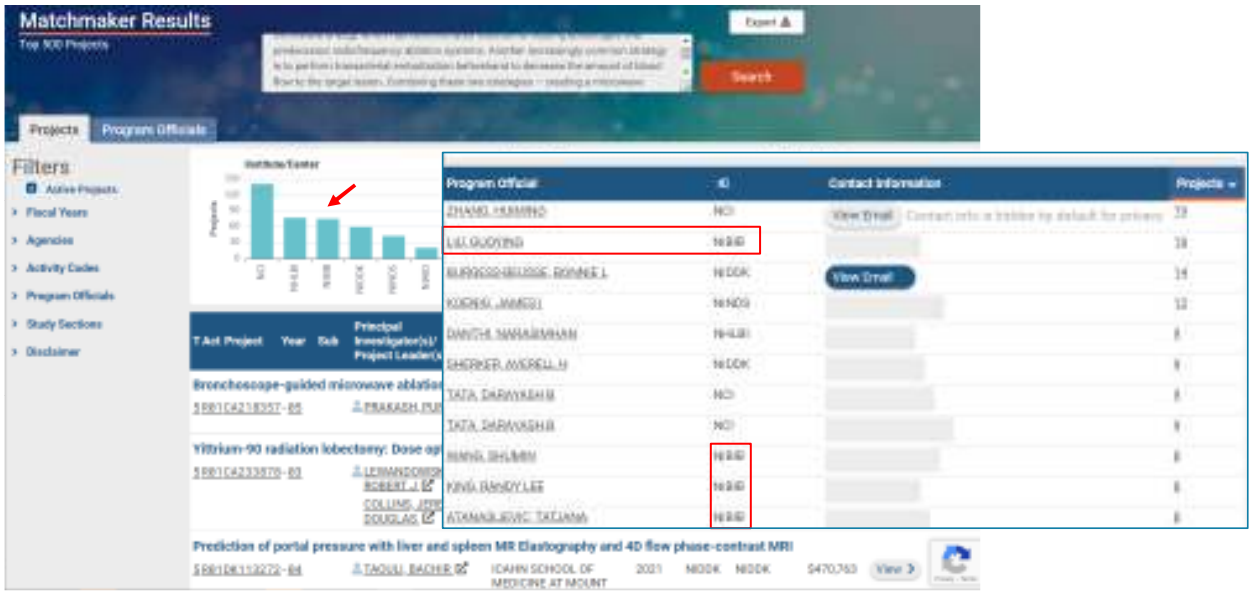
Find similar
- Projects
- Program Officials/Officers who may manage a portfolio with projects similar to yours!



23

23

Matchmaker example



24

Pre-Application Submission Inquiry

ALWAYS reach out to a Program Officer
in advance of submission
preferably with Specific Aims page and CV

1) Eligible (PI an institution)
2) Scientifically responsive
3) Right fit for IC

https://www.niaid.nih.gov/grants-contracts/draft-specific-aims

Getting to the Top: Writing a Competitive Grant Application

Core ingredients:

- Solve a significant problem (Significance)
- New science/Technology (Innovation)
- Right team (Investigator)
- Feasible approach (Approach)
- Resources (Environment)



Hone high-quality grant writing skills

- Follow all the instructions
- Articulate the need to capture the opportunity
- Communicate scientific content accurately and concisely

Lots of on-line resources!
https://www.nccih.nih.gov/grants/grant-writing-advice-and-sample-applications

Assignment Request Form (ARF)

Use it to:

- Make IC and/or study section assignment requests
- Identify potential conflicts of interest
- List areas of expertise needed to evaluate the application

You should never suggest specific reviewers



27

Your application is reviewed by an IC or by one of:

>200 Scientific Review Groups (SRGs or Study Sections) housed in 24 Integrated Review Groups at CSR

Bioengineering Sciences and Technology (BST)
BDMA, BMBI, GDD, ISD, MABS, NANO

Vascular and Hematology (VH)
AICS, ELB, HM, HP, MCH, VCMB

Molecular, Cellular and Developmental Neuroscience (MDCN)
BPNS, CMBG, CMND, DDNS, MNPS, NCF, NDPR, NOMD, NTRC, SYN

AIDS and AIDS Related Research (AARR)
ACE, ADDT, AIP, AMCB, AOIC, BSCH, BSPH, NAED, VACC

Behavior and Behavioral Processes (BBBP)
APDA, BRLE, CP, CPDD, LCOM, MESH, MFSR

Healthcare Delivery and Methodologies (HDM)
BCHI, BMRD, CIHB, CLHP, DIRH, HDEP, HSOD, NRCS, SEIR

Cell Biology (CB)
BVS, NCSD, CMAD, CSRS, DEV1/2, ICI, MBPP, MIST

Cardiovascular and Respiratory Sciences (CVRS)
CCHF, CDD, CICS, ESTA, LCMI, LIRR, MIM, RIBT, F10A/B

Surgical Sciences and Biomedical Imaging and Bioengineering (SBIB)
BMIT-A/B, BTSS, CMIP, MEDI, SAT, F15, various SEPs

Brain Disorders and Clinical Neuroscience (BDCN)
ANIE, ASG, BINP, CDIN, CNBT, CNN, CNNT, DBD, DPVS, NPAS, PMDA

Endocrinology, Metabolism, Nutrition and Reproductive Systems (EMNR)
MCE, ICER, CMIR, PN, CADO, IPOD, CIDO, INMP

Biological Chemistry and Molecular Biophysics (BCMB)
BBM, MSFA/B/D/C/E, SBCA/B

Immunology (IMM)
CMIA/B, HAI, IHD, III, IMM-M, TTT, VMD

Musculoskeletal Oral and Skin Diseases (MOSS)
ACTS, MRS, MTE, ODCS, SBDD, SBSR, SMEP

Risk Prevention and Health Behavior (RPHB)
BMIO, PDRP, PRDP, RPIA, SPIP

Genes, Genomes and Genetics (GGG)
MGA/B, GCAT, GVE, GHS, PCMB, TAG

Interdisciplinary Medical Sciences and Training (IMST)
various SEP and training, EBIT

Infectious Diseases and Microbiology (IDM)
BACP, CRFS, DDR, HIBP, PTHE, PTHE, VB, VIRA/B

Digestive, Kidney and Urological Systems (DKUS)
CIMG, KMBD, GMPB, HBPP, KMBD, PBKD, XNDA, UGPP

Oncology 1 – Basic Translational (OBT)
CAMP, CE, CG, MONC, TCB, TME, TPM

Emerging Technologies and Training in Neuroscience (ETTN)
MNG, NT, F01/2/3, several SEPs

Integrative, Functional and Cognitive Neuroscience (IFCN)
AUD, CFS, LAM, NAL, NMB, NNRS, SCS, SMI, SPC

Population Science and Epidemiology (PSE)
BGES, CASE, EPIC, IRAP, KNOD, NAME, SSPS

Oncology 2 – Translational and Clinical (OTC)
BMCT, CBSS, CDP, CII, CONC, DMP, DT, RTB, various SEPs

28

Review Process

Scientific Review Group (SRG) — 1st level
- Independent outside review
- Evaluate scientific merit, significance
- Recommend length and level of funding

Output: Priority Score and Summary Statement

3 - 7 months

Advisory Council — 2nd level
- assess quality of SRG process
- offers recommendation to Institute Staff
- evaluates program priorities and relevance
- advises on policy

Output: Funding Recommendations

1 - 3 months

Institute Director
- makes final decision based on Council input, programmatic priorities
- Must also Pass Administrative Review

Output: Awards or Resubmission

29

Who are your NIH Points of Contact



Inquiry/Prep (PO) → Submission/Review (SRO) → Summary Statement (SRO/PO) → Award (PO, GM)

- PO and GM contacts for all the IC's that participate on a FOA
- SRO assigned later after application submitted

NIH National Institute of Biomedical Imaging and Bioengineering

30

Resubmit or Not?

- Reach out to your PO after you receive your summary statement
- Where is the problem?
  - Significance
  - Innovation
  - Approach
  - Investigator
  - Environment
- PO may advise you to submit a response letter
- If resubmitting, explain the changes in a one page "Introduction"

Thank You!