The NIH R01 Grant: A Foundation for Your Research Career

James Burroughs
Program Coordinator, CAIRHE

MONTANA STATE UNIVERSITY
Center for American Indian and Rural Health Equity
Why NIH?

Credit: NIH Data Book, FY19
NIH Funds Every Career Stage ...

Small Grant (R03)

Research Project Grant (R01)

Exploratory/Developmental Grant (R21)

Institutional Training Grant (T34)

Institutional Training Grant (T32)

Individual NRSA Fellowship (F31, F30)

Institutional Training Grant (T32)

Individual NRSA Fellowship (F32)

Pathway to Independence Award (K99/R00)

Mentored Research Scientist Development Award (K01)

Mentored Clinical Scientist Development Award (K08)

Mentored Patient-Oriented RCDA (K23)

Mentored Quantitative RCDA (K25)

Independent Scientist Award (K02)

Midcareer Investigator Award in Patient-Oriented Research (K24)

Senior Scientist Award (K05)

Credit: Columbus, NIH

Graphic represents a small sample of NIH funding mechanisms available.
R01 Grants: The “Gold Standard”

Purpose of the Award

Provides funding to support research on a discrete, specified, circumscribed project to be performed by the named investigator(s) in an area representing the investigator's specific interest and competencies, based on the mission of the NIH.*

Details

- NIH's most-used grant program, and the largest and oldest
- No specific dollar limit unless specified in FOA
- Advance permission required for $500,000 or more (direct costs) in any year
- Generally awarded for 3 to 5 years; can be competitively renewed
- Preliminary data required/expected
- Can be investigator-initiated (most) or can be solicited via a Request for Applications
- Investigator-initiated proposals use standard due dates (Feb. 5, June 5, Oct. 5)

* To seek fundamental knowledge about the nature and behavior of living systems and the application of that knowledge to enhance health, lengthen life, and reduce illness and disability.
What Can an R01 Grant Support?

• Salary and benefits (e.g., summer salary, course buyouts) for PI, key personnel, and other essential personnel
• Equipment and supplies
• Consultant costs
• Alterations and renovations
• Publications and miscellaneous costs
• Contracted services
• Consortium costs
• Travel expenses
• Facilities & Administrative costs (indirect costs)

Most importantly, it can help you build your TEAM!
R01 vs. R21
By Comparison: R21 Grants

Purpose of the Award

Intended to encourage exploratory/developmental research by providing support for the early and conceptual stages of project development.

Details

• “Need not have preliminary data, extensive background material or preliminary information; however, they may be included if available.” (This is, in practice, false.)

• Project period of up to 2 years; not renewable

• Combined budget for direct costs for the 2-year project period may not exceed $275,000 (no more than $200,000 in any single year)

• Novel, high-risk/high-reward proposals

• Investigator-initiated proposals use standard due dates (Feb. 5, June 5, Oct. 5)

• R21 ≠ “R01 Lite”
## R01 vs. R21

<table>
<thead>
<tr>
<th></th>
<th>R01</th>
<th>R21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
<td>Usually 3 to 5 years</td>
<td>2 years maximum</td>
</tr>
<tr>
<td>Budget</td>
<td>Up to $500,000 per year, or more</td>
<td>Up to $275,000 total maximum</td>
</tr>
<tr>
<td>Pilot Data</td>
<td>Pilot data needed</td>
<td>Pilot data needed (for success)</td>
</tr>
<tr>
<td>Special Consideration</td>
<td>Special consideration for Early-Stage Investigators (ESI)</td>
<td>NO special consideration for Early-Stage Investigators (ESI)</td>
</tr>
<tr>
<td>Offered</td>
<td>Offered by most (if not all) ICs</td>
<td>Offered by 1/2 to 2/3 ICs</td>
</tr>
<tr>
<td>Success Rate</td>
<td>~20% overall success rate</td>
<td>~17% overall success rate</td>
</tr>
<tr>
<td>Path to Next R01</td>
<td>Path to next R01 (*)</td>
<td>Not a proven path to R01</td>
</tr>
</tbody>
</table>

“Smaller and shorter does not equal easier.”
Early-Stage Investigator (ESI) or New Investigator (NI)

**Early-Stage Investigator (ESI):** A PI who has completed their terminal research degree or end of post-graduate clinical training (whichever date is later) within the **past 10 years** and who has not previously competed successfully as PI for a substantial NIH independent research award (i.e., an R01).

- Designation matters for R01 applications
- ESI/NI applications clustered and reviewed together
- Institutes consider ESI status for funding decisions. All ICs are different. (*)
- Consider carefully if you are part of a multi-PI application!

Credit: NIH Office of Extramural Research
“OK, I’m sold. I want an R01. How do I get it?”

• **Start planning early**
  • Apply for the right opportunity
  • Contact appropriate program staff early
  • Present ideas clearly and directly
Preliminary Health Sciences Funding for MSU Faculty: Look No Further

- NIH funding allocated, awarded, and administered locally by MSU colleagues.
- Designed to develop the research careers of early-stage investigators in Montana.
- Funding comparable to that of R03 or R21 grants, and MUCH EASIER to get!
- Comes with hands-on assistance and coaching to get you to an R01 level.

Also: **MW CTR-IN**  ctrin.unlv.edu
The Grant Life Cycle

FROM “PLAN” TO “APPLY” COULD TAKE 8+ MONTHS

FROM “APPLY” TO “AWARD” USUALLY TAKES 9 MONTHS

Credit: Hamlet, NIH
You Aren’t Alone: R01-Level Awardees at MSU, Past 10 Years *(partial list: see reporter.nih.gov)*

Adams
Carter
Kominsky
Swain
Nygaard
Kinion
Voyich
Cloninger
Copie
Dickensheets
Stewart

McDermott
Franklin
Skewes
Walk
Held
Harmsen
Livinghouse
Lefcort
Kohout
Brooker
DuBois

Broderick
June
Lei
Rink
Pincus
Schmidt
Stowers
John-Henderson
Wiedenheft
and more ...

For Healthy Communities Under the Big Sky
www.montana.edu/cairhe
• Start planning early
• **Apply for the right opportunity**
• Contact appropriate program staff early
• Present ideas clearly and directly
27 Institutes & Centers (ICs), each with a different:

- Mission and priorities
- Budget
- Funding strategy and payline

You need to find: 1) the right IC; 2) the right FOA; 3) the right Study Section; 4) program officer(s) to guide you (not necessarily in that order).

Credit: Columbus, NIH
## Types of Funding Opportunity Announcements (FOAs)

<table>
<thead>
<tr>
<th>Type of FOA</th>
<th>Description</th>
</tr>
</thead>
</table>
| **Program Announcements (PA, PAR, PAS)**        | • Highlights areas of focus  
• Usually ongoing (3+ yrs.)  
• Often use standard receipt dates |
| **Requests for Applications (RFA)**              | • Narrowly defined scope  
• Usually single receipt date  
• Set-aside funds  
• IC usually convenes review panel |
| **Parent Announcements**                         | • Type of program announcement  
• Generally span the breadth of NIH mission  
• By activity code (R01, R03, etc.)  
• For “investigator-initiated” or unsolicited research ideas (~80% of all R01s) |
Part 1. Overview Information

Funding Opportunity Title

Research Project Grant (Parent R01 Clinical Trial Required)

Activity Code

R01 Research Project Grant
PA-20-184
Research Project Grant (Parent R01 Basic Experimental Studies with Humans Required)

PA-20-185
NIH Research Project Grant (Parent R01 Clinical Trial Not Allowed)

Examples of Non-Parent R01 Funding Opportunities

PAR-20-238 ("R" means special receipt, referral, and/or review considerations)
Intervention Research to Improve Native American Health (R01 Clinical Trial Optional)

RFA-EB-21-001 (National Institute of Biomedical Imaging and Bioengineering)
Technology Development to Reduce Health Disparities (R01 Clinical Trial Optional)
Clinical Trials Policy

A research study in which one or more human subjects are prospectively assigned to one or more interventions (which may include placebo or other control) to evaluate the effects of those interventions on health-related biomedical or behavioral outcomes.

R01 grants have 3 options (apply to the correct FOA):
- Clinical trials allowed/required
- Clinical trials not allowed
- Basic Experimental Studies with Humans (BESH)

Finding the Right NIH Funding Opportunity

New/Active FOAs publicized through:

- Grants.gov
- Weekly emails from individual ICs, or MSU ORD
- NIH Guide for Grants and Contracts (Go to grants.nih.gov >> “Funding”)

<table>
<thead>
<tr>
<th>Title</th>
<th>FOA/Notice Number</th>
<th>Issuing Organization</th>
<th>Release Date</th>
<th>Expiration Date</th>
<th>Activity Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urgent Award: COVID-19 Mental Health Research (R01 Clinical Trial Required)</td>
<td>PAR-22-112</td>
<td>NIMH</td>
<td>Jan 31, 2022</td>
<td>Dec 23, 2022</td>
<td>R01</td>
</tr>
<tr>
<td>Urgent Award: COVID-19 Mental Health Research (R01 Clinical Trial Optional)</td>
<td>PAR-22-113</td>
<td>NIMH</td>
<td>Jan 31, 2022</td>
<td>Dec 23, 2022</td>
<td>R01</td>
</tr>
<tr>
<td>Integrative Research in Gynecologic Health (R01 Clinical Trial Optional)</td>
<td>RFA-HD-23-006</td>
<td>NICHD</td>
<td>Jan 31, 2022</td>
<td>Apr 18, 2022</td>
<td>R01</td>
</tr>
<tr>
<td>Notice of Special Interest (NOS!): Research on barriers to care and risk of HIV-associated comorbidities among vulnerable population groups</td>
<td>NOT-HL-22-010</td>
<td>NHLBI</td>
<td>Jan 31, 2022</td>
<td>May 7, 2025</td>
<td>R01</td>
</tr>
</tbody>
</table>
A More Targeted Approach: MATCHMAKER

https://reporter.nih.gov/matchmaker
Matchmaker Search Result Example

### Matchmaker Search Result Example

<table>
<thead>
<tr>
<th>Project Number</th>
<th>Contact P/Project Leader</th>
<th>Other Pls</th>
<th>Program Official</th>
</tr>
</thead>
<tbody>
<tr>
<td>SR01HL123669-05</td>
<td>FULKERSON, JAYNE ALLYN</td>
<td>Not Applicable</td>
<td>Name: PRATT, CHARLOTTE A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Contact: View Email</td>
</tr>
</tbody>
</table>

#### Details

**Organization**

- Name: UNIVERSITY OF MINNESOTA
- City: MINNEAPOLIS
- Country: UNITED STATES (US)
- State Code: MN
- Congressional District: 05

**Other Information**

- FOA: PA-14-033
- Administering Institutes or Centers: NATIONAL HEART, LUNG, AND BLOOD INSTITUTE
- Project Start Date: 01-March-2016
- Project End Date: 31-August-2022
- Budget Start Date: 01-March-2020
- Budget End Date: 31-August-2022
- DUNS Number: 555917956
- UBI: KAB:1Z8B14854

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**Matchmaker Results**

Top 500 Projects

<table>
<thead>
<tr>
<th>Institute/Center</th>
<th>Activity Code</th>
<th>Study Section</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project</th>
<th>Year</th>
<th>PI(s)</th>
<th>Organization</th>
<th>Fiscal Year</th>
<th>Admin IC</th>
<th>Funding IC</th>
<th>FY Total Cost by IC</th>
<th>Similar Projects</th>
<th>Match</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Ulm at HOME - (NU-HOME)</td>
<td>2020</td>
<td>NHLBI</td>
<td>UNIVERSITY OF MINNESOTA</td>
<td>59214.123669-05</td>
<td>FULKERSON, JAYNE ALLYN</td>
<td>NHLBI</td>
<td>$560,402</td>
<td>View &gt;</td>
<td>731</td>
</tr>
<tr>
<td>Family-Based, Culturally-Centered Diabetes Intervention with Ojibwe Communities</td>
<td>2023</td>
<td>NIDDK</td>
<td>JOHNS HOPKINS UNIVERSITY</td>
<td>59186.91258-05</td>
<td>WALLS, MELISSA L.</td>
<td>NIDDK</td>
<td>$303,023</td>
<td>View &gt;</td>
<td>724</td>
</tr>
<tr>
<td>A Community-based, Family-Driven intervention to improve cardiometabolic health of Medicaid-insured youth identified through an antipsychotic medication preauthorization program</td>
<td>2022</td>
<td>NHLBI</td>
<td>UNIVERSITY OF MARYLAND BAI</td>
<td>59186.91458-05</td>
<td>BELVAL, TIM</td>
<td>NHLBI</td>
<td>$400,000</td>
<td>View &gt;</td>
<td>680</td>
</tr>
<tr>
<td>Preventing Early Childhood Obesity in American Indian Populations</td>
<td>2023</td>
<td>NIDDK</td>
<td>JOHNS HOPKINS UNIVERSITY</td>
<td>59186.91740-05</td>
<td>BOW, MARY ALICE A</td>
<td>NIDDK</td>
<td>$400,000</td>
<td>View &gt;</td>
<td>657</td>
</tr>
<tr>
<td>Obesity Prevention in Head Start: The Mirandio Program</td>
<td>2022</td>
<td>NHLBI</td>
<td>UNIVERSITY OF TEXAS SAN ANTONIO</td>
<td>59186.91322-05</td>
<td>YIN, ZHEN</td>
<td>NHLBI</td>
<td>$300,000</td>
<td>View &gt;</td>
<td>655</td>
</tr>
</tbody>
</table>

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**For Healthy Communities Under the Big Sky**

[www.montana.edu/cairhe](http://www.montana.edu/cairhe)
Not All ICs Are Equal Where R01s Are Concerned

Research Project Grants: Funding, by Institute / Center

Funding for 2020

Funding Trend NIH Total
• Start planning early
• Apply for the right opportunity
• **Contact appropriate program staff early**
• Present ideas clearly and directly
Important NIH People

**Program Official (or Officer):** NIH staff scientist responsible for developing research initiatives and for the programmatic, scientific, and/or technical aspects of assigned applications and grants. (Contact before application, after Summary Statement, during study.)

**Scientific Review Officer:** NIH staff scientist and the federal official responsible for ensuring that applications receive an objective and fair initial peer review. Convenes the SRG. (Contact before or after application, before review.)

**Scientific Review Group** (*SRG, aka “Study Section”*): Primarily non-federal scientists (i.e., your peers) who conduct the first level of review for grants in a particular subject area. They have expertise in relevant scientific disciplines and current research areas. (NEVER contact.)
Matchmaker Search Result Example
What to Discuss with Program Officers?

• Your ideas—provide a Specific Aims page.
• Fit—is your idea a good fit for Institute or Center (IC)?
• Priority—is your idea a research priority for IC?
• Funding mechanisms the IC currently supports.
• Specific Funding Opportunity Announcements (FOAs).
• After you’re scored: Prospects for funding, next steps.

Don’t be intimidated. It’s their job to help you, and most really enjoy it!
• Start planning early
• Apply for the right opportunity
• Contact appropriate program staff early
• Present ideas clearly and directly
Getting your SPECIFIC AIMS right (the page and the Aims themselves) is CRITICAL to a successful proposal.

- Start writing *many months* before submission.
- Workshop this page with your study team.
- Get input from mentors and other colleagues.
- Get input from Program Officials at potential Institutes/Centers.
- Edit EXTENSIVELY (think # of revisions in *double digits*). *

* Hemingway revised the ending to *A Farewell to Arms* 47 times!
More Attributes of an Outstanding R01 Application

• Strong Significance; important problem in public health: IMPACT is high.

• High degree of novelty and innovation.

• Strong track record of a well-qualified applicant, with team to shore up individual weaknesses; compelling publications.

• Relevant, supportive preliminary data to ensure Aims can be done.

• Clear rationale.

• Focused approach that provides unambiguous results.

• Careful attention to details:
  o Spelling, punctuation, grammar, fonts, tables, figures, budgets.
    (Get professional help if these aren’t your strengths.)
Some General Tips for Success

• Read every word of the FOA multiple times, especially the Review Criteria!

• Refer to the Application Form Instructions often.


• Be realistic ... not overly ambitious. NIH wants high feasibility.

• Be direct and put yourself in the Reviewer’s seat:
  o Tell them what they want to hear (Review Criteria in FOA).
  o Reviewers can’t read your mind.
  o Reviewers won’t read between the lines.
  o Don’t assume they know what you intend.
In the “Reviewer’s Seat”

Typical Study Section:
- 20+ Reviewers
- 50 to 120 Applications
- 1 ½ days (about 15 minutes of discussion per application in upper half of scores)

How Organized:
- Usually 3 assigned primary reviewers for your application, picked by SRO
- All other panel members hear discussion and engage
- Every panel member gets a vote and may only read your Specific Aims, if that

Will the proposed study have a strong and sustained impact on the scientific field? Two questions drive a Reviewer’s decision:

Should they do it?
Can they do it?
## NIH Application Impact Score

<table>
<thead>
<tr>
<th>Degree of Impact</th>
<th>Impact Score</th>
<th>Descriptor</th>
<th>Additional Guidance on Strengths/Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>1</td>
<td>Exceptional</td>
<td>Exceptionally strong with essentially no weaknesses</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Outstanding</td>
<td>Extremely strong with negligible weaknesses</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Excellent</td>
<td>Very strong with only some minor weaknesses</td>
</tr>
<tr>
<td>Moderate</td>
<td>4</td>
<td>Very Good</td>
<td>Strong but with numerous minor weaknesses</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Good</td>
<td>Strong but with at least one moderate weakness</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Satisfactory</td>
<td>Some strengths but also some moderate weaknesses</td>
</tr>
<tr>
<td>Low</td>
<td>7</td>
<td>Fair</td>
<td>Some strengths but with at least one major weakness</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>Marginal</td>
<td>A few strengths and a few major weaknesses</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>Poor</td>
<td>Very few strengths and numerous major weaknesses</td>
</tr>
</tbody>
</table>
Your Application’s Impact Score Reflects ...

The likelihood of the project to exert a sustained, powerful influence on the research field(s) involved:

• in consideration of the 5 core review criteria (Significance, Innovation, Approach, Investigator, Environment);

  and

• additional Review Criteria (as applicable for the project proposed). READ the FOA.

Address on your Specific Aims page!
• Start planning early
• Apply for the right opportunity
• Contact appropriate program staff early
• Present ideas clearly and directly
  ○ (P.S.: To the right people)
The Peer Review Process: Quick Take

For more: [https://public.csr.nih.gov/ForApplicants](https://public.csr.nih.gov/ForApplicants)

Your preferences are considered, but CSR has the ultimate decision based on the best match.
Matchmaker Search Result Example
Another Way to Find Study Sections:
The Assisted Referral Tool (ART)

https://art.csr.nih.gov/ART/
Community Influences on Health Behavior Study Section – CIHB

We're hiring SROs!
CSR is a great place to work - interesting, collegial, and being an SRO is a great way to contribute broadly to science. Learn More

The Community Influences on Health Behavior (CIHB) Study Section reviews applications concerned with how community-level factors prevent or moderate health risks and behaviors. Community is defined in a variety of ways including geographically, by social unit or practices, virtual spaces, and group affiliations. Research approaches may include community based participatory research, mixed methods (quantitative and qualitative analyses), ethnographic studies, policy and document analysis, and other non-interventional study designs.

The List of Reviewers lists all present, whether standing members or temporary, to provide the full scope of expertise present on that date. Lists are posted 30 days before the meeting and are tentative, pending any last minute changes.

Review Dates
- List of Reviewers on 02/15/2022
- List of Reviewers on 10/26/2021
- List of Reviewers on 06/02/2021

Membership Panel

Margaret Peltola
Scientific Review Officer
pia.peltola@nih.gov
301-594-9295

Dr. Pia Peltola

+ 35 more

CHAIRPERSON
RAMASWAMY, MEGHA, PHD
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KANSAS CITY, KS, 66160

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CORNIS, HEATHER L, PHD
PROFESSOR
DIVISION OF HEALTH PROMOTION
AND BEHAVIORAL SCIENCE
SCHOOL OF PUBLIC HEALTH

For Healthy Communities Under the Big Sky
www.montana.edu/cairhe
Thank You! Questions?

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- Sheila Caldwell, NIGMS
- Kathy Etz, NIDA
- Shobha Srinivasan, NCI
- Megan Columbus, NIH Office of Extramural Research
- Michelle Hamlet, NINR
- Kay Lund, NIH Office of the Director
- Nancy Whitesell, University of Colorado Anschutz Medical Campus

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