Funding Opportunities for Junior Investigators

Medical Students: Summer Research

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Jaime S. Rubin, Ph.D.
Dept. of Medicine
College of Physicians and Surgeons
Columbia University

Course: “Funding and Grantsmanship for Research and Career Development Activities”

http://grantscourse.columbia.edu/
Not All Funding Opportunities Are the Same

- **Different mission statements**
  - Career development (K’s)/ Scholar awards
  - Research project (R’s)

- **Different funding**
  - Stipend/Salary
  - Pilot awards
  - Comprehensive research costs

- **Different time frames**
  - Not renewable: 5 years (K’s), 3 years (F’s), 2 years (T’s)
  - Renewable: 4 years-5 years (R01) each competitive period
Timeline of Funding for Junior Investigators

- Medical School
- Internship/Residency
- Fellowship – Research Years
- Instructor/Assistant Professor

Short term Training
Medical Student: Short Term Training

- NIH
  - T35 training grant: Summer between 1st and 2nd years
  - NIH campus: Summer Research Fellowship Program
  - NIDDK: Medical Student Research Program in Diabetes
  - NIEHS: Summers of Discovery

- AOA Honor Medical Society - Carolyn L. Kuckein Student Research Fellowships
  - For research in clinical investigation, basic research, epidemiology, and social sciences/health services research
Medical Student: Short Term Training

- American Heart Association: Student Scholarships
  - Cardiovascular Disease and Stroke
  - Cerebrovascular Disease

- American Medical Association Foundation
  - Seed Grant Research Program
  - Supports research in: Cardiovascular/Pulmonary Diseases, HIV/AIDS, and Pancreatic Cancer.
Medical Student: Short Term Training

- American Skin Association
  - Medical Student Grant
- American Society of Nephrology
  - Student Scholar Grant
- Crohn's and Colitis Foundation of America
  - Student Research Fellowship Awards
- Endocrine Society
  - Summer Research Fellowships
- Infectious Diseases Society of America
  - Medical Scholars Program
Medical Student: Short Term Training

- **New York Academy of Medicine**
  - Glorney-Raisbeck Medical Student Grants in Cardiovascular Research
  - David E. Rogers Fellowship Program
  - Margaret E. Mahoney Fellowships
  - Ferdinand C. Valentine Medical Student Research Grants in Urology
Timeline of Funding for Junior Investigators

- Medical School
- Internship/Residency
- Fellowship – Research Years
- Instructor/Assistant Professor

Short term Training

Year-long Enhancement Programs
Medical Student: Year-long Enhancement Programs

NIH

- Medical Research Scholars Program
  - Mentored basic, clinical, or translational research
- Fogarty International Center
  - Clinical Research Training Scholars Program
  - Fulbright-Fogarty Fellowships in Public Health
- National Institute of Diabetes and Digestive and Kidney Diseases
  - Medical Student Research Training Program
- National Institute of Environmental Health Sciences
  - Fellowships in Environmental Medicine for Medical Students
Medical Student: Year-long Enhancement Programs

- Doris Duke Charitable Foundation
  - International/Global health
- Hughes (Howard) Medical Institute
  - Medical Research Fellows Program
- Research to Prevent Blindness
  - Medical Student Fellowships
- Sarnoff (Stanley J.) Endowment for Cardiovascular Science
  - Research Training for Medical Students
Medical Student: Year-long Enhancement Programs

- American Diabetes Association
  - Clinical Scholars Award
- American Heart Association
  - Medical Student Research Program (Founders Affiliate)
- American Society of Nephrology
  - Student Scholar Grant
- CDC Foundation
  - CDC Experience - Applied Epidemiology Fellowship
Timeline of NIH Funding for Junior Investigators

- Short term Training
- Research Support
- Medical School
- Internship/Residency
- Fellowship – Research Years
- Instructor/Assistant Professor
- Year-long Enhancement Programs
Residents

- American Academy of Otolaryngology - Head and Neck Surgery
  - Resident Research Grant

- American Academy of Pediatrics
  - Resident Research Grant

- American College of Gastroenterology
  - Clinical Research Awards

- American College of Surgeons
  - Resident Research Scholarship
Timeline of NIH Funding for Junior Investigators

- Short term Training
- Research Support
- Fellowship – Research Years
- Instructor/Assistant Professor
- Year-long Enhancement Programs
Post-doc: Institutional Training Grant (NIH-T32)

- Post-docs selected by institution
- Research training in specific area
- Defined number of slots
- Stipend, health fees, tuition, travel

Do your fellowship programs of interest have a T32?
Post-doc: Individual Fellowship

- Supports specific individual
- Stipend, health fees, tuition, travel
- NIH: F32

Review criteria:
- Individual fellow
- Mentor
- Research project
- Research environment
Post-doc Fellowships (F32s) Applications, awards, and success rates
Post-doc: Individual Fellowship
- Voluntary Health Organizations, Foundations, Professional Societies -

- American Heart Association (Founders)
- American Kidney Fund
- American Liver Foundation
- Daland Fellowships in Clinical Investigation
Timeline of NIH Funding for Junior Investigators

- Medical School
- Internship/Residency
- Fellowship – Research Years
- Instructor/Assistant Professor

- Short term Training
- Research Support
- Individual Post-doc Fellowship or Institutional T32 Post-doc Training Grant slot

- Year-long Enhancement Programs
- Career Transition Awards
NIH: Pathway to Independence Award

- **Career Transition Award (K99/R00)**
- **No citizenship requirement**
- **Applicants must:**
  - Have earned a clinical or research doctorate;
  - Have **no more than 4 years of research experience** since completing the requirements of the doctoral degree;
  - Have not been the principal investigator of an NIH research grant (e.g., R01, R03, R21), career development award (e.g., K01, K07, K08, K23, K25), other peer-reviewed NIH or non-NIH research grant over $100,000 direct costs per year, or have been a project leader on a sub-project of a program project (P01) or a center (P50) grant.
1-2 years as a mentored **K award** for “post-docs”
- Funding level is Institute-specific
  - **NHLBI, NIDDK, NIA, NICHD:** $75K for salary plus fringe benefits, $25K for research support (+ 8% I.C.)
  - 75% effort

3 years as a **Research award** for independent investigators
- Total/year: = $249,000 (salary and research expenses)
  - D.C. + institution’s I.C. rate
  - Must have an independent research position
Career Transition Awards

BWF: Career Awards for Medical Scientists

- Supports physician-scientists to bridge advanced postdoctoral/fellowship training and the early years of faculty appointment
- Must hold an M.D., D.D.S., or D.V.M.
- 75% effort to research-related activities
- Funding: $700,000 over five years
  - Postdoctoral/Fellowship Portion: Years 1 and 2
    - Annual Total: $95,000
  - Faculty Portion of the Award: Years 3-5
    - Annual Total: $170,000
Career Transition Awards

American Heart Association (National)

Career Fellow-to-Faculty Transition Award

- For physician-scientists
- Provides funding for the period of career development which spans the completion of research training through the early years of the first faculty/staff position

- **Training stage:** Maximum of $65,000 per year
- **Faculty stage:** Maximum of $132,000 per year
- **Award Duration:** 5 years
Career Transition Awards

- **JDRF: Advanced Postdoctoral Fellowships**
  - Provides an opportunity to receive full-time research training and to assist awardees in transitioning from a fellowship to an independent (faculty-level) position
  - First degree (PhD, MD, DMD, DVM, or equivalent) received no more than 5 years before the fellowship
  - $90,000 per year for up to 3 years
  - **Transition Award**: Optional transition year in which awardees may request funding support for their first year as a faculty member (up to $110,000 for one year)
Timeline of NIH Funding for Junior Investigators

- Medical School
- Internship/Residency
- Fellowship – Research Years
- Instructor/Assistant Professor

- Short term Training
- Research Support
- Individual Post-doc Fellowship or Institutional T32 Post-doc Training Grant slot

- Year-long Enhancement Programs
- Career Transition Awards
- Individual Mentored K Career Development Award
Research Career Programs (K)

- Provides predominantly salary support
  - Specified salary levels (e.g. NIDDK: $90K, NCI: $100K)
- Minimum effort: e.g. 75%,
  (some exceptions to 50%)
  Research and Career Development activities
- Up to 5 years
- US citizen/permanent resident
- May reduce effort to 50% in the last 2 years if
  the PI of an NIH research grant
Mentored Clinical Scientist Development Award (K08)

- Support to develop outstanding independent clinician research scientists
- Basic and translational science
Mentored Patient-Oriented Research Career Development Award (K23)

- **Patient-oriented research**: Research conducted with human subjects (or on material of human origin) for which an investigator directly interacts with human subjects

- **Research areas**: (1) Mechanisms of human disease, (2) Therapeutic interventions, (3) Clinical trials, and (4) Development of new technologies
Mentored Research Scientist Development Award (K01)

Not all NIH Institutes participate in program.

Participating Institutes may use for different purposes.

- Train in a new field
- Specific research areas
- Hiatus in research career
- Increase research workforce diversity
Mentored Research Scientist Development Awards (K01)

- **NIMH**
  - Broad spectrum of basic and translational research, including basic neuroscience, human genetics, adult and developmental translational research, services and intervention research, and AIDS-related research

- **NCI, NHLBI, NINDS:**
  - Underrepresented faculty

- **NIAID:**
  - (a) Epidemiology
  - (b) Modeling Techniques
  - (c) Outcomes Research
Mentored Research Scientist Development Awards (K01)

- **NHLBI:**
  - (a) Epidemiology
  - (b) Biostatistics
  - (c) Comparative effectiveness

- **NHGRI**
  - (a) Genomics, proteomics, population genomics
  - (b) Ethical, legal and social issues (ELSI)

- **NIA:** Aging and Health Disparities Research

- **FIC:**
  - International Research Scientist Development Award (IRSDA)
Cancer Prevention, Control, Behavioral, and Population Sciences Career Development Award (K07)

- NCI program
- Support individuals with health professional or science doctoral degrees who are not fully established investigators
Research Career Development Awards

![Graph showing the number of awards from Fiscal Year 1997 to 2013. The graph includes data for K01, K08, K23, K25, and K99 awards.](image-url)
<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Activity Code</th>
<th>NIH Institute / Center</th>
<th>Number of Applications Reviewed</th>
<th>Number of Applications Awarded</th>
<th>Success Rate</th>
<th>Total Funding</th>
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<tbody>
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<td>2013</td>
<td>K23</td>
<td>NCI</td>
<td>34</td>
<td>7</td>
<td>20.6%</td>
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<td>2013</td>
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<td>107</td>
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<td>2</td>
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<tr>
<td>2013</td>
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<td>NIDDK</td>
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<td>28</td>
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<td>2013</td>
<td>K23</td>
<td>NINDS</td>
<td>36</td>
<td>11</td>
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<tr>
<td>2013</td>
<td>K23</td>
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<td>30</td>
<td>11</td>
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<tr>
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<td>‡OD Other</td>
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<td>1</td>
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<td>2013</td>
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<td>Activity Total</td>
<td>555</td>
<td>178</td>
<td>32.1%</td>
<td>$28,555,388</td>
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Agency for Healthcare Research and Quality (AHRQ)

- **K08:** Mentored Clinical Scientist Research Career Development Award - Health services research
  - Safety and Quality
  - Effectiveness
  - Efficiency

- **K08:** Patient-Centered Outcomes Research (PCOR) Mentored Clinical Investigator Award

- **K01:** Patient-Centered Outcomes Research (PCOR) Mentored Research Scientist Development Award
Centers for Disease Control and Prevention (CDC)

- **K01:** Mentored Public Health Research Scientist Development Award
  - Basic, behavioral, and applied sciences
  - Health promotion
  - Disease prevention
  - Injury and disability prevention
  - Health protection from infectious, environmental, and terrorist health threats
Research Career Development/Scholar Programs

- AGA Research Foundation
  - Research Scholar Awards
- American Heart Association
  - Scientist Development Grant
- American Academy of Neurology
  - Clinician-Scientist Development Awards
- Damon Runyon Cancer Research Foundation
  - Clinical Investigator Award
- Doris Duke Charitable Foundation
  - Clinical Scientist Development Grant
Mentored Clinical Scientist Development Program Award (K12)

- Support to an institution for career development experiences for clinicians leading to research independence.
- Institutions recruit and select candidates into their programs.
- Candidates must meet the same criteria as for the individual mentored clinical scientist development award.
Mentored Clinical Scientist Development Program Award (K12)

- Multi-Institute
  - Women’s Health

- Institute specific
  - NCI: Clinical oncology
  - NEI: Clinical vision scientists
  - NICHD:
    - Pediatric Scientist/Child health
    - Rehabilitation research
    - Reproductive health
Mentored Clinical Scientist Development Program Award (K12)

- Institute specific
  - NHLBI
    - Clinical Hematology/Transfusion Medicine
    - Emergency Medicine
  - NIDDK
    - Pediatric Diabetes Research
  - NIDA: Drug abuse and addiction
  - NINDS: Neurological sciences, Neuro Surgery
- CTSA - Clinical and Translational Scientist Award
Mentored Clinical Scientist Development Program Award (K12)

- Institute specific
  - NHLBI
    - Clinical Hematology/Transfusion Medicine
    - Emergency Medicine
  - NIDDK
    - Pediatric Diabetes Research
  - NIDA: Drug abuse and addiction
  - NINDS: Neurological sciences, Neuro Surgery
- CTSA - Clinical and Translational Scientist Award
CTSA Awards:
A Home for Clinical and Translational Science

Source: Zerhouni (NIH) [9/06]
Mentored Clinical Scientist Development Program Award (K12)

- CTSA – Clinical and Translational Scientist Award

- CUMC: TRANSFORM Scholars Mentored Career Development program [Training and Nurturing Scientists for Research that is Multidisciplinary]
Degree Program in Patient-Oriented Research [POR]

- Comprehensive courses in clinical research
  - Biostatistics, epidemiology, study designs, bioethics, legal and regulatory issues
- For the career development of clinical investigators
Timeline of NIH Funding for Junior Investigators

- Short term Training
- Research Support
- Fellowship – Research Years
- Instructor/Assistant Professor

Year-long “Enhancement” Programs

Career Transition Awards

Individual Mentored K Career Development Award

NIH Loan Repayment Program
NIH’s Extramural Loan Repayment Program

- Up to $35,000 a year towards educational loan debt
- Conduct qualified research activities for at least 50% of their effort (or less than 20 hours per week) for a minimum of 2 years
- Qualifying educational loan debt equals or exceeds 20% of the applicant's institutional base salary

Eligibility:
- U.S. citizen/Permanent residence
- Recipient of D.D.S, D.M.D., Ph.D., M.D., or other specified equivalent doctoral degree
NIH’s Extramural Loan Repayment Program

Extramural Programs

- Clinical Research
- Pediatric Research
- Health Disparities Research
- Clinical Researchers from Disadvantaged Backgrounds
- Contraception and Infertility Research
Percent of Total Awards by LRP

- Clinical Research (57%)
- Pediatric Research (25%)
- Health Disparities Research (16%)
- Contraception and Infertility Research (2%)
- Clinical Research for Individuals from Disadvantaged Backgrounds (1%)
LRP: Clinical Research – New Applications -

http://www.lrp.nih.gov/about_the_programs/clinical.aspx
LRP: Clinical Research – Renewal Applications -

http://www.lrp.nih.gov/about_the_programs/clinical.aspx
Career Development (K) Support to Research Grant (R01)
R01 Research Award

Independent Investigator

Funds research project
- Salaries of PI and other research personnel
- Supplies, reagents, etc
- Animal costs
- Patient care costs
- Core facilities
- Page charges for publications

Multi-Year (4yrs – 5yrs)
Renewable (e.g. original grant + 2 renewals = 15yrs)
Research Project Grants: Applications, Awards, and Success Rates
NIH: one round of applications
Research Arrangements

- Collaborations
- Subcontracts
- Multiple Principle Investigators
  - Now permitted by NIH
- Co-investigators
- Multidisciplinary/Interdisciplinary
When Preparing an Application:

- Read instructions
- Never assume that reviewers “will know what you mean”
- Refer to literature thoroughly and thoughtfully
- Explicitly state the rationale of the proposed investigation
- Include well-designed tables and figures
- Present an organized, lucid write-up
Anticipate Questions
and
Answer them before
they are asked
Common Problems with Grant Applications from New Investigators

- Overly ambitious
- Not independent of previous mentor’s research
- Fishing expedition
- Not hypothesis driven
- Descriptive, not mechanistic project
- Unfocussed
- No or insufficient preliminary data
- Unrealistic budget
- Methodologies beyond the expertise of investigator or research team
Bell Curve of Reviewer’s Grant Applications

- Definitely do not fund
- Fine
- Definitely fund

Great
Poor Statistics
Research Resources not Adequately Described
Career Development Plan

not Comprehensive
All Components of the Application are as Strong as Possible
Good Luck!