Sponsored Projects: Planning & Organizing Fellowship and Career Development Proposals

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/
Topics to be Discussed

- Individual Fellowship Programs
  - Overview of Programs and Funding Agencies
  - NIH Review Process, Criteria, and Scoring System
  - Components of an NIH Application

- Career Transition Funding Programs

- Junior Faculty Career Development Programs
  - Overview of Programs and Funding Agencies
  - NIH Review Process, Criteria, and Scoring System
  - Components of an NIH Application

- Approaches for Competitive Applications

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Topics to be Discussed

- **Individual Fellowship Programs**
  - **Overview of Programs and Funding Agencies**
  - NIH Review Process, Criteria, and Scoring System
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- **Career Transition Funding Programs**

- **Junior Faculty Career Development Programs**
  - **Overview of Programs and Funding Agencies**
  - NIH Review Process, Criteria, and Scoring System
  - Components of an NIH Application

- **Approaches for Competitive Applications**
Not All Funding Opportunities Are the Same

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

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

- **Different time frames**
  - Not renewable: e.g. 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

- Individual Fellowship
- Training Grant
- Mentor’s Research Grant

Graduate School | Post-doctoral Years | Instructor/Assistant Professor

Timeline of Funding for Junior Investigators

Graduate School

Individual Fellowship Training Grant
Mentor’s Research Grant

Post-doctoral Years

Individual Post-doc Fellowship
Institutional T32 Post-doc Training Grant slot
Mentor’s Research Grant

Instructor/Assistant Professor

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Timeline of Funding for Junior Investigators

Graduate School

Individual Fellowship
Training Grant
Mentor’s Research Grant

Individual Post-doc Fellowship
Institutional T32 Post-doc Training Grant slot
Mentor’s Research Grant

Post-doctoral Years

Pre-doc to Post-doc Transition Awards

Instructor/Assistant Professor

Pre-doc to Post-doc Transition Awards

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Timeline of NIH Funding for Junior Investigators

- **Short term Training**
  - Medical School
  - Internship/Residency
  - Fellowship – Research Years
  - Instructor/Assistant Professor

- **Year-long Enhancement Programs**
  - MD/PhD Fellowship or Institutional T32

Timeline of NIH Funding for Junior Investigators

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

- Medical School
- Internship/Residency
- F30: MD/PhD Fellowship or Institutional T32
- F32: Individual Post-doc Fellowship or Institutional T32 Post-doc Training Grant slot

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Ruth L. Kirschstein Individual Predoctoral NRSA for MD/PhD and other Dual Degree Fellowships

Individual fellowships for predoctoral training which leads to the combined MD/PhD and other dual Clinical/Research degrees.

-[Details](#)  [View Current Funding Opportunities](#)

Ruth L. Kirschstein Predoctoral Individual National Research Service Award

To provide predoctoral individuals with supervised research training in specified health and health-related areas leading toward the research doctoral degree (e.g., PhD).

-[Details](#)  [View Current Funding Opportunities](#)

Ruth L. Kirschstein Postdoctoral Individual National Research Service Award

To provide postdoctoral research training to individuals to broaden their scientific background and extend their potential for research in specified health-related areas.

-[Details](#)  [View Current Funding Opportunities](#)
Ruth L. Kirschstein Predoctoral Individual National Research Service Award

To provide predoctoral individuals with supervised research training in specified health and health-related areas leading toward the research doctoral degree (e.g., PhD).

- Ruth L. Kirschstein National Research Service Award (NRSA) Individual Predoctoral Fellowship (Parent F31)
- Ruth L. Kirschstein National Research Service Award (NRSA) Individual Predoctoral Fellowship to Promote Diversity in Health-Related Research (Parent F31)

https://researchtraining.nih.gov/programs/fellowships

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Fellowship Programs

Predoctoral Individual National Research Service Award (F31)

- Supports specific individual in research degree program (e.g. PhD candidate)
- Stipend, health fees, tuition, travel

- Review criteria:
  - Individual fellow
  - Mentor
  - Research project
  - Research training/Career Development environment

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Pre-doc Fellowships (F31’s)
Applications, awards, and success rates

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
### Pre-doc Fellowships (F31’s)

Applications, awards, and success rates

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Activity Code</th>
<th>NIH Institute/Cent</th>
<th>Number of Applications Reviewed</th>
<th>Number of Applications Awarded</th>
<th>Success Rate</th>
<th>Total Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>F31</td>
<td>NCCIH****</td>
<td>14</td>
<td>6</td>
<td>42.9%</td>
<td>$214,547</td>
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<td>2018</td>
<td>F31</td>
<td>NCI</td>
<td>367</td>
<td>104</td>
<td>28.3%</td>
<td>$4,083,988</td>
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<td>2018</td>
<td>F31</td>
<td>NEI</td>
<td>56</td>
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<td>8</td>
<td>1</td>
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<td>$38,767</td>
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<td>2018</td>
<td>F31</td>
<td>NHLBI</td>
<td>214</td>
<td>89</td>
<td>41.6%</td>
<td>$3,495,967</td>
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<td>F31</td>
<td>NIA</td>
<td>106</td>
<td>28</td>
<td>26.4%</td>
<td>$1,088,187</td>
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<td>2018</td>
<td>F31</td>
<td>NIAAA</td>
<td>71</td>
<td>30</td>
<td>42.3%</td>
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<td>2018</td>
<td>F31</td>
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<td>325</td>
<td>38</td>
<td>11.7%</td>
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<td>2018</td>
<td>F31</td>
<td>NIAMS</td>
<td>59</td>
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<td>25.4%</td>
<td>$600,490</td>
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<td>2018</td>
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<td>NIBIB</td>
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<td>5</td>
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<td>2018</td>
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<td>NICHD</td>
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<td>2018</td>
<td>F31</td>
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<td>72</td>
<td>22</td>
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<td>F31</td>
<td>NIDCR</td>
<td>28</td>
<td>18</td>
<td>64.3%</td>
<td>$630,826</td>
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<td>2018</td>
<td>F31</td>
<td>NIDDK</td>
<td>172</td>
<td>53</td>
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<td>$1,993,026</td>
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<td>2018</td>
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<td>NIEHS</td>
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<td>2018</td>
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<td>2018</td>
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<td>NIMHD***</td>
<td>20</td>
<td>5</td>
<td>25.0%</td>
<td>$210,722</td>
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<td>2018</td>
<td>F31</td>
<td>NINDS</td>
<td>324</td>
<td>85</td>
<td>26.2%</td>
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<tr>
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<td>F31</td>
<td>NINR</td>
<td>35</td>
<td>14</td>
<td>40.0%</td>
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<td>F31</td>
<td>NLM</td>
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<td>2</td>
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<td>2018</td>
<td>F31</td>
<td>OD ORIP</td>
<td>1</td>
<td>0</td>
<td>0.0%</td>
<td>$0</td>
</tr>
</tbody>
</table>

Success Rates


Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
### Pre-doc Fellowships (F31’s)
**Applications, awards, and success rates**

<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>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>F31</td>
<td>NCI</td>
<td>64</td>
<td>29</td>
<td>45.3%</td>
<td>$1,000,758</td>
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<tr>
<td>2010</td>
<td>F31</td>
<td>NCI</td>
<td>72</td>
<td>28</td>
<td>38.9%</td>
<td>$956,309</td>
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<tr>
<td>2011</td>
<td>F31</td>
<td>NCI</td>
<td>71</td>
<td>28</td>
<td>39.4%</td>
<td>$969,748</td>
</tr>
<tr>
<td>2012</td>
<td>F31</td>
<td>NCI</td>
<td>333</td>
<td>95</td>
<td>28.5%</td>
<td>$3,327,984</td>
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<tr>
<td>2013</td>
<td>F31</td>
<td>NCI</td>
<td>372</td>
<td>118</td>
<td>31.7%</td>
<td>$4,268,106</td>
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<tr>
<td>2014</td>
<td>F31</td>
<td>NCI</td>
<td>349</td>
<td>109</td>
<td>31.2%</td>
<td>$3,907,028</td>
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<tr>
<td>2015</td>
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<td>NCI</td>
<td>336</td>
<td>97</td>
<td>28.9%</td>
<td>$3,497,746</td>
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<td>2016</td>
<td>F31</td>
<td>NCI</td>
<td>302</td>
<td>86</td>
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<td>$3,183,545</td>
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<tr>
<td>2017</td>
<td>F31</td>
<td>NCI</td>
<td>343</td>
<td>84</td>
<td>24.5%</td>
<td>$3,180,018</td>
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<tr>
<td>2018</td>
<td>F31</td>
<td>NCI</td>
<td>367</td>
<td>104</td>
<td>28.3%</td>
<td>$4,083,988</td>
</tr>
</tbody>
</table>

For more detailed information, visit: [Report.nih.gov](https://report.nih.gov/success_rates/index.aspx)

Contact: Jaime S. Rubin, Ph.D.; [Grantscourse.columbia.edu](http://grantscourse.columbia.edu)
American Heart Association
Predoctoral Fellowship Program

- Cardiovascular function and disease and stroke
- “Pre-doctoral or clinical health professional degree students… enrolled in a post-baccalaureate Ph.D., M.D., D.O., D.V.M., Pharm.D., D.D.S., DrPH, or Ph.D. in nursing or equivalent clinical health science doctoral degree program”
- Basic science, clinical, behavioral, translational, population research, bioengineering, biotechnology, public health
- Funding: Stipend (NIH rate), Health insurance, Project support
- Award Duration: 1-2 years
- U.S. citizen, Permanent resident, Visa status (e.g., H1-B, F-1, J-1, O-1)

Predoctoral MD/PhD or Other Dual-Doctoral Degree Fellowship (F30)

- Supports specific individual - dual degree candidate: health professional doctoral degree (e.g., MD, DDS) and a research doctoral degree (e.g., PhD, DrPH)

- Stipend, health fees, tuition, travel

- Review criteria:
  - Individual fellow
  - Mentor
  - Research project
  - Research training/Career Development environment

## Pre-doc to Post-doc Transition Awards (F99’s)

Applications, awards, and success rates

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Activity Code</th>
<th>NIH Institute/Cent</th>
<th>Number of Applications Reviewed</th>
<th>Number of Applications Awarded</th>
<th>Success Rate</th>
<th>Total Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>F99</td>
<td>NCI</td>
<td>76</td>
<td>36</td>
<td>47.4%</td>
<td>$1,391,380</td>
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<tr>
<td>2017</td>
<td>F99</td>
<td>NCI</td>
<td>90</td>
<td>27</td>
<td>30.0%</td>
<td>$1,025,370</td>
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<tr>
<td>2017</td>
<td>F99</td>
<td>NINDS</td>
<td>29</td>
<td>12</td>
<td>41.4%</td>
<td>$394,321</td>
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<tr>
<td>2017</td>
<td>F99</td>
<td>Activity Total</td>
<td>119</td>
<td>39</td>
<td>32.8%</td>
<td>$1,419,691</td>
</tr>
<tr>
<td>2018</td>
<td>F99</td>
<td>NCI</td>
<td>73</td>
<td>23</td>
<td>31.5%</td>
<td>$907,420</td>
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<tr>
<td>2018</td>
<td>F99</td>
<td>NINDS</td>
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<td>18</td>
<td>45.0%</td>
<td>$689,588</td>
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<td>2018</td>
<td>F99</td>
<td>Activity Total</td>
<td>113</td>
<td>41</td>
<td>36.3%</td>
<td>$1,597,008</td>
</tr>
</tbody>
</table>


Postdoctoral Individual National Research Service Award (F32)

- Supports specific individual (e.g., PhD, MD, or MD/PhD trained)
- May be in degree program
- Stipend, health fees, tuition, travel

Review criteria:
- Individual fellow
- Mentor
- Research project
- Research training/Career Development environment

Post-doc Fellowships (F32’s) Applications, awards, and success rates

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Training Grants and Fellowships: Funding in Current and Constant Dollars

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Training Grants and Fellowships: Pre- and Post-Doctoral Positions

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Training Grants and Fellowships: Pre- and Post-Doctoral Positions

Improving graduate student and postdoctoral training

A. Put individual development plans in place for all trainees
B. Reduce the length of graduate training
C. Provide F30 and F31 awards from all Institutes/Centers
D. Increase postdoctoral stipends and consider policies on benefits
E. Increase support for K99/R00 and shorten eligibility period
F. Increase support for Early Independence Awards

http://acd.od.nih.gov/bwf.htm

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Ruth L. Kirschstein National Research Service Award (NRSA) Individual Predoctoral Fellowship (Parent F31)

National Center for Complementary and Integrative Health (NCCIH)
National Cancer Institute (NCI)
National Human Genome Research Institute (NHGRI)
National Heart, Lung, and Blood Institute (NHLBI)
National Institute on Aging (NIA)
National Institute on Alcohol Abuse and Alcoholism (NIAAA)
National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS)
Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)
National Institute on Deafness and Other Communication Disorders (NIDCD)
National Institute of Dental and Craniofacial Research (NIDCR)
National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)
National Institute of Environmental Health Sciences (NIEHS)
National Institute of Mental Health (NIMH)
National Institute on Minority Health and Health Disparities (NIMHD)
National Institute of Neurological Disorders and Stroke (NINDS)
National Library of Medicine (NLM)
Division of Program Coordination, Planning and Strategic Initiatives, Office of Research Infrastructure Programs (ORIP)


Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Ruth L. Kirschstein National Research Service Award (NRSA) Individual Predoctoral Fellowship to **Promote Diversity** in Health-Related Research (Parent F31)

**National Human Genome Research Institute (NHGRI)**

**National Heart, Lung, and Blood Institute (NHLBI)**

**National Institute on Aging (NIA)**

**National Institute on Alcohol Abuse and Alcoholism (NIAAA)**

**National Institute of Allergy and Infectious Diseases (NIAID)**

**National Institute on Deafness and Other Communication Disorders (NIDCD)**

**National Institute of Dental and Craniofacial Research (NIDCR)**

**National Institute of General Medical Sciences (NIGMS)**

**National Institute of Mental Health (NIMH)**

**National Institute on Minority Health and Health Disparities (NIMHD)**

**National Institute of Neurological Disorders and Stroke (NINDS)**

**National Library of Medicine (NLM)**

**Division of Program Coordination, Planning and Strategic Initiatives, Office of Research Infrastructure Programs (ORIP)**

**Funding Opportunity Announcement (FOA) Number** PA-19-196

For the purpose of this announcement, institutions are encouraged to recruit potential student participants from diverse backgrounds, such as:

**A. Individuals from racial and ethnic groups** that have been shown by the National Science Foundation to be underrepresented in health-related sciences on a national basis (see data at http://www.nsf.gov/statistics/showpub.cfm?TopID=2&SubID=27) and the report Women, Minorities, and Persons with Disabilities in Science and Engineering). The following racial and ethnic groups have been shown to be underrepresented in biomedical research: Blacks or African Americans, Hispanics or Latinos, American Indians or Alaska Natives, Native Hawaiians and other Pacific Islanders. In addition, it is recognized that underrepresentation can vary from setting to setting; individuals from racial or ethnic groups that can be demonstrated convincingly to be underrepresented by the grantee institution should be encouraged to participate in this program. For more information on racial and ethnic categories and definitions, see NOT-OD-15-089.

**B. Individuals with disabilities**, who are defined as those with a physical or mental impairment that substantially limits one or more major life activities, as described in the Americans with Disabilities Act of 1990, as amended. See NSF data at http://www.nsf.gov/statistics/wmpd/2013/pdf/tab7-5_updated_2014_10.pdf.
Ruth L. Kirschstein National Research Service Award (NRSA) Individual Fellowship for Students at Institutions with NIH-Funded Institutional Predoctoral Dual-Degree Training Programs (Parent F30)

Funding Opportunity Announcement (FOA) Number PA-19-191

National Cancer Institute (NCI)
National Eye Institute (NEI)
National Human Genome Research Institute (NHGRI)
National Institute on Aging (NIA)
National Institute on Alcohol Abuse and Alcoholism (NIAAA)
National Institute of Allergy and Infectious Diseases (NIAID)
Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)
National Institute on Deafness and Other Communication Disorders (NIDCD)
National Institute of Dental and Craniofacial Research (NIDCR)
National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)
National Institute on Drug Abuse (NIDA)
National Institute of Environmental Health Sciences (NIEHS)
National Institute of Mental Health (NIMH)
National Institute on Minority Health and Health Disparities (NIMHD)
National Center for Complementary and Integrative Health (NCCIH)

Division of Program Coordination, Planning and Strategic Initiatives, Office of Research Infrastructure Programs (ORIP)
National Heart, Lung, and Blood Institute (NHLBI)
Ruth L. Kirschstein National Research Service Award (NRSA) Individual Postdoctoral Fellowship (Parent F32)

National Center for Complementary and Integrative Health (NCCIH)
National Cancer Institute (NCI)
National Human Genome Research Institute (NHGRI)
National Heart, Lung and Blood Institute (NHLBI)
National Institute on Aging (NIA)
National Institute on Alcohol Abuse and Alcoholism (NIAAA)
National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS)
Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)
National Institute on Deafness and Other Communication Disorders (NIDCD)
National Institute of Dental and Craniofacial Research (NIDCR)
National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)
National Institute of Environmental Health Sciences (NIEHS)
National Institute of General Medical Sciences (NIGMS)
National Institute of Mental Health (NIMH)
National Institute on Minority Health and Health Disparities (NIMHD)

Funding Opportunity Announcement (FOA) Number: PA-19-188

NINDS Ruth L. Kirschstein National Research Service Award (NRSA) for Training of Postdoctoral Fellows (F32) PAR-16-458

The purpose of this award is to support outstanding scientific training of highly promising postdoctoral candidates with outstanding mentors. Candidates are eligible to apply for support from this program from ~12 months prior to the start of the proposed postdoctoral position to within 12 months after starting in postdoctoral position. Based on the early timeframe of eligibility, and the discouragement of inclusion of preliminary data, this NINDS F32 seeks to foster early, goal-directed planning and to encourage applications for bold and/or innovative projects by the candidate that have the potential for significant impact. Applications are expected to incorporate strong training in quantitative reasoning and the quantitative principles of experimental design and analysis. Support by this program is limited to the first 3 years of a candidate's activity in a specific laboratory or research environment, so as to further encourage early fellowship application and timely completion of “mentored training” of the postdoctoral candidate in a single environment.


FOA MAY BE REISSUED

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
National Science Foundation: Graduate Research Fellowship Program

Eligibility:

- Citizenship:
  - US citizens, nationals, permanent residents

- Degree Requirements:
  - have not completed > than 12 months of full-time graduate study (or equivalent) as of August 1st (limited exceptions)

- Fields of Study not Eligible:
  - “directly health-related, such as etiology, diagnosis or treatment of physical or mental disease, abnormality, or malfunction in humans and other animals…”

https://www.nsfgrfp.org/

Jaime S. Rubin, Ph.D.: http://grantscourse.columbia.edu
National Science Foundation: Graduate Research Fellowship Program

**Fields of Study:** Chemistry, Computer and Information Science and Engineering, Engineering, Geosciences; Life Sciences; Materials Research; Mathematical Sciences; Physics and Astronomy; Psychology; Social Sciences; STEM Education and Learning Research

- **Life Sciences:** Biochemistry, Bioinformatics and Computational Biology, Biophysics, Cell Biology, Developmental Biology, Ecology, Environmental Biology, Evolutionary Biology, Genetics, Genomics, Microbial Biology, Neurosciences, Organismal Biology, Physiology, Proteomics, Structural Biology, Systematics and Biodiversity, Systems and Molecular Biology, Other (specify)

https://www.nsfgrfp.org/
Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
National Science Foundation: Graduate Research Fellowship Program

**Application includes:**
- Personal, Relevant Background and Future Goals
- Graduate Research Plan
- Reference Letters
- Transcripts

**Funding:**
- Stipend
- Cost-of-education allowance

https://www.nsfgrfp.org/
Individual Fellowships

Non-government, non-profit agencies

• Voluntary Health Organizations
• Professional Societies
• Private Foundations
Post-doc: Individual Fellowship

- Voluntary Health Organizations, Foundations, Professional Societies -

- American Cancer Society
- American Heart Association
- American Liver Foundation
- Daland Fellowships in Clinical Investigation
- Damon Runyon Cancer Research Foundation
- Helen Hay Whitney Foundation
- Jane Coffin Childs Memorial Fund
American Heart Association
Postdoctoral Fellowship Program

- Cardiovascular function and disease and stroke research
- Basic, translational, clinical, behavioral, population, bioengineering, biotechnology, and public health
- Funding: Stipend, Health insurance, Project support
- Award Duration: 2 years, May apply for a second 2-year award
- US citizenship/Permanent Residency not required

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Jane Coffin Childs Memorial Fund for Medical Research

Postdoctoral Research Fellowships

- Supports early postdoctoral research training
- “Research into the causes and treatment of cancer… the study of cell growth and development, emphasizing the study of the basic biology and chemistry of the underlying processes. ”
- 3-year fellowships
- Stipend, Research Allowance, and Travel
- Stipends for child care
- US and foreign citizens

http://www.jccfund.org/fellowship-information/
Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Topics to be Discussed

- **Individual Fellowship Programs**
  - Overview of Programs and Funding Agencies
  - NIH Review Process, Criteria, and Scoring System
  - Components of an NIH Application

- **Career Transition Funding Programs**

- **Junior Faculty Career Development Programs**
  - Overview of Programs and Funding Agencies
  - NIH Review Process, Criteria, and Scoring System
  - Components of an NIH Application

- **Approaches for Competitive Applications**
<table>
<thead>
<tr>
<th>Activity Codes</th>
<th>Program Description</th>
<th>Cycle I Due Date</th>
<th>Cycle II Due Date</th>
<th>Cycle III Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>F Series Fellowships  (including F31 Diversity – NOT-OD-17-029)</td>
<td><em>Individual National Research Service Awards (Standard)</em> (see NRSA Training Page) •</td>
<td>April 8</td>
<td>August 8</td>
<td>December 8</td>
</tr>
</tbody>
</table>

new, renewal, resubmission


Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
### Application Due Dates

<table>
<thead>
<tr>
<th>All Activity Codes Cited Above</th>
<th>AIDS and AIDS-Related Applications</th>
<th>May 7</th>
<th>September 7</th>
<th>January 7</th>
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<tbody>
<tr>
<td>new, renewal, resubmission, revision</td>
<td><em>Effective. Sept 5, 2015 - N/A for SBIR/STTR Applications using Standard Due Dates</em></td>
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<tr>
<td></td>
<td>NOTE: See Key Dates section of funding opportunity announcement to determine if AIDS dates apply.</td>
<td></td>
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</table>


### Application Due Dates

#### Review and Award Cycles

<table>
<thead>
<tr>
<th></th>
<th>Cycle I</th>
<th>Cycle II</th>
<th>Cycle III</th>
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<tbody>
<tr>
<td>Application Due Dates</td>
<td>January 25 - May 7</td>
<td>May 25 - September 7</td>
<td>September 25 - January 7</td>
</tr>
<tr>
<td>Scientific Merit Review</td>
<td>June - July</td>
<td>October - November</td>
<td>February - March</td>
</tr>
<tr>
<td>Advisory Council Round</td>
<td>August or October *</td>
<td>January</td>
<td>May</td>
</tr>
<tr>
<td>Earliest Project Start Date</td>
<td>September or December *</td>
<td>April</td>
<td>July</td>
</tr>
</tbody>
</table>

NIH REFERRAL AND REVIEW SYSTEM
REGULAR RESEARCH GRANT APPLICATIONS

PROGRAM & POLICY CONSIDERATIONS

NINDS  NIGMS  NIA

NIAID

NIDR

NINR

NIEMS

NIDCD

NLM

NCRR

FIC

NIDDK

SCIENTIFIC REVIEW

REFERRAL

NEI

NCI

NEI

NIAMS

NHLBI

NCHGR

NICHDT

SCIENTIFIC MANAGEMENT

FUNDING DECISIONS

CSR

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
<table>
<thead>
<tr>
<th>Study Section</th>
<th>Study Section Description</th>
<th>Scientific Review Officer</th>
</tr>
</thead>
<tbody>
<tr>
<td>F01A</td>
<td>Fellowships: Brain Disorders and Related Neurosciences</td>
<td>Dr. Vilen Movsesyan</td>
</tr>
<tr>
<td>F01B</td>
<td>Fellowships: Learning and Memory, Language, Communication and Related Neurosciences</td>
<td>Dr. Susan Gillmor</td>
</tr>
<tr>
<td>F02A</td>
<td>Fellowships: Behavioral Neuroscience</td>
<td>Dr. Mei Qin</td>
</tr>
<tr>
<td>F02B</td>
<td>Fellowships: Sensory and Motor Neurosciences, Cognition and Perception</td>
<td>Dr. Sharon Low</td>
</tr>
<tr>
<td>F03A</td>
<td>Fellowships: Neurodevelopment, Synaptic Plasticity and Neurodegeneration</td>
<td>Dr. Mary Schueler</td>
</tr>
<tr>
<td>F03B</td>
<td>Fellowships: Biophysical, Physiological, Pharmacological and Bioengineering Neuroscience</td>
<td>Dr. Sussan Paydar</td>
</tr>
<tr>
<td>F04A</td>
<td>Fellowships: Chemistry, Biochemistry and Biophysics A</td>
<td>Dr. Mike Radtke</td>
</tr>
<tr>
<td>F04B</td>
<td>Fellowships: Chemistry, Biochemistry and Biophysics B</td>
<td>Dr. Sudha Veeraraghavan</td>
</tr>
<tr>
<td>F05-D</td>
<td>Fellowships: Cell Biology, Developmental Biology, and Bioengineering</td>
<td>Dr. Alexander Gubin</td>
</tr>
<tr>
<td>F05-U</td>
<td>Fellowships: Cell Biology, Developmental Biology, and Bioengineering</td>
<td>Dr. Raj Krishnaraju</td>
</tr>
<tr>
<td>F06</td>
<td>Fellowships: Endocrinology, Metabolism, Nutrition and Reproductive Sciences</td>
<td>Dr. Elaine Sierra-Rivera</td>
</tr>
<tr>
<td>F07</td>
<td>Fellowships: Immunology and Area</td>
<td>Dr. Liying Guo</td>
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<tr>
<td>F08</td>
<td>Fellowships: Genes, Genomes and Genetics</td>
<td>Dr. Lystranne Maynard Smith</td>
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<td>F09A</td>
<td>Fellowships: Oncological Sciences</td>
<td>Dr. Reigh-Yi Lin</td>
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<tr>
<td>F09B</td>
<td>Fellowships: Oncological Sciences</td>
<td>Dr. Jian Cao</td>
</tr>
<tr>
<td>F09C</td>
<td>Fellowships: Oncological Sciences</td>
<td>Dr. Sarita Sastry</td>
</tr>
<tr>
<td>F10A</td>
<td>Fellowships: Physiology and Pathobiology of Cardiovascular and Respiratory Systems</td>
<td>Dr. Richard Schneiderman</td>
</tr>
<tr>
<td>F10B</td>
<td>Fellowships: Musculoskeletal and Oral Sciences, Imaging, Surgery, and Informatics</td>
<td>Dr. Anshumali Chaudhari</td>
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<tr>
<td>F13</td>
<td>Fellowships: Infectious Diseases and Microbiology</td>
<td>Dr. Tamara McNealy</td>
</tr>
<tr>
<td>F16</td>
<td>Fellowships: Risk, Prevention and Health Behavior</td>
<td>Dr. Martha Faraday</td>
</tr>
<tr>
<td>F17</td>
<td>Fellowships: AIDS and AIDS Related Applications</td>
<td>Dr. Jingsheng Tuo</td>
</tr>
<tr>
<td>F18</td>
<td>Fellowships: Epidemiology and Population Sciences</td>
<td>Dr. Ramona Gianina Dumitrescu</td>
</tr>
</tbody>
</table>
Fellowships: Infectious Diseases and Microbiology – F13

The F13 Special Emphasis Panel reviews fellowship applications involving virology and viral pathogenesis, bacteriology and bacterial pathogenesis, fungal pathogenesis, parasitology and parasitic diseases, vector biology, the innate and adaptive host responses to these microbes and viruses, and the development of anti-infective agents to treat and prevent infectious disease.
Notice of NIH Policy to All Applicants: Meeting rosters are provided for information purposes only. Applicant investigators and institutional members about an application before or after the review. Failure to observe this policy will create a serious breach of integrity in the NOT-OD-14-073 and NOT-OD-15-106, including removal of the application from immediate review.

CHAIRPERSON
------------------
VEDANTAM, GAYATRI, PHD
PROFESSOR
SCHOOL OF ANIMAL AND COMPARATIVE
BIOMEDICAL SCIENCES
UNIVERSITY OF ARIZONA
TUCSON, AZ, 85721

MEMBERS
--------
ADAMSON, AMY L, PHD
PROFESSOR
DEPARTMENT OF BIOLOGY
UNIVERSITY OF NORTH CAROLINA - GREENSBORO
GREENSBORO, NC, 27402

ALLRED, DAVID R, PHD
PROFESSOR
DEPARTMENT OF INFECTIOUS DISEASES AND IMMUNOLOGY
UNIVERSITY OF FLORIDA
GAINESVILLE, FL, 32610880

ALTO, NEAL MATHEW, PHD
ASSOCIATE PROFESSOR
DEPARTMENT OF MICROBIOLOGY
SOUTHWESTERN MEDICAL CENTER

https://public.era.nih.gov/pubroster/jsp/preRosIndex.jsp?CID=101323&AGENDA=353189
Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Notice of NIH Policy to All Applicants: Meeting rosters are provided for information purposes only. Applicant investigators and institutional officials must not communicate directly with study section members about an application before or after the review. Failure to observe this policy will create a serious breach of integrity in the peer review process, and may lead to actions outlined in NOT-OD-14-073 and NOT-OD-15-106 including removal of the application from immediate review.
Overlaps with Closely Related Study Sections

- **Immunology and Area (F07)** in the area of infectious diseases. Fellowship applications that focus on advancing the understanding of the immune response against microbial pathogens may be reviewed in F07. Fellowship applications that focus on microbial pathogenesis may be reviewed in F13.

- **Genes, Genomes and Genetics (F08)** in the area of microbiology. Fellowship applications that focus on bacterial genetics, DNA replication, recombination/repair, transcriptional regulation, and evolution may be reviewed in F08. Fellowship applications that explore bacterial physiology or pathogenesis may be reviewed in F13.

- **Risk, Prevention and Health Behavior (F16)** in the area of infectious diseases. Fellowship applications that focus on the epidemiology, implementation science, health informatics or ethical issues as related to infectious diseases may be reviewed in F16. Fellowship applications that address infectious disease transmission and molecular epidemiology may be reviewed in F13.
There were 125 results matching your search criteria.

<table>
<thead>
<tr>
<th>T</th>
<th>Act</th>
<th>Project</th>
<th>Year</th>
<th>Sub #</th>
<th>Project Title</th>
<th>Contact PI/Project Leader</th>
<th>Organization</th>
<th>FY</th>
<th>Admin IC</th>
<th>Funding IC</th>
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<td>F32</td>
<td>AI126892</td>
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<td>THE ROLE OF EPISTATIC NETWORKS IN SHAPING ADAPTIVE LANDSCAPES</td>
<td>ACEVEDO, ASHLEY</td>
<td>ROCKEFELLER UNIVERSITY</td>
<td>2018</td>
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<td>AI126660</td>
<td>03</td>
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<td>RNA-PROTEIN INTERACTIONS DURING HEPATITIS C VIRUS INFECTION</td>
<td>ADAMS, REBECCA LYNN</td>
<td>YALE UNIVERSITY</td>
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<td>HEPARANASE IN HERPETIC KERATITIS</td>
<td>AGELIDIS, ALEX</td>
<td>UNIVERSITY OF ILLINOIS AT CHICAGO</td>
<td>2018</td>
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<td>NEI</td>
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<td>5</td>
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<td>CORONAVIRUS ANTIVIRAL NUCLEOSIDE ANALOGS: INHIBITION AND REDUCED SUSCEPTIBILITY</td>
<td>AGOSTINI, MARIA</td>
<td>VANDERBILT UNIVERSITY</td>
<td>2018</td>
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<td>CATCHING THE PARPS: DEFINING THE ANTIVIRAL MECHANISMS OF ADP-RIBOSYLATION IN SIV INFECTION</td>
<td>AGUILAR, EDUARDO G</td>
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<td>NIAID</td>
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<td>MOLECULAR DETERMINANTS OF HUMAN ANTIBODY-MEDIATED INHIBITION OF HUMAN NOROVIRUS</td>
<td>ALVARADO, GABRIELA</td>
<td>VANDERBILT UNIVERSITY</td>
<td>2018</td>
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<td>GM130003</td>
<td>01</td>
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<td>MOLECULAR MECHANISMS OF SPORE GERMINATION</td>
<td>AMON, JEREMY DAVID</td>
<td>HARVARD MEDICAL SCHOOL</td>
<td>2018</td>
<td>NIGMS</td>
<td>NIGMS</td>
<td>$56,654</td>
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</tbody>
</table>
How to Direct a Grant Application to the Appropriate Study Section

- Review research areas of Study Section
- Review roster of Study Section members
  - Do not contact reviewers
- Review Study Section’s funded grants in NIH Reporter
- Discuss with colleagues in similar research area
- Request via Assignment Request Form in Application
PHS Assignment Request Form

| Funding Opportunity Number: | [ ] |
| Funding Opportunity Title: | [ ] |

**Awarding Component Assignment Request (optional)**

If you have a preference for an awarding component (e.g., NIH Institute/Center) assignment, use the link below to identify the appropriate short abbreviation and enter it below. All requests will be considered; however, assignment requests cannot always be honored.

Awarding Components: [https://grants.nih.gov/grants/phs_assignment_information.htm#AwardingComponents](https://grants.nih.gov/grants/phs_assignment_information.htm#AwardingComponents)

<table>
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<tr>
<th>Assign to Awarding Component:</th>
<th>First Choice</th>
<th>Second Choice</th>
<th>Third Choice</th>
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<tr>
<td>Do Not Assign to Awarding Component:</td>
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</tbody>
</table>

**Study Section Assignment Request (optional)**

If you have a preference for study section assignment, use the link below to identify the appropriate study section (e.g., NIH Scientific Review Group or Special Emphasis Panel) and enter it below. Remove all hyphens, parentheses, and spaces. All requests will be considered; however, assignment requests cannot always be honored.

Study Sections: [https://grants.nih.gov/grants/phs_assignment_information.htm#StudySection](https://grants.nih.gov/grants/phs_assignment_information.htm#StudySection)

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<thead>
<tr>
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<th>First Choice</th>
<th>Second Choice</th>
<th>Third Choice</th>
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</thead>
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<td>[ ]</td>
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<tr>
<td>Do Not Assign to Study Section:</td>
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</tr>
<tr>
<td>Only 20 characters allowed</td>
<td>[ ]</td>
<td>[ ]</td>
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</tr>
</tbody>
</table>
PHS Assignment Request Form

List individuals who should not review your application and why (optional)  Only 1000 characters allowed

Identify scientific areas of expertise needed to review your application (optional)
Note: Please do not provide names of individuals

<table>
<thead>
<tr>
<th>Expertise: Only 40 characters allowed</th>
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</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
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<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>5</td>
</tr>
</tbody>
</table>
Initial Review Group or Study Section

Actions

- **Discussed applications:**
  - Receives Impact/Priority Scores
  - Receives Scores for individual core review criteria

- **Not Discussed**
  - Receives Scores for individual core review criteria

- **Not Recommended for Further Consideration** (NRFC)

- **Other:** e.g. Deferred
# NIH's Evaluation System

**9-point rating scale (1=exceptional; 9=poor)**

<table>
<thead>
<tr>
<th>Impact</th>
<th>Score</th>
<th>Descriptor</th>
<th>Strengths/Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High Impact</strong></td>
<td>1</td>
<td>Exceptional</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Outstanding</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Excellent</td>
<td></td>
</tr>
<tr>
<td><strong>Moderate Impact</strong></td>
<td>4</td>
<td>Very Good</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Good</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Satisfactory</td>
<td></td>
</tr>
<tr>
<td><strong>Low Impact</strong></td>
<td>7</td>
<td>Fair</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>Marginal</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>Poor</td>
<td></td>
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</table>


<table>
<thead>
<tr>
<th>Impact</th>
<th>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>Medium</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>
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<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>

**Minor Weakness:** An easily addressable weakness that does not substantially lessen impact

**Moderate Weakness:** A weakness that lessens impact

**Major Weakness:** A weakness that severely limits impact


**FELLOWSHIPS & CAREER AWARDS**

**Overall Impact:**
The likelihood that the proposed training (F) or career development (K) will enhance the candidate's potential for a productive, independent scientific research career in a health-related field.

<table>
<thead>
<tr>
<th>Overall Impact</th>
<th>High</th>
<th>Medium</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Score</strong></td>
<td>1 2 3</td>
<td>4 5 6</td>
<td>7 8 9</td>
</tr>
</tbody>
</table>

### Evaluating Overall Impact
Consider the 5 criteria (weighting based on reviewer’s judgment):

<table>
<thead>
<tr>
<th>Fs</th>
<th>Ks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applicant</td>
<td>Applicant</td>
</tr>
<tr>
<td>Sponsor(s)</td>
<td>Candidate</td>
</tr>
<tr>
<td>Research</td>
<td>Career Development</td>
</tr>
<tr>
<td>Training Plan</td>
<td>Plan/Goals*</td>
</tr>
<tr>
<td>Potential</td>
<td>Research Plan</td>
</tr>
<tr>
<td>Institutional Environment &amp; Commitment</td>
<td>Mentor(s)**</td>
</tr>
<tr>
<td></td>
<td>Environment &amp; Institutional Commitment</td>
</tr>
</tbody>
</table>

- e.g. Proposes training or career development of high value/benefit for the candidate who has high potential for developing into a productive, independent scientist. May have some or no weaknesses in the criteria.
- e.g. Proposes training or career development of high or moderate value/benefit for the candidate who has high or moderate potential for further development, but weaknesses in the criteria reduce the overall impact to medium.
- e.g. Proposes training or career development of moderate value/benefit for the candidate who shows moderate potential. May have some weaknesses in the criteria.
- e.g. Proposes training or career development of low value/benefit for the candidate who shows low potential. May have some weaknesses in the criteria.

5 is a good, medium-impact application. The entire scale (1-9) should always be considered.

---

Impact Score

- Preliminary Impact Scores determine which applications discussed at study section
- Impact Score given by each member of the study section
- Overall Impact Score (for discussed applications): Mean of reviewers’ Impact Scores x10
- 81 possible overall Impact Scores (10 – 90, whole numbers)
# Fellowship Payline: NIAID

<table>
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<tr>
<th>Grant Type</th>
<th>Payline</th>
<th>Status</th>
<th>Description</th>
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<td>18 overall impact/priority score</td>
<td>Interim</td>
<td>NRSA Individual Predoctoral M.D./Ph.D. or Other Dual-Doctoral Degree Fellowships</td>
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<tr>
<td>F31</td>
<td>18 overall impact/priority score</td>
<td>Interim</td>
<td>NRSA Individual Predoctoral Fellowships</td>
</tr>
<tr>
<td>F32</td>
<td>20 overall impact/priority score</td>
<td>Interim</td>
<td>NRSA Individual Postdoctoral Fellowships</td>
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FY19

https://www.niaid.nih.gov/grants-contracts/niaid-paylines

<table>
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## Fellowship Payline: NHLBI

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FY19


Application Review Information from the Fellowship Funding Opportunity Announcements

“A fellowship application has a research project that is integrated with the training plan. The review will emphasize the applicant's potential for a productive career, the applicant's need for the proposed training, and the degree to which the research project and training plan, the sponsor(s), and the environment will satisfy those needs.”

https://researchtraining.nih.gov/programs/fellowships

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Overall Impact/Merit Score

Reviewer’s assessment “that the fellowship will enhance the applicant’s potential for, and commitment to, a productive independent scientific research career…”
Reviewers will consider each of the five review criteria below in the determination of scientific and technical merit, and give a separate score for each.

1. **Fellowship Applicant**

   **Strengths**
   
   -

   **Weaknesses**
   
   -

2. **Sponsors, Collaborators, and Consultants**

   **Strengths**
   
   -

   **Weaknesses**
   
   -

3. **Research Training Plan**

   **Strengths**
   
   -

   **Weaknesses**
   
   -
4. **Training Potential**

**Strengths**
- 

**Weaknesses**
- 

5. **Institutional Environment & Commitment to Training**

**Strengths**
- 

**Weaknesses**
- 

1. Fellowship Applicant

- “Are the applicant's academic record and research experience of high quality?
- Does the applicant have the potential to develop into an independent and productive researcher?
- Does the applicant demonstrate commitment to a research career in the future?”
- Post-docs: “Does the research project reflect a significant contribution of the candidate to the originality of the project idea, approach and/or hypotheses?”

https://researchtraining.nih.gov/programs/fellowships

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
1. Fellowship Applicant

- **Dual-Degree (MD/PhD):** Are the applicant's interests consistent with a career as a physician-scientist or other clinician-scientist?

- **Dual-Degree (MD/PhD):** Does the applicant have the potential to develop into an independent, productive contributor to biomedical, behavioral or clinical science as a physician-scientist or other clinician-scientist?

- **Dual-Degree (MD/PhD):** Does the applicant demonstrate commitment to a career as a physician-scientist or other clinician-scientist?

https://researchtraining.nih.gov/programs/fellowships

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
2. Sponsors, Collaborators, and Consultants

- “Are the sponsor(s’) research qualifications (including recent publications) and track record of mentoring individuals at a similar stage appropriate for the needs of the applicant?

- Is there evidence of a match between the research and clinical interests (if applicable) of the applicant and the sponsor(s)?

- Do(es) the sponsor(s) demonstrate an understanding of the applicant’s training needs as well as the ability and commitment to assist in meeting these needs?”

https://researchtraining.nih.gov/programs/fellowships

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
2. Sponsors, Collaborators, and Consultants

- “Is there evidence of adequate research funds to support the applicant’s proposed research project and training for the duration of the research component of the fellowship?
- If a team of sponsors is proposed, is the team structure well justified for the mentored training plan, and are the roles of the individual members appropriate and clearly defined?”
2. Sponsors, Collaborators, and Consultants

- “Are the qualifications of any collaborator(s) and/or consultant(s), including their complementary expertise and previous experience in fostering the training of fellows, appropriate for the proposed project?

- If the applicant is proposing to gain experience in a clinical trial as part of his or her research training, is there evidence of the appropriate expertise, experience, resources, and ability on the part of the sponsor(s) to guide the applicant during the clinical trial research experience?”

https://researchtraining.nih.gov/programs/fellowships
Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
2. Sponsors, Collaborators, and Consultants

- **Post-docs**: “Does the sponsor's research and training record, as well as mentoring statement, indicate that the applicant will receive outstanding training in the proposed research area and have the opportunity to publish high quality papers and present research data at national meetings as the project progresses?”

https://researchtraining.nih.gov/programs/fellowships

3. Research Training Plan

- “Is the proposed research project of high scientific quality, and is it well integrated with the proposed research training plan?”
- “Based on the sponsor’s description of his/her active research program, is the applicant’s proposed research project sufficiently distinct from the sponsor’s funded research for the applicant’s career stage?”
- “Is the research project consistent with the applicant's stage of research development?”
- Is the proposed time frame feasible to accomplish the proposed training?”

https://researchtraining.nih.gov/programs/fellowships
3. Research Training Plan

■ “If proposed, will the clinical trial experience contribute to the proposed project and/or the applicant's research training?”

■ **Post-docs:** “Does the training plan provide adequate opportunities to present and publish research findings and meet with scientists in the community at national meetings as the work progresses?”

■ **Post-docs:** “Will the training plan provide the professional skills needed for the applicant to transition to the next stage of his/her research career?”

https://researchtraining.nih.gov/programs/fellowships

3. Research Training Plan

- **Dual-Degree (MD/PhD):** “Is the training plan well-reasoned, and likely to provide an effective, integrated research and clinical training experience and ease the transitions between the phases of the dual-degree program?

https://researchtraining.nih.gov/programs/fellowships
4. Training Potential

■ “Are the proposed research project and training plan likely to provide the applicant with the requisite individualized and mentored experiences in order to obtain appropriate skills for a research career?

■ Does the training plan take advantage of the applicant’s strengths and address gaps in needed skills?

■ Does the training plan document a clear need for, and value of, the proposed training?

■ Does the proposed training have the potential to serve as a sound foundation that will clearly enhance the applicant’s ability to develop into a productive researcher?”
4. Training Potential

- **Dual-Degree (MD/PhD):** Are the proposed research project and research and clinical training plan likely to provide the applicant with an integrated perspective and appropriate skills for a physician-scientist or other clinician-scientist?

- **Dual-Degree (MD/PhD):** If applicable to the dual-degree program, are appropriate opportunities for electives, early and longitudinal clinical experiences, or other enhanced clinical training available to the applicant? Are appropriate opportunities available to ease the transition to clinical clerkships and for research electives during clinical training?

https://researchtraining.nih.gov/programs/fellowships

5. Institutional Environment & Commitment to Training

- “Are the research facilities, resources (e.g., equipment, laboratory space, computer time, subject populations, clinical training settings), and training opportunities (e.g. seminars, workshops, professional development opportunities) adequate and appropriate?

- Is the institutional environment for the applicant’s scientific development of high quality?

- Is there appropriate institutional commitment to fostering the applicant's mentored training?”

https://researchtraining.nih.gov/programs/fellowships

Jaime S. Rubin, Ph.D.; http://grantcourse.columbia.edu
5. Institutional Environment & Commitment to Training

- **Post-docs:** “Does the institutional and/or lab environment provide appropriate and sufficient opportunities for the applicant to gain the professional skills needed for a successful research career?”

5. Institutional Environment & Commitment to Training - Dual-Degree (MD/PhD)

- Is the institutional environment for the applicant’s scientific and clinical development of high quality?
- Are the facilities and resources appropriate to provide exposure to a research-oriented, clinical environment?
- Does the environment include individuals with similar training who will serve as role models for the applicant?

https://researchtraining.nih.gov/programs/fellowships
5. Institutional Environment & Commitment to Training - Dual-Degree (MD/PhD)

- Given the integrated nature of the training program, will appropriate advising be available to the applicant as he/she transitions between the research and clinical components of the integrated training program and to the next career stage?

https://researchtraining.nih.gov/programs/fellowships
5. Institutional Environment & Commitment to Training - Dual-Degree (MD/PhD)

- Is there appropriate institutional commitment to fostering the applicant's integrated training as a physician-scientist or other clinician-scientist?
- Does this commitment extend to support the applicant's research and training, if needed, for the duration of the proposed award?

https://researchtraining.nih.gov/programs/fellowships
Additional Review Criteria

Evaluated for the overall impact score, but not given an individual score

- Protections for Human Subjects
- Inclusion of Women, Minorities, and Individuals Across the Lifespan (as of Jan 25, 2019)
- Vertebrate Animals
- Biohazards
- Resubmissions
  - Response to previous reviewers’ comments and subsequent changes made to the proposal

https://researchtraining.nih.gov/programs/fellowships
Additional Review Considerations

Not given an individual score and not considered for the overall impact score

- Training in the Responsible Conduct of Research
  - Address required components

- Select Agent Research

- Resource Sharing Plans
  - 1) Data Sharing Plan; 2) Sharing Model Organisms; and
    3) Genomic Data Sharing Plan

- Budget and Period of Support

https://researchtraining.nih.gov/programs/fellowships

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
NIH Fellowship Review Criteria – Changes

For applications with deadlines **on or after** January 25, 2019

| Additional Review Criteria | Inclusion of Women, Minorities, and Individuals Across the Lifespan | When the proposed project involves human subjects and/or NIH-defined clinical research, the committee will evaluate the proposed plans for the inclusion (or exclusion) of individuals on the basis of sex/gender, race, and ethnicity, as well as the inclusion (or exclusion) of children to determine if it is justified in terms of the scientific goals and research strategy proposed. | When the proposed project involves human subjects and/or NIH-defined clinical research, the committee will evaluate the proposed plans for the inclusion (or exclusion) of individuals on the basis of sex/gender, race, and ethnicity, as well as the inclusion (or exclusion) of individuals of all ages (including children and older adults) to determine if it is justified in terms of the scientific goals and research strategy proposed. |

Notice Number: NOT-OD-18-227


Jaime S. Rubin, Ph.D.: http://grantscourse.columbia.edu
FOAs that accept clinical trials will include additional review criteria questions in *Section V. Application Review Information.*

The NIH Announces New Review Criteria for Ruth L. Kirschstein National Research Service Award (NRSA) Individual Fellowship Applications Involving Research Experiences in Clinical Trials

**Notice Number: NOT-OD-17-122**

**Sponsors, Collaborators, and Consultants**

- *If the applicant is proposing to gain experience in a clinical trial as part of his or her research training*, is there evidence of the appropriate expertise, experience, resources, and ability on the part of the sponsor(s) to guide the applicant during the clinical trial research experience?

**Research Training Plan**

- *If proposed, will the clinical trial experience contribute to the proposed project and/or the applicant’s research training?*

https://grants.nih.gov/policy/clinical-trials/review-criteria.htm
https://grants.nih.gov/grants/peer/critiques/f_D.htm

Topics to be Discussed

- **Individual Fellowship Programs**
  - Overview of Programs and Funding Agencies
  - NIH Review Process, Criteria, and Scoring System
  - Components of an NIH Application

- **Career Transition Funding Programs**

- **Junior Faculty Career Development Programs**
  - Overview of Programs and Funding Agencies
  - NIH Review Process, Criteria, and Scoring System
  - Components of an NIH Application

- **Approaches for Competitive Applications**
FELLOWSHIP INSTRUCTIONS FOR NIH AND OTHER PHS AGENCIES

SF424 (R&R) APPLICATION PACKAGES

FORMS VERSION E SERIES
Released: September 25, 2017
Revised: December 7, 2018

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
G.430 - PHS Fellowship Supplemental Form

The PHS Fellowship Supplemental Form is used only for fellowship applications.

This form includes fields to upload several attachments including the Specific Aims, Research Strategy, and Applicant Background and Goals.

The attachments in this form, together with the rest of your application, should include sufficient information needed for evaluation of the project and fellow, independent of any other documents (e.g., previous application). Be specific and informative, and avoid redundancies.

Quick Links

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PHS Fellowship Supplemental Form

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Research Training Plan Section
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<td>4. * Research Strategy</td>
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<td>7. Progress Report Publication List (for Renewal applications)</td>
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## PHS Fellowship Supplemental Form

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### Research Training Plan Section
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10. Letters of Support from Collaborators,
    Contributors, and Consultants

### Institutional Environment and Commitment to Training Section
11. Description of Institutional Environment
    and Commitment to Training
2. Applicant’s Background and Goals for Fellowship Training (6 pages)

A. Doctoral Dissertation and Research Experience:

- In chronological order, summarize previous research and scientific experiences, (not courses)
  - Include results and conclusions, publications, presentations
  - Relationship to proposed fellowship

- Graduate students:
  - Undergraduate research
  - Graduate lab rotations
  - Preliminary description of doctoral thesis research

- Post-doctoral fellows:
  - Predoctoral research
  - Previous post-doctoral research
2. Applicant’s Background and Goals for Fellowship Training (6 pages)

B. Training Goals and Objectives:

■ Overall career goals
■ How the fellowship will help you reach these goals
■ Identify specific “skills, theories, conceptual approaches, etc.” that will be acquired or expanded upon during the fellowship period
  ■ Didactics (e.g. statistics), Research and Technical Skills, Career Development Skills (e.g. presentations, writing)
■ How the fellowship will “facilitate your transition to the next career stage”
2. Applicant’s Background and Goals for Fellowship Training (6 pages)

C. Activities Planned Under this Award:

- Fellowship activities (by year)
  - Specific for applicant and integrated with proposed research project
  - e.g., Research, Didactics, Teaching
  - Skills and techniques to be learned
  - Relate non-research activities (e.g., professional development) to the proposed research training
- Timeline of research training and related activities
- Estimate % of time devoted to each activity

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Improving graduate student and postdoctoral training

A. Put individual development plans in place for all trainees
B. Reduce the length of graduate training
C. Provide F30 and F31 awards from all Institutes/Centers
D. Increase postdoctoral stipends and consider policies on benefits
E. Increase support for K99/R00 and shorten eligibility period
F. Increase support for Early Independence Awards

http://acd.od.nih.gov/bwf.htm
# PHS Fellowship Supplemental Form

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9. **Sponsor and Co-Sponsor Statements**
10. **Letters of Support from Collaborators, Contributors, and Consultants**

## Institutional Environment and Commitment to Training Section
11. **Description of Institutional Environment and Commitment to Training**

3. Specific Aims (1 page)

- Goals of the proposed research
- Expected outcome(s)
- Impact of proposed research on your field(s)
- Specific objectives
  - Test of a stated hypothesis
  - Create a novel design
  - Solve a specific problem
  - Challenge an existing paradigm or clinical practice
  - Address a critical barrier to progress in the field
  - Develop new technology

4. Research Strategy (6 pages total)

■ (1) Significance

■ “Importance of the problem or critical barrier to progress that the proposed project addresses”

■ “How the proposed project will improve scientific knowledge, technical capability, and/or clinical practice”

■ “How the concepts, methods, technologies, treatments, services, or preventative interventions that drive this field will be changed if the proposed aims are achieved”

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu

4. Research Strategy (6 pages total)

■ (2) Approach
  ■ “Overall strategy, methodology, and analyses to be used”
  ■ “How the data will be collected, analyzed, and interpreted”
  ■ “Potential problems [challenges], alternative strategies, and benchmarks for success”
  ■ Strategies “to establish feasibility, and address the management of any high risk aspects”
  ■ Preliminary studies and results (including those collected by others in the research group)
  ■ Relevant previous experiences
  ■ Additional: Clinical trials, hESC’s, hazardous situations


Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
# PHS Fellowship Supplemental Form

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11. Description of Institutional Environment and Commitment to Training
5. Respective Contributions (1 page)

- “Describe the collaborative process between you and your sponsor/co-sponsor(s) in the development, review, and editing of this Research Training Plan.”
- “Discuss the respective roles in accomplishing the proposed research.”
6. Selection of Sponsor and Institution (1 page)

- “Explain why the sponsor, co-sponsor (if any), and institution were selected to accomplish the research training goals.”

- Post-doctoral Fellows: “Training is expected to broaden a fellow's perspective. Therefore, if you are requesting training at either your doctorate institution or any institution where you have been training for more than a year, you must explain why further training at that institution would be valuable.”

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</table>
8. Training in the Responsible Conduct of Research (1 page)

- Five required instructional components:
  - Format: on-line only is not acceptable
  - Subject Matter: e.g., required topics
  - Faculty Participation
    - e.g., Role of the Mentor and other faculty
  - Duration of Instruction (e.g., contact hours)
  - Frequency of Instruction
    - At every career stage, at least once every four years
  - Document any prior instruction

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9. Sponsor(s) and Co-Sponsor(s) (6 pages)

- **A. Research Support Available**
  - Table containing detailed information on all current and pending research and research training support available to the applicant (contingency plan if there is a gap in funding)
  - Role of Sponsor(s) in the proposed integrated research and training plan.
  - If more than one Sponsor, then include a plan describing their individual and coordinated roles and efforts


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9. Sponsor(s) and Co-Sponsor(s) (6 pages)

B. Sponsor's/Co-Sponsor’s Previous Fellows/Trainees

- Total number of predoctoral and postdoctoral fellows previously mentored.
- For representative five, provide information on time in sponsor’s research group and on current positions.

9. Sponsor(s) and Co-Sponsor(s) (6 pages)

C. Training Plan, Environment, Research Facilities

- Fellow-specific individualized research training plan
- Didactics, courses, seminars, workshops
- Research environment (e.g. core facilities, equipment, laboratory, computers, research patient population)
- Relationship of the Fellow’s research/career goals to the proposed research training plan
- Specific new skills and techniques to be acquired
- Professional development (e.g. grant writing, presentation skills)
- How training plan will facilitate the applicant's transition to the next career stage

9. Sponsor(s) and Co-Sponsor(s) (6 pages)

- D. Number of Fellows/Trainees to be Supervised During the Fellowship
  - Number of pre- and postdoctoral fellows to be mentored during the award period

- E. Applicant's Qualifications and Potential for a Research Career
  - Relate applicant’s academic record and previous research experiences to the proposed research training opportunity
  - Describe how the proposed research training plan, and sponsor’s expertise as a mentor, will “assist in producing an independent researcher”
9. Sponsor(s) and Co-Sponsor(s) (6 pages)

- Additional instructions if a clinical trial research experience is proposed

The NIH Announces New Review Criteria for Ruth L. Kirschstein National Research Service Award (NRSA) Individual Fellowship Applications Involving Research Experiences in Clinical Trials

Notice Number: NOT-OD-17-122

Sponsors, Collaborators, and Consultants

- If the applicant is proposing to gain experience in a clinical trial as part of his or her research training, is there evidence of the appropriate expertise, experience, resources, and ability on the part of the sponsor(s) to guide the applicant during the clinical trial research experience?

Research Training Plan

- If proposed, will the clinical trial experience contribute to the proposed project and/or the applicant’s research training?

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# PHS Fellowship Supplemental Form

## Introduction
1. Introduction to Application (for Resubmission applications)  
   [Add Attachment]

## Fellowship Applicant Section
2. Applicant's Background and Goals for Fellowship Training  
   [Add Attachment]

## Research Training Plan Section
3. Specific Aims  
   [Add Attachment]
4. Research Strategy  
   [Add Attachment]
5. Respective Contributions  
   [Add Attachment]
6. Selection of Sponsor and Institution  
   [Add Attachment]
7. Progress Report Publication List (for Renewal applications)  
   [Add Attachment]
8. Training in the Responsible Conduct of Research  
   [Add Attachment]

## Sponsor(s), Collaborator(s), and Consultant(s) Section
9. Sponsor and Co-Sponsor Statements  
   [Add Attachment]
10. Letters of Support from Collaborators, Contributors, and Consultants  
    [Add Attachment]

## Institutional Environment and Commitment to Training Section
11. Description of Institutional Environment and Commitment to Training  
    [Add Attachment]
10. Letters of Support from Collaborators, Contributors, and Consultants (6 pages)

- Collaborators, consultants, advisors, director of core facility, statistician, provider of unique research resource, instructor of unique technique/technology, referring physician, etc.

- Letter describing their role and contribution to the applicant’s proposed project, research training, career development, and future career goals

- Signed on letterhead stationery


Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
# PHS Fellowship Supplemental Form

## Introduction
1. Introduction to Application
   (for Resubmission applications)

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## Sponsor(s), Collaborator(s), and Consultant(s) Section
9. Sponsor and Co-Sponsor Statements
10. Letters of Support from Collaborators,
    Contributors, and Consultants

## Institutional Environment and Commitment to Training Section
11. Description of Institutional Environment
    and Commitment to Training
11. Description of Institutional Environment and Commitment to Training (2 pages)

- Description of a robust research program relevant to the applicant’s areas of interest
- Opportunities for collaborations, courses, journal clubs, seminars, workshops, presentations, etc.
- Appropriate facilities and resources available for academic, research, and career development activities
- Refer to “Facilities/Resources” and “Sponsor’s Statement” sections


11. Description of Institutional Environment and Commitment to Training (2 pages)

- Instruction in “rigorous experimental design to ensure reproducibility”
- Institution-wide resources
  - Students: Office of Graduate Affairs
  - Post-doctoral Fellows: Office of Post-doctoral Affairs
11. Description of Institutional Environment and Commitment to Training (2 pages)

- Additional Educational Information – F31 applications
  - Description of graduate/degree-granting program
    - Structure of the program
    - Description of and time line of required milestones
      - Courses, Teaching, Clinical requirements, (e.g., F30), Qualifying exams
  - Average time to degree over the past 10 years
  - Applicant’s progress in relation to the program's time line
  - Frequency and method by which the program formally monitors and evaluates a student's progress
  - Usually provided by the graduate program’s director/department chair (include name and title)


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11. Description of Institutional Environment and Commitment to Training (2 pages)

- **Additional Educational Information – F30 applications**
  - Clinical didactic programs during the graduate research years
  - Programs to facilitate the transition from graduate/research training (PhD) to the clinical training (MD) of the dual-degree program
  - Research-related programs during the clinical years of the dual-degree program

Improving graduate student and postdoctoral training

A. Put individual development plans in place for all trainees
B. Reduce the length of graduate training
C. Provide F30 and F31 awards from all Institutes/Centers
D. Increase postdoctoral stipends and consider policies on benefits
E. Increase support for K99/R00 and shorten eligibility period
F. Increase support for Early Independence Awards

http://acd.od.nih.gov/bwf.htm
Advanced Notice of Coming Requirements for Formal Instruction in Rigorous Experimental Design and Transparency to Enhance Reproducibility: NIH and AHRQ Institutional Training Grants, Institutional Career Development Awards, and Individual Fellowships

Individual fellowship applications will be required to summarize in the research strategy section plans to ensure rigorous, well-controlled experiments that consider all relevant biological variables, use authenticated biological and chemical resources, and apply appropriate statistical tests for data analyses. In addition more detailed description of instruction in rigorous experimental design to ensure reproducibility will be required in the section on Institutional Environment and Commitment to Training. The impacted programs will include the following individual fellowships: F05, F30, F31, F32, F37, F38, and F12.
Improving graduate student and postdoctoral training

A. Put individual development plans in place for all trainees
B. Reduce the length of graduate training
C. Provide F30 and F31 awards from all Institutes/Centers
D. Increase postdoctoral stipends and consider policies on benefits
E. Increase support for K99/R00 and shorten eligibility period
F. Increase support for Early Independence Awards

http://acd.od.nih.gov/bwf.htm

Individual Development Plans

- “NIH encourages institutions to assist graduate students and postdoctoral researchers to achieve their career goals within the biomedical research workforce through the use of Individual Development Plans (IDPs)”

- “is required for all T, F, K… and other awards or award components designed to provide training and professional development opportunities for graduate students and postdoctoral researchers.”

**Individual Development Plans**

- **Science Careers: myIDP:**
- “Exercises to help you examine your skills, interests, and values
- A list of 20 scientific career paths with a prediction of which ones best fit your skills and interests
- A tool for setting strategic goals for the coming year, with optional reminders to keep you on track
- Articles and resources to guide you through the process”

http://myidp.sciencecareers.org/

Certification Letter for Predoctoral Fellowships to Promote Diversity

- Institutional letter certifying eligibility of the applicant for the diversity fellowship program
  - Signed by institutional official
    - e.g., Graduate Affairs Office, Grants Office
  - On institutional letterhead
- Do not include “sensitive personal information” (e.g., specific racial/ethnic background, disability)
## RESEARCH & RELATED Other Project Information

### 1. Are Human Subjects Involved?
- [ ] Yes
- [ ] No

1.a. If YES to Human Subjects
- Is the Project Exempt from Federal regulations? [ ] Yes [ ] No

   If yes, check appropriate exemption number: 1 2 3 4 5 6 7 8

   If no, is the IRB review Pending? [ ] Yes [ ] No

   IRB Approval Date: ____________________________

   Human Subject Assurance Number: ______________

### 2. Are Vertebrate Animals Used?
- [ ] Yes
- [ ] No

2.a. If YES to Vertebrate Animals
- Is the IACUC review Pending? [ ] Yes [ ] No

   IACUC Approval Date: ____________________________

   Animal Welfare Assurance Number: ______________

### 3. Is proprietary/privileged information included in the application?
- [ ] Yes
- [ ] No

### 4. Does this Project Have an Actual or Potential Impact - positive or negative - on the environment?
- [ ] Yes
- [ ] No

4.a. If yes, please explain:

4.b. If yes, please explain:

4.c. If this project has an actual or potential impact on the environment, has an exemption been authorized or an environmental assessment (EA) or environmental impact statement (EIS) been performed? [ ] Yes [ ] No

4.d. If yes, please explain:

### 5. Is the research performance site designated, or eligible to be designated, as a historic place?
- [ ] Yes
- [ ] No

5.a. If yes, please explain:

### 6. Does this project involve activities outside of the United States or partnerships with international collaborators?
- [ ] Yes
- [ ] No

6.a. If yes, identify countries:

6.b. Optional Explanation:

### 7. Project Summary/Abstract

**Project Summary/Abstract**

**Add Attachment**  **Delete Attachment**  **View Attachment**

### 8. Project Narrative

**Project Narrative**

**Add Attachment**  **Delete Attachment**  **View Attachment**

### 9. Bibliography & References Cited

**Bibliography & References Cited**

**Add Attachment**  **Delete Attachment**  **View Attachment**

### 10. Facilities & Other Resources

**Facilities & Other Resources**

**Add Attachment**  **Delete Attachment**  **View Attachment**

### 11. Equipment

**Equipment**

**Add Attachment**  **Delete Attachment**  **View Attachment**

### 12. Other Attachments

**Other Attachments**

**Add Attachments**  **Delete Attachments**  **View Attachments**

---

https://grants.nih.gov/grants/how-to-apply-application-guide/forms-e/general/g.220-rder-other-project-information-form.htm

10. Facilities & Other Resources

Scientific/Technical Resources

- Facilities to be used for the conduct of the proposed research
  - Laboratory
  - Animal
  - Computer
  - Office
  - Clinical [patient/research subject populations]
  - Other: Core facilities [e.g. research pharmacy, biostatistics, technical cores (microscopy, biomarkers), biohazards]

- Discuss how the proposed studies will benefit from unique features of the scientific environment, subject populations, or collaborative arrangements
R&R Other Project Information:

10. Facilities & Other Resources

Career Development Resources

- More complete descriptions of programs referenced in:
  - 2. Applicant’s Background and Goals for Fellowship Training - C. Activities Planned Under this Award
  - 6. Selection of Sponsor and Institution
  - 9. Sponsor(s) and Co-Sponsor(s) - C. Training Plan, Environment, Research Facilities
  - 11. Description of Institutional Environment and Commitment to Training

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R&R Other Project Information:

10. Facilities & Other Resources

Career Development Resources

- Career development programs
  - Institutional (e.g. Office of Postdoctoral or Graduate Affairs)
  - Departmental
  - Professional societies

- Formal degree programs and other didactics
  - Degree program
  - Scientific courses: e.g., Statistics
  - Career Development courses: e.g., Funding & Grantsmanship

- Workshops, webinars, other training programs
Letters of Reference

- Include a list of Referees in the Cover Letter
- 3-5 Letters of References are required
- Individuals who know you well from a research perspective (qualifications, training, and interests)
- Individuals not directly involved in the research project
- Mentor(s) cannot be one of the confidential Letters of Reference (“letter” in main body of application)
- Helpful to include at least one referee who is not in your current department/institution
Letters of Reference

- “Research ability and potential to become an independent researcher
- Adequacy of scientific and technical background
- Written and verbal communication abilities including ability to organize scientific data
- Quality of research endeavors or publications to date, if applicable
- Perseverance in pursuing goals
- Evidence of originality
- Need for further research experience and training
- Familiarity with research literature”
21. Cover Letter Attachment

- Must include
- Title of application
- Title of funding opportunity announcement
- List of Referees (name and affiliation)
- Administrative document – not seen by reviewers

https://grants.nih.gov/grants/how-to-apply-application-guide/forms-c/general/g.200-sf-424-(r&r)-form.htm
# Biosketch Format Pages, Instructions and Samples

<table>
<thead>
<tr>
<th>Form Name</th>
<th>Form Number</th>
<th>Description</th>
<th>How to Access</th>
<th>Instructions</th>
<th>Additional Information</th>
<th>Updated Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biographical Sketch Format Page (non-fellowship)</td>
<td></td>
<td>Prepare biographical sketches for applications and progress reports for non-fellowship applications and awards.</td>
<td>Blank biosketch format page - non-fellowship</td>
<td>Biosketch instructions – non-fellowship</td>
<td>Sample of non-fellowship biosketch Try SciENcv to help you develop your biosketch and automatically format it according to NIH requirements.</td>
<td>September 2017</td>
</tr>
<tr>
<td>Biographical Sketch Format Page (fellowship)</td>
<td></td>
<td>Prepare biographical sketches for applications and progress reports for fellowship applications and awards.</td>
<td>Blank biosketch format page - fellowship</td>
<td>Biosketch instructions – fellowship</td>
<td>Sample for Predoctoral Fellowship Sample for Postdoctoral Fellowship Try SciENcv to help you develop your biosketch and automatically format it according to NIH requirements.</td>
<td>September 2017</td>
</tr>
</tbody>
</table>
Biographical Sketch

- For Principal Investigators (PI’s), Key Personnel, Other Significant Contributors, and Consultants
  - Fellowships: Advisory Committee Members
- Fellowship applicants are considered the PI
- Used by reviewers to assess each investigator’s qualifications for their proposed role in addition to the overall competence of the entire research team
- [https://grants.nih.gov/grants/forms/biosketch.htm](https://grants.nih.gov/grants/forms/biosketch.htm)
- [https://grants.nih.gov/grants/how-to-apply-application-guide/forms-e/general/g.240-r&r-seniorkey-person-profile-(expanded)-form.htm#Instructions](https://grants.nih.gov/grants/how-to-apply-application-guide/forms-e/general/g.240-r&r-seniorkey-person-profile-(expanded)-form.htm#Instructions)
- 5 pages in length total
Keep Yours Current!

Include all information that is relevant – even if mentioned/discussed elsewhere in the application

“Stand alone” document that conveys to the reviewers everything you want them to know about you
Different format for the graduate student/post-doc applying for an NIH Fellowship application (F31/F30/F32), as compared to all other applications

Make sure that the NIH Biosketches others give you for your application are current and programmatically appropriate
Biosketch for Fellowship Applications

- “Special” NIH Biosketch for Fellowship (F) applicants
- C. Contributions to Science
  - High School Research:
  - Undergraduate Research:
  - Graduate Research:
  - Post-doctoral Research:
- Additional section - Scholastic Performance (courses and grades) [D. Additional Information]
- [https://grants.nih.gov/grants/forms/biosketch.htm](https://grants.nih.gov/grants/forms/biosketch.htm)
Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu

OMB No. 0925-0001 and 0925-0002 (Rev. 09/17 Approved Through 03/31/2020)

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors. Follow this format for each person. DO NOT EXCEED FIVE PAGES.

NAME: Robertson-Chang, Leilani

eRA COMMONS USER NAME (credential, e.g., agency login): RobertsonL

POSITION TITLE: Graduate Student Research Assistant

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE (if applicable)</th>
<th>START DATE MM/YYYY</th>
<th>END DATE MM/YYYY</th>
<th>FIELD OF STUDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swarthmore College</td>
<td>BA</td>
<td>08/2008</td>
<td>05/2012</td>
<td>Biology</td>
</tr>
<tr>
<td>UC San Diego</td>
<td>PhD</td>
<td>08/2012</td>
<td>05/2018</td>
<td>Molecular Biology</td>
</tr>
</tbody>
</table>
A. Personal Statement

My long term research interests involve the development of a comprehensive understanding of key developmental pathways and how alterations in gene expression contribute to human disease. My academic training and research experience to date have provided me with an excellent background in molecular biology and microbiology. While in high school I was awarded an NIH Diversity Supplement award to work as a research technician for two summers in Dr. Indira Creative’s lab at the University of Hawaii. As an undergraduate at Swarthmore College, I conducted research with Dr. Xavier Factor on the mechanisms of action of a new class of antibiotics. This resulted in a co-authorship publication, as well as an invitation to present a poster at the annual Antibiotica meeting in Denver, Colorado. For my graduate training at UC San Diego, I have moved into the fields of genetics and biochemistry by studying the regulation of transcription in yeast, under Dr. Tanti Auguri. Dr. Auguri is an internationally recognized leader in the field of yeast genetics and has an extensive record for training predoctoral and postdoctoral fellows. Along with giving me new conceptual and technical training, the proposed training plan outlines a set of career development activities and workshops – e.g. public speaking, literature analysis, biomedical ethics, and career options. For my initial project I am currently developing a novel protocol for the purification for components of large transcription complexes which I hope to submit as a first author publication in the next few months. As a native Hawaiian, I am the first in my family to graduate from college so I am excited to keep pushing forward with my education. Overall, I feel that my choice of sponsor, research project, and the training I will get from this fellowship will give me a solid foundation for my long-term goal to become an academic researcher.

1. Robertson-Chang L, Factor X. Testing the ability of antibiotic Gen Y to kill Gram-negative bacteria. Antibiotica annual meeting; 2011 September; Denver, CO.

2. Robertson-Chang L, Auguri T. A tandem affinity purification tag approach allows for isolation of interacting proteins in Saccharomyces cerevisiae. Yeast Genetics and Molecular Biology Meeting; 2013 September; Seattle, WA.
## B. Positions and Honors

### Positions and Employment

<table>
<thead>
<tr>
<th>Year</th>
<th>Position</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007 - 2008</td>
<td>Lab Technician</td>
<td>University of Hawaii</td>
</tr>
<tr>
<td>2012 -</td>
<td>Graduate Student Research Assistant</td>
<td>UC San Diego</td>
</tr>
</tbody>
</table>

### Other Experience and Professional Memberships

<table>
<thead>
<tr>
<th>Year</th>
<th>Membership</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007 -</td>
<td>Member</td>
<td>Association for Women in Science</td>
</tr>
<tr>
<td>2009 -</td>
<td>Member</td>
<td>Sigma Xi</td>
</tr>
</tbody>
</table>

### Honors

<table>
<thead>
<tr>
<th>Year</th>
<th>Award</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007 - 2008</td>
<td>Diversity Supplement</td>
<td>National Institutes of Health</td>
</tr>
<tr>
<td>2008</td>
<td>Scholarship</td>
<td>Daughters of Hawaii Society</td>
</tr>
<tr>
<td>2008 - 2012</td>
<td>Scholarship</td>
<td>National Merit Scholarship Program</td>
</tr>
<tr>
<td>2012</td>
<td>Paula F. Laufenberg award</td>
<td>Best senior project in the Biology Department, Swarthmore College</td>
</tr>
</tbody>
</table>
C. Contribution to Science

1. **High School Research:** I spent two summers doing research in the laboratory of Dr. Indira M. Creative at University of Hawaii, funded by a NIH Diversity Supplement award. Dr. Creative has developed several new anti-fungal drugs that might protect against skin infections. Over the course of two summers I set up in vitro cultures of skin cell lines and conducted a wide range of toxicity assays. We were excited to find that one of the new agents showed almost no toxicity, even at fairly high doses. Dr. Creative is now testing the drug in animals exposed to different types of fungal infections, including *Candida albicans*.


2. **Undergraduate Research:** I was part of a project in the laboratory of Dr. Xavier Factor at Swarthmore College. Dr. Factor’s laboratory studies the mechanisms of action of antibiotics. During my time in his lab I was looking at how a new antibiotic, Gen Y, is able to unravel bacterial DNA. My contributions to this work were included in a publication recently accepted in Cellular and Molecular Biology. The work was particularly exciting because it looks like the mechanism used by Factor Y might be completely novel, making it a potential candidate for treating patients infected with antibiotic resistant organisms. Dr. Factor was recently awarded a patent for this new drug.


   b. Robertson-Chang L, Factor X. Testing the ability of antibiotic Gen Y to kill Gram-negative bacteria. Antibiotica annual meeting; 2011 September; Denver, CO.
3. **Graduate Research:** My ongoing predoc research is focused on transcriptional gene regulation in *Saccharomyces cerevisiae*. I believe the results from my research will likely be highly relevant to human health as they will provide new details into the workings of complex biological systems, which will allow for further extrapolations into the development of certain diseases and their progression. I am currently developing a novel protocol for the purification of components of large transcription complexes which I hope to submit as a first author publication in the next few months.

   a. Robertson-Chang L, Auguri T. A tandem affinity purification tag approach allows for isolation of interacting proteins in *Saccharomyces cerevisiae*. Yeast Genetics and Molecular Biology Meeting; 2013 September; Seattle, WA.
### Scholastic Performance

<table>
<thead>
<tr>
<th>YEAR</th>
<th>COURSE TITLE</th>
<th>GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>Cellular and Molecular Biology</td>
<td>A</td>
</tr>
<tr>
<td>2008</td>
<td>Foundations of Chemical Principles</td>
<td>A</td>
</tr>
<tr>
<td>2009</td>
<td>Organismal and Population Biology</td>
<td>B</td>
</tr>
<tr>
<td>2009</td>
<td>Omics</td>
<td>B</td>
</tr>
<tr>
<td>2008</td>
<td>First Year Seminar: Nation and Migration</td>
<td>A</td>
</tr>
<tr>
<td>2009</td>
<td>Statistics, Probability, and Reliability</td>
<td>A</td>
</tr>
<tr>
<td>2009</td>
<td>Calculus I</td>
<td>B</td>
</tr>
<tr>
<td>2009</td>
<td>General Physics I</td>
<td>B</td>
</tr>
<tr>
<td>2009</td>
<td>Introductory Chemistry</td>
<td>A</td>
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<tr>
<td>2009</td>
<td>Organic Chemistry</td>
<td>B</td>
</tr>
<tr>
<td>YEAR</td>
<td>COURSE TITLE</td>
<td>GRADE</td>
</tr>
<tr>
<td>------</td>
<td>--------------------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>2012</td>
<td>Seminar in Genetics</td>
<td>P</td>
</tr>
<tr>
<td>2013</td>
<td>Statistics for the Life Sciences</td>
<td>P</td>
</tr>
<tr>
<td>2013</td>
<td>Ethics in Biological Research</td>
<td>CRE</td>
</tr>
<tr>
<td>2014</td>
<td>Seminar in Physiology and Behavior</td>
<td>P</td>
</tr>
</tbody>
</table>

Except for the scientific ethics course, UC San Diego graduate courses are graded P (pass) or F (fail). Passing is C plus or better. The scientific ethics course is graded CRE (credit) or NC (no credit). Students must attend at least seven of the eight presentation/discussion sessions for credit.
For applications with deadlines on or after January 25, 2019

“NIH Policy and Guidelines on the Inclusion of Children. Changes to the policy include (1) the applicability of the policy to individuals of all ages, including children and older adults; (2) clarification of potentially acceptable reasons for excluding participants based on age; and (3) a requirement to provide data on participant age at enrollment in progress reports.

“NIH Policy and Guidelines on the Inclusion of Individuals Across the Lifespan as Participants in Research Involving Human Subjects”

## Human Subjects/Clinical Trials Info - changes

| Human Subjects and Clinical Trials Information | Section 2 – Study Population Characteristics | 2.4 Inclusion of Women, Minorities, and Children | 2. Inclusion of Children
| References to the Inclusion of Children in Clinical Research policy | 2. Inclusion Across the Lifespan
| References to Inclusion of Children replaced with Inclusion Across the Lifespan |

---

NIH “F” Sites of Interest

- Program Announcements for Dual Degree: F30, Pre-Doc: F31 and F31-Diversity, and Post-doc: F32 grant mechanisms
  https://researchtraining.nih.gov/programs/fellowships

- Fellowship Application Instructions
  https://grants.nih.gov/grants/how-to-apply-application-guide/forms-e/general/g.100-how-to-use-the-application-instructions.htm

- Reference Letters

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NIH “F” Sites of Interest

- Application Page Limits

- NIH Biosketch Format Pages, Instructions and Samples
  https://grants.nih.gov/grants/forms/biosketch.htm

- Instruction in the Responsible Conduct of Research

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NIH “F” Sites of Interest

- NIH Research Training and Career Development Programs
  [https://researchtraining.nih.gov/](https://researchtraining.nih.gov/)

- Research Training and Career Development Programs at Specific Institutes
  [https://researchtraining.nih.gov/institute](https://researchtraining.nih.gov/institute)

Topics to be Discussed

- Individual Fellowship Programs
  - Funding Agencies
  - Components of a Fellowship Application
  - Scoring and Review Criteria

- Career Transition Funding Programs

- Junior Faculty Career Development Programs
  - Funding Agencies
  - Components of a Career Development Application
  - Scoring and Review Criteria

- Approaches for Competitive Applications
Timeline of Funding for Junior Investigators

Graduate School
- Individual Fellowship Training Grant
- Mentor’s Research Grant

Post-doctoral Years
- Individual Post-doc Fellowship
- Institutional T32 Post-doc Training Grant slot
- Mentor’s Research Grant

Instructor/Assistant Professor
- Career Transition Awards
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
  - Salary and Research Support
- 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
Research Career Development Awards

![Bar Chart](chart.png)

- **K01**
- **K08**
- **K23**
- **K25**
- **K99**

**Fiscal Year:** 1997 to 2017

**Number of Awards:**
- 1.4K
- 1.2K
- 1K
- 800
- 600
- 400
- 200
- 0

- [Jaime S. Rubin, Ph.D.](http://grantscourse.columbia.edu)
<table>
<thead>
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<th>Activity Code</th>
<th>NIH Institute / Center</th>
<th>Number of Applications Reviewed</th>
<th>Number of Applications Awarded</th>
<th>Success Rate¹</th>
<th>Total Funding²</th>
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Pathway to Independence Award

To support both an initial mentored research experience (K99) followed by independent research (R00) for highly qualified, postdoctoral researchers, to secure an independent research position. Award recipients are expected to compete successfully for independent R01 support during the R00 phase.

- **NIH Pathway to Independence Award (Parent K99/R00 Independent Basic Experimental Studies with Humans Required)**
- **NIH Pathway to Independence Award (Parent K99/R00 - Clinical Trial Required)**
- **NIH Pathway to Independence Award (Parent K99/R00 - Independent Clinical Trial Not Allowed)**
  - NIDCR Dual Degree Dentist Scientist Pathway to Independence Award (K99/R00 - Clinical Trial Not Allowed)
  - NIAID Physician-Scientist Pathway to Independence Award (K99/R00)
  - NIDCR Dual Degree Dentist Scientist Pathway to Independence Award (K99/R00-Clinical Trial Required)
  - NIAID Physician-Scientist Pathway to Independence Award (K99/R00 Clinical Trial Required)
  - Pathway to Independence Award in Tobacco Regulatory Research (K99/R00 - Independent Clinical Trial Not Allowed)
  - Pathway to Independence Award in Tobacco Regulatory Research (K99/R00 - Independent Clinical Trial Required)
  - BRAIN Initiative Advanced Postdoctoral Career Transition Award to Promote Diversity (K99/R00 Independent Clinical Trial Not Allowed)
  - BRAIN Initiative Advanced Postdoctoral Career Transition Award to Promote Diversity (K99/R00 Clinical Trial Required)
The purpose of the NIH Pathway to Independence Award (K99/R00) program is to increase and maintain a strong cohort of new and talented, NIH-supported, independent investigators. This program is designed to facilitate a timely transition of outstanding postdoctoral researchers with a research and/or clinical doctorate degree from mentored, postdoctoral research positions to independent, tenure-track or equivalent faculty positions. The program will provide independent NIH research support during this transition in order to help awardees to launch competitive, independent research careers.

Eligible Individuals

“K99/R00 applicants must have no more than 4 years of postdoctoral research experience as of the relevant application due date regardless of whether it is a new or resubmission application. Individuals must be in mentored, postdoctoral training positions to be eligible to apply to the K99/R00 program. If an applicant achieves independence (i.e., any faculty or non-mentored research position) before a K99 award is made, neither the K99 award, nor the R00 award, will be issued. Parental, medical, or other well-justified leave for personal or family situations of generally less than 12 months duration is not included in the 4-year eligibility limit, nor is clinical training with no research involvement (e.g., full-time residency training). Part-time postdoctoral research training, related to personal or family situations or occurring during a research residency or fellowship, will be pro-rated accordingly. In addition, time spent conducting postgraduate clinical training that does not involve research is not considered as part of the 4-year research training eligibility limit. Only time dedicated to research activities would count toward the 4-year limit.”
Ph.D. (or equivalent research doctorate degree) candidates in positions other than postdoctoral fellow positions: It is recognized that some institutions appoint postdoctoral fellows in positions with other titles although they are still in non-independent, mentored training positions. Candidates in such positions are encouraged to obtain confirmation of their eligibility from the relevant IC before they begin to prepare their applications…

Clinicians (including those with M.D., D.D.S, D.V.M…. ) in positions not designated as postdoctoral positions: Following clinical training or fellowship training periods, clinicians often obtain a clinical faculty position that denotes independence in clinical responsibilities but not in research. A clinical faculty member who does not hold an independent research faculty position may be eligible for the K99/R00 award,… Clinicians in such positions are encouraged to obtain confirmation of their eligibility before they begin to prepare their applications. Such individuals may also wish to consider other career awards (see Kiosk) available for junior faculty development”
**Additional Information for Physician-Scientists:** For the purposes of this program, physician-scientists include individuals with an MD, DO, DDS/DMD, DVM/VMD, or nurses with research doctoral degrees who devote the majority of their time to biomedical research. The K99/R00 is intended for those physician-scientists who already have substantial research training and are dedicated to initiating a strong, research-intensive career as physician-scientists. The K99/R00 program is designed to facilitate a timely transition of outstanding physician-scientists from mentored, research positions to independent, tenure-track or equivalent faculty positions, and to provide independent NIH research support during the transition. Individuals who need a longer period of mentored career development before they are prepared to begin the transition to research independence should consider the K08 or K23 program (see: K Kiosk).
5. NIH should establish a new physician-scientist-specific granting mechanism to facilitate the transition from training to independence. This program should be similar to the K99/R00 program whose funding currently goes almost exclusively to individuals holding a PhD degree. This new grant program could serve either as a replacement or transition from existing K Awards for physician scientists, and should provide a longer period of support, potentially lengthening the R00 phase to 5 years (with an interim staff review at year 3). This new grant series, as well as K and all other training awards, should rigorously enforce protected time of at least 75 percent effort and provide sufficient salary support to make that possible.
The purpose of the NIAID Physician-Scientist Pathway to Independence Award (K99/R00) program is to increase and maintain a strong cohort of new and talented independent physician-scientists. This program is designed to facilitate a timely transition of outstanding postdoctoral researchers with a clinical doctorate degree from mentored, postdoctoral research positions to independent, tenure-track or equivalent faculty positions. The program will provide independent NIAID research support during this transition to help awardees launch competitive, independent research careers in biomedical fields and thereby help to address the national physician-scientist workforce shortage.
Career Transition Award (K22)

- **NCI:**
  - “facilitates the transition of investigators in mentored, non-independent cancer research positions to independent faculty cancer research positions”

- **NCI, NINDS:** Diversity candidates
Timeline of Funding for Junior Investigators

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

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

- **Year-long Enhancement Programs**
  - MD/PhD Fellowship or Institutional T32

- **Career Transition Awards**

Career Transition Awards

**BWF: Career Awards for Medical Scientists**

- To support physician-scientists during the last years of a mentored postdoctoral/fellowship position and the beginning years of an independent faculty position.
- Candidates must hold an M.D., D.O., D.D.S., or D.V.M. degree
- 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:** Years 3-5
    - Annual Total: $170,000

Career Transition Awards

- **JDRF: Advanced Postdoctoral Fellowships**
  - Type 1 Diabetes
  - Supports full-time research training and assist awardees “in transitioning from a fellowship to an independent (faculty-level) position”
  - Usually, most recent doctoral degree (PhD, MD, DMD, DVM, or equivalent) received no more than 6 years before application
  - $95,000 per year for up to 3 years
  - **Transition Award**: “Optional transition year in which the awardee may request funding support in their first year as a faculty member” (up to $110,000 for one year)

http://grantcenter.jdrf.org/rfa/advanced-postdoctoral-fellowships//
Topics to be Discussed

- Individual Fellowship Programs
  - Overview of Programs and Funding Agencies
  - NIH Review Process, Criteria, and Scoring System
  - Components of an NIH Application

- Career Transition Funding Programs

- Junior Faculty Career Development Programs
  - Overview of Programs and Funding Agencies
  - NIH Review Process, Criteria, and Scoring System
  - Components of an NIH Application

- Approaches for Competitive Applications

Timeline of Funding for Junior Investigators

- Medical School
  - Short term Training
    - Year-long Enhancement Programs
      - MD/PhD Fellowship or Institutional T32

- Internship/Residency
  - Research Support
    - Individual Post-doc Fellowship or Institutional T32 Post-doc Training Grant slot

- Fellowship – Research Years
  - Career Transition Awards

- Instructor/Assistant Professor
  - Individual Mentored K Career Development Award

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Timeline of Funding for Junior Investigators

- Graduate School
  - Individual Fellowship Training Grant
  - Mentor’s Research Grant

- Post-doctoral Years
  - Individual Post-doc Fellowship
  - Institutional T32 Post-doc Training Grant slot
  - Mentor’s Research Grant

- Instructor/Assistant Professor
  - Career Transition Awards
  - Individual Mentored K Career Development Award
Career Development (K) Support to Independent Research Grant (R01)

K01/K08/K23 → R01
K12 → K23 → R01
K12 → K23 → R01
K01/K08/K23 → R01
K12 → R01

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Not All Funding Opportunities Are the Same

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

- **Different funding**
  - Stipend/Salary
  - Pilot awards vs. 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
Research Career Programs (K)

- Provides predominantly salary support
- Minimum requirements for the amount of effort that must be devoted to research and career development (e.g. 75%, some exceptions to 50%)
- Up to 5 years
- Specified salary levels
- US citizen/permanent resident.
- Can reduce effort to 50% in last 2 years if PI of 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)

- For investigators just after specialty training; not renewable

Mid-Career Investigator In Patient-Oriented Research Career Development Award (K24)

- Support for clinicians to allow for time to devote to patient-oriented research and to mentor beginning clinical investigators

Patient-oriented research:

- Research conducted with human subjects (or on material of human origin, i.e. tissues, specimens, and cognitive phenomena)
- Investigator directly interacts with human subjects

Research areas:

- Mechanisms of human disease
- Therapeutic interventions
- Clinical trials
- Development of new technologies
NCI will no longer be participating in PA-16-198, "Mentored Patient-Oriented Research Career Development Award (Parent K23)"

NCI will support training in Patient-Oriented Research through K08 Awards and increase K08 Salary and Research Support

**NCI K08 Career Development Awards** will support training in Basic, Translational, and Patient-Oriented Cancer Research, as well as combinations of Basic, Translational, and Patient-Oriented Research.

https://grants.nih.gov/grants/guide/notice-files/NOT-CA-17-043.html
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

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Mentored Research Scientist Development Awards (K01)

- **NIMH:**
  - “Supports a 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”

- **NINDS:**
  - Supports “postdoctoral researchers… Candidates are encouraged to apply for support… between the second through fourth year of cumulative mentored postdoctoral research experience… a strong, well-planned, thorough career development plan, in addition to development of an impactful research project, is a critical aspect of this K01”
Mentored Research Scientist Development Awards (K01)

- **NIDDK:**
  - For “experienced postdoctoral (two years minimum) and/or recently appointed junior faculty (usually with a Ph.D. degree) in biomedical, behavioral, or clinical sciences”

- **NIAID:**
  - (a) Epidemiology
  - (b) Computational Modeling Techniques
  - (c) Outcomes Research

- **NLM:** Biomedical Informatics and Data Science

- **FIC:**
  - International Research Scientist Development Award (IRSDA)

Mentored Research Scientist Development Awards (K01)

**NINR:**
- Supports “mentored patient-oriented research in the areas of symptom management, pulmonary, critical care, trauma, reproductive health, genetics, epigenetics, behavioral research, incorporation of advanced technology and end-of-life and palliative care”

**NICHD:**
- (a) Medical Rehabilitation Research
- (b) Child Abuse and Neglect
- (c) Population Research

Mentored Research Scientist Development Awards (K01)

- **NHGRI:**
  - (a) Genomic Sciences
  - (b) Ethical, Legal and Social Issues (ELSI)

- **NHLBI:**
  - (a) Epidemiology
  - (b) Biostatistics
  - (c) Outcomes Research
  - (d) Implementation Research

- **NCI, NHLBI, NIDCR, NINDS:** Promote Faculty Diversity

Mentored Quantitative Research
Career Development Award (K25)

- To attract investigators with expertise in quantitative science and engineering research (e.g., mathematics, statistics, economics, computer science, imaging science, informatics, physics, chemistry), but whose research has not been focused on NIH-relevant questions of health and disease.

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Mentored Research Scientist Career Development Award

For support of a postdoctoral or early career research scientists committed to research, in need of both advanced research training and additional experience.

[Details] [View Current Funding Opportunities]

Mentored Clinical Scientist Research Career Development Award

To provide the opportunity for promising clinician scientists with demonstrated aptitude to develop into independent investigators, or for faculty members to pursue research, and aid in filling the academic faculty gap in health profession’s institutions.

[Details] [View Current Funding Opportunities]

Mentored Patient-Oriented Research Career Development Award

To provide support for the career development of clinically trained professionals who have made a commitment to patient-oriented research, and who have the potential to develop into productive, clinical investigators.

[Details] [View Current Funding Opportunities]

Pathway to Independence Award

To support both an initial mentored research experience (K99) followed by independent research (R00) for highly qualified, postdoctoral researchers, to secure an independent research position. Award recipients are expected to compete successfully for independent R01 support during the R00 phase.

[Details] [View Current Funding Opportunities]
Mentored Patient-Oriented Research Career Development Award

To provide support for the career development of clinically trained professionals who have made a commitment to patient-oriented research, and who have the potential to develop into productive, clinical investigators.

- Mentored Patient-Oriented Research Career Development Award (Parent K23 Independent Basic Experimental Studies with Humans Required)
- Mentored Patient-Oriented Research Career Development Award (Parent K23 - Clinical Trial Required)
- Mentored Patient-Oriented Research Career Development Award (Parent K23 - Independent Clinical Trials Not Allowed)
Research Career Development Awards

K01 | K08 | K23 | K25 | K99

Number of Awards

Fiscal Year

Individual Research Career Development Awards – by NIH Institute

Awards for 2018

Institute / Center

NHLBI  NIA  NIAAA  NIAMS  NIBIB  NICHD  NIDA  NIDCD  NIDCR  NIDDK  NIEHS  NGMS  NIMH  NIHIC  NICHD  NINDS  NINR  NLM  OD

Awards

0  100  200  300  400  500  600  700

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Research Career Development Awards

Graph showing total funding and average funding over fiscal years 1998 to 2018. The funding has increased significantly over the years, with a steady rise in both total and average funding. The graph is sourced from NIH Data Book.
<table>
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<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 (^1)</th>
<th>Total Funding (^2)</th>
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<td><strong>K23</strong></td>
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<td>49%</td>
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</tr>
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<td>101</td>
<td>45</td>
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<td>$8,086,510</td>
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<td>K23</td>
<td>NHLBI</td>
<td>138</td>
<td>52</td>
<td>37.7%</td>
<td>$9,311,596</td>
</tr>
<tr>
<td>2018</td>
<td>K23</td>
<td>NHLBI</td>
<td>137</td>
<td>50</td>
<td>36.5%</td>
<td>$8,957,091</td>
</tr>
</tbody>
</table>

Agency for Healthcare Research and Quality

AHRQ's Priority Areas:

- “Improve health care quality by accelerating implementation of patient-centered outcomes research (PCOR)
- Make health care safer
- Increase accessibility by evaluating coverage expansions
- Improve health care affordability, efficiency, and cost transparency”

**K08:** Mentored Clinical Scientist Research Career Development Award for individuals with a clinical doctoral degree or Ph.D./other doctoral degree in a clinical discipline

**K01:** Mentored Research Scientist Research Career Development Award - for individuals with a research doctoral degree

Centers for Disease Control and Prevention (CDC) K01

- National Institute for Occupational Safety and Health
  - Mentored Research Scientist Development Award
    - “career development experience in occupational health and safety research leading to research independence”
Mentored Clinical Scientist Development Program Award (K12)

- Support to an institution for career development experiences for junior investigators 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
  - NIDDK: Urology research
  - NIDDK: Diabetes research for endocrinologists
  - NICHD: Child health
  - NICHD: Pediatric scientists
  - NICHD: Reproductive scientists

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Mentored Clinical Scientist Development Program Award (K12)

- **Institute specific**
  - NIDA: Mentored clinical scientist development
  - NEI: Physician scientist award
  - NHLBI: Late stage (T4) translation research
  - NIDCR: Dental specialty and PhD program
  - NINDS: Neurosurgeons

- **CTSA - Clinical and Translational Scientist Award:** KL2
NIH CTSA Awards: A Home for Clinical and Translational Science

Clinical Research Ethics
Biomedical Informatics
Clinical Resources
Biostatistics
Regulatory Support
Advanced Degree-Granting Programs
Participant & Community Involvement
Trial Design

Source: Zerhouni (NIH) [9/06]

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Research Career Development/Scholar Programs

Non-government, non-profit agencies

- Voluntary Health Organizations
- Professional Societies
- Private Foundations
Research Career Development/Scholar Programs

- American Heart Association
  - Career Development Award

- Harold Amos Medical Faculty Development Program
  - “Physicians, dentists, or nurses from historically disadvantaged backgrounds (ethnic, financial, or educational)”
  - Partners: American Society of Hematology, American Society of Nephrology, American Heart Association

- Damon Runyon Cancer Research Foundation
  - Clinical Investigator Award

- Doris Duke Charitable Foundation
  - Clinical Scientist Development Award

Topics to be Discussed

- Individual Fellowship Programs
  - Overview of Programs and Funding Agencies
  - NIH Review Process, Criteria, and Scoring System
  - Components of an NIH Application

- Career Transition Funding Programs

- Junior Faculty Career Development Programs
  - Overview of Programs and Funding Agencies
  - NIH Review Process, Criteria, and Scoring System
  - Components of an NIH Application

- Approaches for Competitive Applications

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
<table>
<thead>
<tr>
<th>Activity Codes</th>
<th>Program Description</th>
<th>Cycle I Due Date</th>
<th>Cycle II Due Date</th>
<th>Cycle III Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>K series</td>
<td>Research Career Development</td>
<td>February 12</td>
<td>June 12</td>
<td>October 12</td>
</tr>
</tbody>
</table>

NEW APPLICATIONS


RESUBMISSION AND COMPETITIVE RENEWAL APPLICATIONS

Application Due Dates

<table>
<thead>
<tr>
<th>Activity Codes</th>
<th>Program Description</th>
<th>Cycle I Due Date</th>
<th>Cycle II Due Date</th>
<th>Cycle III Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>K series</td>
<td>Research Career Development</td>
<td>March 12</td>
<td>July 12</td>
<td>November 12</td>
</tr>
</tbody>
</table>

renewal, resubmission, revision
## Application Due Dates

<table>
<thead>
<tr>
<th>All Activity Codes Cited Above</th>
<th>AIDS and AIDS-Related Applications</th>
<th>May 7</th>
<th>September 7</th>
<th>January 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>new, renewal, resubmission, revision</td>
<td><em>Effective. Sept 5, 2015 - N/A for SBIR/STTR Applications using Standard Due Dates</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>NOTE: See Key Dates section of funding opportunity announcement to determine if AIDS dates apply.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Application Due Dates**

**Review and Award Cycles**

<table>
<thead>
<tr>
<th></th>
<th>Cycle I</th>
<th>Cycle II</th>
<th>Cycle III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Due Dates</td>
<td>January 25 - May 7</td>
<td>May 25 - September 7</td>
<td>September 25 - January 7</td>
</tr>
<tr>
<td>Scientific Merit Review</td>
<td>June - July</td>
<td>October - November</td>
<td>February - March</td>
</tr>
<tr>
<td>Advisory Council Round</td>
<td>August or October *</td>
<td>January</td>
<td>May</td>
</tr>
<tr>
<td>Earliest Project Start Date</td>
<td>September or December *</td>
<td>April</td>
<td>July</td>
</tr>
</tbody>
</table>


# NIH's Evaluation System

9-point rating scale (1=exceptional; 9=poor)

<table>
<thead>
<tr>
<th>Impact</th>
<th>Score</th>
<th>Descriptor</th>
<th>Strengths/Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Impact</td>
<td>1</td>
<td>Exceptional</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Outstanding</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Excellent</td>
<td></td>
</tr>
<tr>
<td>Moderate Impact</td>
<td>4</td>
<td>Very Good</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Good</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Satisfactory</td>
<td></td>
</tr>
<tr>
<td>Low Impact</td>
<td>7</td>
<td>Fair</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>Marginal</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>Poor</td>
<td></td>
</tr>
</tbody>
</table>

[Jaime S. Rubin, Ph.D.; [http://grantscourse.columbia.edu](http://grantscourse.columbia.edu)]
<table>
<thead>
<tr>
<th>Impact</th>
<th>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>Medium</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>

**Minor Weakness:** An easily addressable weakness that does not substantially lessen impact

**Moderate Weakness:** A weakness that lessens impact

**Major Weakness:** A weakness that severely limits impact
**FELLOWSHIPS & CAREER AWARDS**

**Overall Impact:**
The likelihood that the proposed training (F) or career development (K) will enhance the candidate's potential for a productive, independent scientific research career in a health-related field.

<table>
<thead>
<tr>
<th>Overall Impact</th>
<th>High</th>
<th>Medium</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Score</strong></td>
<td>1 2 3</td>
<td>4 5 6</td>
<td>7 8 9</td>
</tr>
</tbody>
</table>

**Evaluating Overall Impact**

Consider the 5 criteria (weighting based on reviewer's judgment):

**Fs**
- Applicant
- Sponsor(s)
- Research Training Plan
- Training Potential
- Institutional Environment & Commitment

**Ks**
- Candidate
- Career Development Plan/Goals*
- Research Plan
- Mentor(s)**
- Environment & Institutional Commitment

and other score influences, e.g. human subjects, animal welfare, inclusion plans, and biohazards

*K05 and K24: Plan to Provide Mentoring
**K02: Consultants/Collaborators

- e.g. Proposes training or career development of *high value/benefit* for the candidate who has *high potential for developing into a productive, independent scientist*. May have some or no weaknesses in the criteria.
- e.g. Proposes training or career development of *high or moderate value/benefit* for the candidate who has *high or moderate potential for further development, but weaknesses in the criteria reduce the overall impact to medium*.
- e.g. Proposes training or career development of *moderate value/benefit* for the candidate who shows *moderate potential. May have some weaknesses in the criteria*.
- e.g. Proposes training or career development of *low value/benefit* for the candidate who shows *low potential. May have some weaknesses in the criteria*.

5 is a good, medium-impact application. The entire scale (1-9) should always be considered.
Pink Sheet: Reviewers’ Comments
Initial Review Group or Study Section

Actions

- **Discussed applications:**
  - Receives Impact/Priority Scores
  - Receives Scores for individual core review criteria

- **Not Discussed:**
  - Receives Scores for individual core review criteria

- **Not Recommended for Further Consideration** (NRFC)

- **Other:** e.g. Deferred

Impact Score

- Preliminary Impact Scores determine which applications discussed at study section
- Impact Score given by each member of the study section
- Overall Impact Score (for discussed applications): Mean of reviewers’ Impact Scores \( \times 10 \)
- 81 possible overall Impact Scores (10 – 90, whole numbers)

http://enhancing-peer-review.nih.gov/timelines.html
Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
<table>
<thead>
<tr>
<th>Payline</th>
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<th>Grant Program Description</th>
<th>Percentile</th>
<th>Priority Score</th>
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</thead>
<tbody>
<tr>
<td>R01</td>
<td>Research Project Grant</td>
<td>16</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>R01 ESI</td>
<td>Early Stage Investigators</td>
<td>26</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>K awards</td>
<td>Career Development Awards</td>
<td>N/A</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>F30</td>
<td>Pre-doctoral NRSA</td>
<td>N/A</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>F31, F32, F33</td>
<td>Pre- and Post-doctoral NRSA</td>
<td>39</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

**FY19**
NIH's Review Criteria

- **Overall Impact Score**
  - “Assessment of the likelihood that the proposed career development and research plan will enhance the candidate’s potential for a productive, independent scientific research career in a health-related field…”

- **Core Review Criteria**
  A separate score is given for each

---

For Mentored Patient-Oriented Research Career Development Award (Parent K23 – Independent Clinical Trial Not Allowed) (PA-19-119)

Check individual funding announcement if applying to another

**Overall Impact** Write a paragraph summarizing the factors that informed your Overall Impact score.
Separate Scores for the Individual Criteria

- All applications receive scores
  (even those not discussed at study section)
- Individually reported in summary statement
- Major strengths and weaknesses that influenced the overall impact/priority score - ¼ page per criterion

http://enhancing-peer-review.nih.gov/docs/ReviewerVideoslides030609_Modified.ppt

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
1. **Candidate**

**Strengths**
- 

**Weaknesses**
- 

2. **Career Development Plan/Career Goals & Objectives/Plan to Provide Mentoring**

**Strengths**
- 

**Weaknesses**
- 

3. **Research Plan**

**Strengths**
- 

**Weaknesses**
-
### 4. Mentor(s), Co-Mentor(s), Consultant(s), Collaborator(s)

**Strengths**
- 

**Weaknesses**
- 

### 5. Environment and Institutional Commitment to the Candidate

**Strengths**
- 

**Weaknesses**
- 

1. Candidate

“Does the candidate have the potential to develop as an independent and productive researcher?

Are the candidate's prior training and research experience appropriate for this award?

Is the candidate’s academic, clinical (if relevant), and research record of high quality?

Is there evidence of the candidate’s commitment to meeting the program objectives to become an independent investigator in research?”
1. Candidate

“Do the **letters of reference** address the above review criteria, and do they provide evidence that the candidate has a high potential for becoming an **independent investigator**?”


2. Career Development Plan/Career Goals & Objectives/Plan to Provide Mentoring

- “What is the likelihood that the plan will contribute substantially to the scientific development of the candidate and lead to scientific independence?
- Are the candidate's prior training and research experience appropriate for this award?
- Are the content, scope, phasing, and duration of the career development plan appropriate when considered in the context of prior training/research experience and the stated training and research objectives for achieving research independence?”

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu

2. Career Development Plan/Career Goals & Objectives/Plan to Provide Mentoring

- “Are there adequate plans for monitoring and evaluating the candidate’s research and career development progress?”
- If proposed, will the clinical trial experience contribute to the applicant’s research career development plan?

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu

3. Research Plan

■ “Are the proposed research questions, design, and methodology of significant scientific and technical merit?

■ Is the prior research that serves as the key support for the proposed research rigorous?

■ Has the candidate included plans to address weaknesses in the rigor of prior research that serves as the key support for the proposed project?

■ Has the candidate presented strategies to ensure a robust and unbiased approach, as appropriate for the work proposed?


Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
3. Research Plan

■ Has the candidate presented adequate plans to address relevant biological variables, such as sex, for studies in vertebrate animals or human subjects?”

■ “Is the research plan relevant to the candidate’s research career objectives?

■ Is the research plan appropriate to the candidate's stage of research development and as a vehicle for developing the research skills described in the career development plan?”

■ If proposed, will the clinical trial experience contribute to the proposed research project?
### NIH Review criteria – changes

For applications with deadlines **on or after** January 25, 2019

<table>
<thead>
<tr>
<th>Section</th>
<th>Criteria</th>
<th>Current language</th>
<th>Revised language</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scored Review Criteria</td>
<td>Research Plan</td>
<td>Is there a strong scientific premise for the project?</td>
<td>Is the prior research that serves as the key support for the proposed project rigorous?</td>
</tr>
<tr>
<td>Scored Review Criteria</td>
<td>Research Plan</td>
<td>Not Applicable</td>
<td>Has the candidate included plans to address weaknesses in the rigor of prior research that serves as the key support for the proposed project?</td>
</tr>
</tbody>
</table>
4. Mentor(s), Co-mentor(s), Consultant(s), Collaborator(s)

- “Are the qualifications of the mentor(s) in the area of the proposed research appropriate?
- Do(es) the mentor(s) adequately address the candidate’s potential and his/her strengths and areas needing improvement?
- Is there adequate description of the quality and extent of the mentor’s proposed role in providing guidance and advice to the candidate?
- Is the mentor’s description of the elements of the research career development activities, including formal course work adequate?”
4. Mentor(s), Co-mentor(s), Consultant(s), Collaborator(s)

- “Is there evidence of the mentor’s, consultant’s and/or collaborator’s previous experience in fostering the development of independent investigators?
- Is there evidence of the mentor’s current research productivity and peer-reviewed support?
- Is active/pending support for the proposed research project appropriate and adequate?
- Are there adequate plans for monitoring and evaluating the career development awardee’s progress toward independence?”


Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
4. Mentor(s), Co-mentor(s), Consultant(s), Collaborator(s)

“If the applicant is proposing to gain experience in a clinical trial as part of his or her research career development, is there evidence of the appropriate expertise, experience, and ability on the part of the mentor(s) to guide the applicant during participation in the clinical trial?”
5. Environment and Institutional Commitment to the Candidate

- “Is there clear commitment of the sponsoring institution to ensure that the required minimum of the candidate’s effort [usually 75%] will be devoted directly to the research described in the application, with the remaining percent effort being devoted to an appropriate balance of research, teaching, administrative, and clinical responsibilities?

- Is the institutional commitment to the career development of the candidate appropriately strong?”

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu

5. Environment and Institutional Commitment to the Candidate

- “Are the research facilities, resources and training opportunities, including faculty capable of productive collaboration with the candidate, adequate and appropriate?

- Is the environment for scientific and professional development of the candidate of high quality?

- Is there assurance that the institution intends the candidate to be an integral part of its research program as an independent investigator?”
Additional Review Criteria

Evaluated for the overall impact score, but not given an individual score

- Protections for Human Subjects
- Inclusion of Women, Minorities, and Individuals Across the Lifespan (as of Jan 25, 2019)
- Vertebrate Animals
- Biohazards
- Resubmissions
  - Response to previous reviewers’ comments and subsequent changes made to the proposal

Additional Review Considerations

Not given an individual score and not considered for the overall impact score

- Training in the Responsible Conduct of Research
  - Address required components

- Select Agent Research

- Resource Sharing Plans
  - 1) Data Sharing Plan; 2) Sharing Model Organisms; and 3) Genomic Data Sharing Plan

- Authentication of Key Biological and/or Chemical Resources
  - Plans for identifying and ensuring the validity of resources

- Budget and Period of Support

For applications with deadlines **on or after** January 25, 2019

| Additional Review Criteria | Inclusion of Women, Minorities, and Individuals Across the Lifespan | When the proposed project involves human subjects and/or NIH-defined clinical research, the committee will evaluate the proposed plans for the inclusion (or exclusion) of individuals on the basis of sex/gender, race, and ethnicity, as well as the inclusion (or exclusion) of children to determine if it is justified in terms of the scientific goals and research strategy proposed. | When the proposed project involves human subjects and/or NIH-defined clinical research, the committee will evaluate the proposed plans for the inclusion (or exclusion) of individuals on the basis of sex/gender, race, and ethnicity, as well as the inclusion (or exclusion) of children to determine if it is justified in terms of the scientific goals and research strategy proposed. |


FOAs that accept clinical trials will include additional review criteria questions in *Section V. Application Review Information.*

Revision: The NIH Announces Additional Review Criteria for Career Development Award Applications Involving Clinical Trials

Notice Number: NOT-OD-18-109

In *addition* to the standard individual K award review questions:

**Scored Review Criteria (Independent Clinical Trial Required)**

Candidate
Research Plan
Mentor(s), Co-Mentor(s), Consultant(s), Collaborator(s)
Environment & Institutional Commitment to the Candidate

**Scored Review Criteria (Independent Clinical Trial Not Allowed)**

Career Development Plan/Career Goals and Objectives
Research Plan
Mentor(s), Co-Mentor(s), Consultant(s), Collaborator(s)

**Additional Review Criteria**

Study Timeline for Clinical Trials

https://grants.nih.gov/policy/clinical-trials/review-criteria.htm
https://grants.nih.gov/grants/peer/critiques/k_D.htm

Implementing Rigor and Transparency in NIH & AHRQ Career Development Award Applications

Notice Number: NOT-OD-16-012

These updates focus on four areas deemed important for enhancing rigor and transparency:

1) the scientific premise forming the basis of the proposed research,
2) rigorous experimental design for robust and unbiased results,
3) consideration of relevant biological variables, and
4) authentication of key biological and/or chemical resources.

Updates include:

- Revisions to application guide instructions for preparing your research strategy attachment
- Use of a new "Authentication of Key Biological and/or Chemical Resources" attachment
- Additional rigor and transparency questions reviewers will be asked to consider when reviewing applications

https://grants.nih.gov/grants/peer/critiques/k.htm
http://grantscourse.columbia.edu
Guidance: Rigor and Reproducibility in Grant Applications

NIH research grant and career development award application instructions and review language focus on four key areas:

1. The **rigor** of the **prior research**
2. Rigorous **experimental design** for robust and unbiased results
3. Consideration of relevant **biological variables**
4. **Authentication** of **key** biological and/or chemical resources
<table>
<thead>
<tr>
<th>4 AREAS OF FOCUS</th>
<th>WHAT DOES IT MEAN?</th>
<th>WHERE SHOULD IT BE INCLUDED IN THE APPLICATION?</th>
</tr>
</thead>
</table>
| Rigor of the Prior Research | A careful assessment of the **rigor of the prior research** that serves as the key support for a proposed project will help applicants identify any weaknesses or gaps in the line of research. 

Describe the strengths and weaknesses in the rigor of the prior research (both published and unpublished) that serves as the key support for the proposed project.

Describe plans to address weaknesses in the rigor of the prior research that serves as the key support for the proposed project. *See related FAQs, blog post* | Research Strategy 
- Significance 
- Approach |
| Scientific Rigor (Design) | **Scientific rigor** is the strict application of the scientific method to ensure robust and unbiased experimental design, methodology, analysis, interpretation and reporting of results.

Emphasize how the experimental design and methods proposed will achieve robust and unbiased results. *See related FAQs, blog post, examples from pilots* | Research Strategy 
- Approach |
<table>
<thead>
<tr>
<th>4 AREAS OF FOCUS</th>
<th>WHAT DOES IT MEAN?</th>
<th>WHERE SHOULD IT BE INCLUDED IN THE APPLICATION?</th>
</tr>
</thead>
</table>
| Biological Variables | Biological variables, such as sex, age, weight, and underlying health conditions, are often critical factors affecting health or disease. In particular, sex is a biological variable that is frequently ignored in animal study designs and analyses, leading to an incomplete understanding of potential sex-based differences in basic biological function, disease processes and treatment response. Explain how relevant biological variables, such as the ones noted above, are factored into research designs, analyses, and reporting in vertebrate animal and human studies. Strong justification from the scientific literature, preliminary data or other relevant considerations must be provided for applications proposing to study only one sex. | Research Strategy  
➢ Approach |

*See related FAQs, blog posts, article |

| Authentication | Key biological and/or chemical resources include, but are not limited to, cell lines, specialty chemicals, antibodies and other biologics. Briefly describe methods to ensure the identity and validity of key biological and/or chemical resources used in the proposed studies. These resources may or may not have been generated with NIH funds and:  
• may differ from laboratory to laboratory or over time;  
• may have qualities and/or qualifications that could influence the research data;  
• are integral to the proposed research. The authentication plan should state in one page or less how you will authenticate key resources, including the frequency, as needed for your research. Note: Do not include authentication data in your plan. | Other Research Plan Section  
➢ Include as an attachment  
➢ Do not include in the Research Strategy. |

*See related FAQs, blog post, examples |
Topics to be Discussed

- Individual Fellowship Programs
  - Overview of Programs and Funding Agencies
  - NIH Review Process, Criteria, and Scoring System
  - Components of an NIH Application
- Career Transition Funding Programs
- Junior Faculty Career Development Programs
  - Overview of Programs and Funding Agencies
  - NIH Review Process, Criteria, and Scoring System
  - Components of an NIH Application
- Approaches for Competitive Applications
FORMS VERSION E SERIES
Released: September 25, 2017
Revised: December 7, 2018

CAREER DEVELOPMENT INSTRUCTIONS
FOR NIH AND OTHER PHS AGENCIES
SF424 (R&R) APPLICATION PACKAGES
G.410 - PHS 398 Career Development Award Supplemental Form

The PHS 398 Career Development Award Supplemental Form is used only for career development applications and multi-project applications with an "Indiv. Career Dev" component.

This form includes fields to upload several attachments including the Specific Aims, Research Strategy, and Candidate Background and Goals.

See NIH's Reference Letters page for information including instructions for referees and how to submit letters.

The attachments in this form, together with the rest of your application, should include sufficient information needed for evaluation of the project and the candidate, independent of any other documents (e.g., previous application). Be specific and informative, and avoid redundancies.

Quick Links
- [Introduction](https://grants.nih.gov/grants/how-to-apply-application-guide/forms-e/general/g.410-phs-398-career-development-award-supplemental-form.htm)

[View larger image](https://grants.nih.gov/grants/how-to-apply-application-guide/forms-e/general/g.410-phs-398-career-development-award-supplemental-form.htm)
<table>
<thead>
<tr>
<th>Section of Application</th>
<th>Page Limits *</th>
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<tbody>
<tr>
<td>Project Summary/Abstract</td>
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<td>Project Narrative</td>
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<td>Introduction to Resubmission or Revision Application (when applicable)</td>
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<tr>
<td>Candidate Information and Goals for Career Development and Research Strategy</td>
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<td>Specific Aims</td>
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<td>Candidate’s Plan to Provide Mentoring (Include only when required by the specific FOA, e.g., K24 and K05)</td>
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<tr>
<td>Plans and Statements of Mentor and Co-mentor(s)</td>
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<td>Letters of Support from Collaborators, Contributors, and Consultants</td>
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<td>Description of Institutional Environment</td>
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<td>Institutional Commitment to Candidate’s Research Career Development</td>
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<td>Biographical Sketch</td>
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*Page Limits may vary depending on the specific FOA.*

https://grants.nih.gov/grants/how-to-apply-application-guide/format-and-write/page-limits.htm#car
1 + 12 Pages Combined

- Candidate Information
  - Section 2
- Research Plan
  - 3. Specific Aims (1 page)
  - 4. Research Strategy
## Candidate Section

2. Candidate Information and Goals for Career Development

### Research Plan Section

3. Specific Aims

4. Research Strategy

5. Progress Report Publication List (for Renewal applications)

6. Training in the Responsible Conduct of Research

### Other Candidate Information Section

7. Candidate’s Plan to Provide Mentoring

### Mentor, Co-Mentor, Consultant, Collaborators Section

8. Plans and Statements of Mentor and Co-Mentor(s)

9. Letters of Support from Collaborators, Contributors, and Consultants

### Environment and Institutional Commitment to Candidate Section

10. Description of Institutional Environment

11. Institutional Commitment to Candidate’s Research Career Development
2. Candidate Information

- Candidate’s Background
- Career Goals and Objectives
- Candidate’s Plan for Career Development/Training Activities During Award Period
2. Candidate’s Background

- Scientific history/Unique expertise
  - Previous work
    - Consistent themes, or
    - Why research interests have changed direction
  - Relationship to career path described in application
- Other didactic/training experiences
  - e.g., Masters degree
- Other research experiences
  - e.g., MD/PhD, Medical school, Fellowship
- Reasons for basic, clinical, translational, epidemiology, behavioral, multidisciplinary research, relevant publications

Career Goals and Objectives

- Justify award
  - Fits into past and future research career
- Skills that are lacking
  - Identification of specific modules to address areas for growth, provides justification of award
  - Role of specific Mentor(s) and Advisory Committee member(s)

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
**Mentors/Advisory Committee**

- Scientific area per Mentor/Committee member
- Schedule of meetings

---

### Career Development and Research Training

#### Mentors and Advisors

<table>
<thead>
<tr>
<th>Faculty Member</th>
<th>Role</th>
<th>Area of Expertise</th>
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<td>Name (Title)</td>
<td>Co-Mentor</td>
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<td>Name (Title)</td>
<td>Consultant</td>
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Short-term Career Goals

Timeline for funded period

Year 1: Preliminary data

Year 2: Submit publications (possible journals),

Presentations at national meetings (examples),

Formulation of R01 application

Years 3-5: By the end of the funded period, applicant will be an independent investigator near to R01 funding
Long-term Career Goals

Scientific goals
- Basic science, translational, clinical, epidemiologic, behavioral

Mentoring goals
- How mentoring has been important to you
- Previous/current mentoring responsibilities

Networking goals
- Multidisciplinary activities, grants, etc.
Career Development/Training Activities During Award Period

- Review of didactic courses, clinical training, and research experiences to date
- New research skills/knowledge required
- Identification of training required to fill gaps in knowledge in order to reach long term goals
  - Rational for each of the training activities

New Section on each Module

- Reason for module
- Specific description of each “Mode of Learning”
  - Role of Mentor(s) and Advisor(s)
  - Specific courses, workshops, and other didactics
  - Details on research meetings

- Module: Career skills
  - Grantsmanship
  - Becoming a mentor
  - Laboratory management

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
<table>
<thead>
<tr>
<th>Module</th>
<th>Mentor(s)</th>
<th>Mode of learning</th>
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</thead>
<tbody>
<tr>
<td>Scientific Area (1-3)</td>
<td>Specific names</td>
<td>Coursework (completed and new) 1-on-1 meetings (schedule? e.g. weekly) Guided readings Research meetings (schedule? e.g. weekly) Applied training Clinical experience</td>
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<tr>
<td>Career skills</td>
<td>All mentors</td>
<td>Improving communication skills Grant writing course Professional workshops/seminars Collaborations Abstracts and manuscripts R01/Small grant application submission</td>
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<td>Dissemination of Research Results</td>
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<td>Supervising technical support personnel, organizing lab meetings, journal clubs e.g. training new lab members, undergraduate, summer students</td>
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<td>Research management</td>
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<td>Mentorship</td>
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</table>

Summary of coursework

- List previous relevant coursework
- Proposed coursework
  - Course number and description
  - Include career development courses (e.g., grant writing) and responsible conduct of research
- Additional didactic activities
  - e.g. Those offered by professional societies, workshops, symposiums
Clinical and/or Teaching activities

- Relationship to proposed research and career development activities
- Be specific, mention hrs. per week (cal months)
- Percentage of time for each activity

Restate % of time dedicated to research

Timetable

Table: Career Development/ Training Activities During Award Period
<table>
<thead>
<tr>
<th>Career Development Activities</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
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## Experimental Training

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## Formal Coursework

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<p>| Scientific Conferences-Communication Skills (Oral / Poster Presentations) | | | | | |
| Symposium of the NY Academy of....(annual) | X | X | X | X | X |
| Congress of........ (annual) | | X | X | X | X |
| American Association for........ (annual) | X | X | X | X | X |
| Society of...... (biannual) | X | | | | X |</p>
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| **Scientific Conferences-Communication Skills (Oral / Poster Presentations)** | |
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| Society of...... (biannual) | | | X | X | X |

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<td>R00 Year 3</td>
<td>R00 Year 4</td>
<td>R00 Year 5</td>
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</table>

# PHS 398 Career Development Award Supplemental Form

**View Burden Statement**

**Introduction**

1. Introduction to Application 
   (for Resubmission and Revision applications)

**Candidate Section**

2. Candidate Information and Goals for Career Development

**Research Plan Section**

3. Specific Aims
4. *Research Strategy*
5. Progress Report Publication List 
   (for Renewal applications)
6. Training in the Responsible Conduct of Research

**Other Candidate Information Section**

7. Candidate’s Plan to Provide Mentoring

**Mentor, Co-Mentor, Consultant, Collaborators Section**

8. Plans and Statements of Mentor and Co-Mentor(s)
9. Letters of Support from Collaborators, Contributors, and Consultants

**Environment and Institutional Commitment to Candidate Section**

10. Description of Institutional Environment
11. Institutional Commitment to Candidate’s Research Career Development

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1 + 12 Pages Combined

- **Candidate Information**
  - Section 2

- **Research Plan**
  - 3. Specific Aims (1 page)
  - 4. Research Strategy

## 4. Research Strategy – changes

<table>
<thead>
<tr>
<th>Form</th>
<th>Section</th>
<th>Heading</th>
<th>Current language</th>
<th>Revised language</th>
</tr>
</thead>
<tbody>
<tr>
<td>Career Development Award</td>
<td>Research Plan</td>
<td>Significance</td>
<td>Describe the scientific premise for the proposed project, including consideration of the strengths and weaknesses of published research or preliminary data crucial to the support of your application.</td>
<td>Describe the strengths and weaknesses in the rigor of the prior research (both published and unpublished) that serves as the key support for the proposed project.</td>
</tr>
<tr>
<td>Supplemental Form</td>
<td>- Research Strategy</td>
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<tr>
<td>Career Development Award</td>
<td>Research Plan</td>
<td>Approach</td>
<td>Not Applicable</td>
<td>Describe plans to address weaknesses in the rigor of the prior research that serves as the key support for the proposed project.</td>
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<td></td>
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## Introduction
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6. Training in the Responsible Conduct of Research

- 1) Format, 2) Subject Matter,
- 3) Faculty Participation, 4) Duration, and
- 5) Frequency of Instruction

- Role of Mentor

- Prior instruction in RCR

- Once every four years requirement

- Don’t do the minimum

- Additional IRB or IACUC-related programs?

- [http://grants.nih.gov/training/responsibleconducted.htm](http://grants.nih.gov/training/responsibleconducted.htm)

- No more than 1 page

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8. Plans and Statements of Mentor and Co-Mentor(s)

- Mentor’s assessment of the Candidate
- Mentor’s research and career development plans for the Candidate
  - Research
  - Career development activities
    - Seminars, scientific meetings, presentations, becoming a mentor, RCR
- Expectations for publications
What aspect of the research will the candidate be allowed to take to start their own independent research career

Mentor’s plans for providing mentoring and supervision

- How this will promote candidate’s development

Plan for Candidate’s Transition from Mentored Stage to Independent Investigator

Candidate’s additional responsibilities

- Courses, seminars, lab meetings
- Teaching, clinical, administrative
Source of support for Candidate’s research project

- Grants
- Core/shared facilities
- Technical support

Previous experience as a Mentor

- Previous mentees - Type (e.g., graduate student, post-doctoral fellow, junior faculty), Number, Career Outcomes

Mentor and Co-Mentors

- How mentorship responsibilities will be shared
- How different areas of expertise enhance mentorship
- Past collaborative research/co-mentorship activities

Addition instructions if clinical trials proposed

No more than 6 pages
# PHS 398 Career Development Award Supplemental Form

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9. Letters of Support from Collaborators, Contributors, and Consultants

- Advisory Committee (described in Section 2)
  - Purpose
    - Reviews research progress, publications, R01 submission, career development activities, didactic program
    - Provides scientific guidance
    - Documents meetings with an annual report
  - Name, title, and short paragraph on each member in Section 2
  - Each should provide a letter and NIH Biosketch

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Collaborators and Consultants (described in Section 2)

- Name, title, and short paragraph on each individual in Section 2
- Each should provide a letter and NIH Biosketch

Director of Core Facility

No more than 6 pages
# PHS 398 Career Development Award Supplemental Form

**Introduction**

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**Research Plan Section**

3. Specific Aims
   - Add Attachment
   - Delete Attachment
   - View Attachment


5. Progress Report Publication List (for Renewal applications)

6. Training in the Responsible Conduct of Research

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Environment and Institutional Commitment to the Candidate

- 10. Description of Institutional Environment
- 11. Institutional Commitment to the Candidate’s Research Career Development
Environment and Institutional Commitment to the Candidate

10. Description of Institutional Environment

- Information relevant to Candidate’s research and career development activities
  - Institution, Dept./Division, Institute
  - Other schools, centers, shared resources, core facilities, CTSA, etc.
  - Degree programs, courses, seminars, journal clubs
  - Institution’s/Dept.’s formal mentoring program

- No more than 1 page
11. Institutional Commitment to the Candidate’s Research Career Development

- **Letter from Dept. Chair/Institute Director**
  - Specifics on protected time (most K awards: 75%)
  - Specifics on faculty appointment (full-time)
  - Statement that appointment and salary are not contingent on award
  - Statement on availability of research resources, personnel, office and research space, equipment, etc. required for project
  - Statement that mentors and collaborators will be able to provide time and support for mentoring/research responsibilities
  - Signed and dated on letterhead stationery

- **No more than 1 page**
10. Facilities & Other Resources

Scientific/Technical Resources

- Facilities to be used for the conduct of the proposed research
  - Laboratory
  - Animal
  - Computer
  - Office
  - Clinical [patient/research subject populations]
  - Other: Core facilities [e.g. research pharmacy, biostatistics, technical cores (microscopy, biomarkers), biohazards]

- Discuss how the proposed studies will benefit from the unique features of the scientific environment, subject populations, or collaborative arrangements
R&R Other Project Information:

10. Facilities & Other Resources

Career Development Resources

- More complete descriptions of programs referenced in:
  - 2. Career Development/Training Activities During Award Period
  - 8. Plans and Statements of Mentor and Co-Mentor(s)
  - 10. Description of Institutional Environment
  - 11. Institutional Commitment to the Candidate’s Research Career Development

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Career Development Resources - also referenced in “main body” of the grant (Table) and Mentor’s section

- Career development programs
  - Institutional (e.g. Office of Postdoctoral Affairs)
  - Department/Institute
  - Professional societies

- Formal degree programs and other didactics
  - Degree program
  - Scientific courses: e.g., Statistics
  - Career Development courses: e.g., Funding & Grantsmanship

- Workshops, webinars, other training programs
Letters of Reference

- Include a list of Referees in the Cover Letter
- 3-5 Letters of References are required
- Individuals who know you well from a research perspective (qualifications, training, and interests)
- Individuals not directly involved in the research project
- Mentor(s) cannot be one of the confidential Letters of Reference ("letter" in main body of application)
- Helpful to include at least one referee who is not in your current department/institution
Letters of Reference

- “Potential to become an independent research scientist;
- Evidence of originality;
- Adequacy of scientific background;
- Quality of research endeavors or publications to date, if any;
- Commitment to health-oriented research; and
- Need for further research experience and training
- Any additional related comments that the referee may wish to provide”
21. Cover Letter Attachment

- Must include
- Title of application
- Title of funding opportunity announcement
- List of Referees (name and affiliation)
- Administrative document – not seen by reviewers

PHS Assignment Request Form

Funding Opportunity Number:

Funding Opportunity Title:

**Awarding Component Assignment Request (optional)**

If you have a preference for an awarding component (e.g., NIH Institute/Center) assignment, use the link below to identify the appropriate short abbreviation and enter it below. All requests will be considered; however, assignment requests cannot always be honored.

Awarding Components: [https://grants.nih.gov/grants/phs_assignment_information.html#AwardingComponents](https://grants.nih.gov/grants/phs_assignment_information.html#AwardingComponents)

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<th>Second Choice</th>
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</tbody>
</table>

**Study Section Assignment Request (optional)**

If you have a preference for study section assignment, use the link below to identify the appropriate study section (e.g., NIH Scientific Review Group or Special Emphasis Panel) and enter it below. Remove all hyphens, parentheses, and spaces. All requests will be considered; however, assignment requests cannot always be honored.

Study Sections: [https://grants.nih.gov/grants/phs_assignment_information.html#StudySection](https://grants.nih.gov/grants/phs_assignment_information.html#StudySection)

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<tr>
<td>Only 20 characters allowed</td>
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</tr>
</tbody>
</table>
Identify scientific areas of expertise needed to review your application (optional)

Note: Please do not provide names of individuals

Expertise: Only 40 characters allowed

1

2

3

4

5
NIH Career Development (K) Application

- Model for other career development/scholar grant programs supported by voluntary health organizations, private foundations, and professional societies
NIH “K” Sites of Interest

- **K Kiosk** – includes Program Announcements for K01, K07, K08, K23, K25, and K99 grant mechanisms
  

- **Career Development (K) Applications Instructions**
  
  [https://grants.nih.gov/grants/how-to-apply-application-guide/forms-e/general/g.100-how-to-use-the-application-instructions.htm](https://grants.nih.gov/grants/how-to-apply-application-guide/forms-e/general/g.100-how-to-use-the-application-instructions.htm)

- **Reference Letters**
  
  [https://grants.nih.gov/sites/default/files/instructions-for-mentored-research-career-development_referees.docx](https://grants.nih.gov/sites/default/files/instructions-for-mentored-research-career-development_referees.docx)

NIH “K” Sites of Interest

- Application Page Limits
  

- NIH Biosketch Format Pages, Instructions and Samples
  
  [https://grants.nih.gov/grants/forms/biosketch.htm](https://grants.nih.gov/grants/forms/biosketch.htm)

- Instruction in the Responsible Conduct of Research
  
NIH “K” Sites of Interest

- NIH Research Training and Career Development Programs
  https://researchtraining.nih.gov/

- Research Training and Career Development Programs at Specific Institutes
  https://researchtraining.nih.gov/institute
Topics to be Discussed

- Individual Fellowship Programs
  - Overview of Programs and Funding Agencies
  - NIH Review Process, Criteria, and Scoring System
  - Components of an NIH Application

- Career Transition Funding Programs

- Junior Faculty Career Development Programs
  - Overview of Programs and Funding Agencies
  - NIH Review Process, Criteria, and Scoring System
  - Components of an NIH Application

- Approaches for Competitive Applications

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Approaches for Competitive Applications

- Identify Funding
- Prepare to Write the Grant Application
- Complete the Grant Application

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Identify Funding

- Identify appropriate funding agencies
  - Government
  - Non-government

- Identify appropriate funding mechanisms
  - Research
  - Training

- Create a calendar of application deadlines for identified funding programs

Approaches for Competitive Applications

- Identify Funding
- Prepare to Complete the Grant Application
- Complete the Grant Application
It’s not the will to win, but the will to prepare to win that makes the difference.

Bear Bryant, University of Alabama
Prepare to Complete the Grant Application

- Speak with Agency Program Officer
- Speak with colleagues who are/were awardees
- Review funded applications if possible
- Review agency’s review criteria
- Identify what will make the application more competitive
  - Research and/or career development arrangements
  - Access to core facilities/research resources
- Strengthen “Preliminary Work/ Pilot Data”
- Who will write confidential letters of reference?

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Research and Career Development Arrangements

- Multiple Principle Investigators (research awards)
- Multiple Mentors (mentored awards)
- Advisors (mentored awards)
- Co-investigators/Collaborations
- Subcontracts to other institutions
- Multidisciplinary/Interdisciplinary

Prepare to Complete the Grant Application

- Identify and meet with Co-investigators, Collaborators, Consultants, Advisors
  - Identify roles and responsibilities
  - Administrative requirements
    (e.g. if other countries/institutions are involved)
- Identify necessary core facilities and other research resources
- Meet with research administrators
- Human subjects, lab animals, and any other regulatory issues?

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Approaches for Competitive Applications

- Identify Funding
- Prepare to Complete the Grant Application
- Complete the Grant Application
Complete the Grant Application

- Review the application instructions
- Identify the different components
- Create a checklist (sequence/date of completion)
- Create an outline
  - Content, Length of section (vis a vis page limits)
- Identify and delegate responsibilities for the different components
  - Technical/Scientific
  - Administrative – e.g. budget
  - Regulatory
  - Draft letters of collaboration/support
Complete the Grant Application

- Confirm **page limits** for each component
- Create a **schedule** for any required **meetings**
- Determine:
  - Shared computer drive/folders
  - Naming of files (e.g., by version # or date)
  - Track changes?
  - Font, margin, format of literature citation
- Set a **firm time-line** for each responsibility
  - Writing milestones
  - Absolute deadline date for final compilation

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Complete the Grant 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 (“the hypothesis of my study is…”)
- Discuss limitations and potential “challenges” and how these will be addressed (e.g., “alternate approaches”)
- Include well-designed tables and figures
- Present an organized, lucid write-up (use an outline)
- Ask colleagues (“pseudo reviewers”) to review and comment
Complete the Grant Application

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- **Include well-designed tables and figures**
- Present an organized, lucid write-up (use an outline)
- Ask colleagues (“pseudo reviewers”) to review and comment
Include Well-Designed Tables and Figures

- Include explanatory caption with the figure (not buried in text)
- Not overly complicated
- Informative, even if printed in black and white
- Easy for the reviewers to read
- Tips:
  - Bold label in text (e.g., Fig. 4) so it’s easier for reviewers to locate relevant text for individual Figure
  - Try to have Figure and relevant text on the same page
## Timeline for Specific Aims and Benchmarks/Milestones of Research Progress

<table>
<thead>
<tr>
<th>Benchmarks/ Milestones</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
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<td>Summary of Specific Aim 2a</td>
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</tr>
<tr>
<td>Summary of Specific Aim 3</td>
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</tr>
</tbody>
</table>

Don’t Do the Minimum

“Optional”: Does not mean don’t do

- PHS Assignment Request Form
  - e.g., Request an Institute, specific Study Section, reviewers’ areas of expertise

- PHS Human Subjects and Clinical Trials Information Form:
  “3.5 Overall Structure of the Study Team” - Required if “Yes” for all questions in the “Clinical Trial Questionnaire.” Optional for all other human subjects research
  - Use the “extra” space to further describe your study team

- When appropriate, fill the page – ½ of page of text means you have nothing more to say

- K awards: “10. Description of Institutional Environment”
Anticipate Questions
and
Answer them before they are asked

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Not everything that can be counted counts.
Not everything that counts can be counted.

Quote Investigator suggests crediting sociologist William Bruce Cameron
http://quoteinvestigator.com/2010/05/26/everything-counts-einstein/

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Investigator

- Competent
- Enthusiastic
- Thorough
- Professional
Personal Statement/
Candidate’s Background

When describing a previous research experience:

- What was the hypothesis/scientific question?
- Why was the study important?
- What were the findings and conclusions?
- What were your role and responsibilities?
- What did you learn and accomplish?
  - “Intellectual aspects”
  - Do not focus on technical aspects
- Cite any resulting publications
- Describe any honors/awards and conference/workshop presentations

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Possible Problems Specific for Mentored Fellowship & Career Development Awards

**Mentor**

- Too many other responsibilities (e.g. administrative, clinical)
- Too many other mentees (e.g. students, post-docs)
- Not appropriate scientifically
- Too junior
- Limited experience as a mentor
- Limited funds to support proposed research

Possible Problems Specific for Mentored Fellowship & Career Development Awards

Institution

- Limited scientific/technical resources
- Limited career development opportunities
- Limited opportunities for career advancement
Elements of a Good Proposal

- Feasible
- Relevant
- Unique
- Innovative
- Clear
- Brief
- Consistent
Common Problems with Grant Applications from New Investigators

- Does not address/follow funding agency’s mission, specific instructions, budget limits, etc.
- Overly ambitious (e.g., $, time, expertise, career level)
- Fishing expedition
- Not hypothesis driven
- Descriptive, not mechanistic project
- Study design (e.g., Control groups(s), Unfocussed)
- Issues with Statistical aspects/Power analysis/Data analysis
- No or insufficient preliminary data
- Does not adequately describe access to “research resources”
- Unrealistic budget
- Methodologies beyond the expertise of investigator or research team
- Not independent of previous mentor’s research

NIH: one round of applications
Pink Sheet: Reviewers’ Comments
Bell Curve of Reviewer’s Grant Applications

Definitely do not fund

Fine

Definitely fund

Great

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Poor Statistics
Research Resources not Adequately Described
Career Development/
Research Training Plan
not Comprehensive

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Figure Caption Font too Small
All Components of the Application are as Strong as Possible
ADVISORY COMMITTEE TO THE DIRECTOR

Next Generation Researchers Initiative Working Group

ACD Working Group on Biomedical Workforce

ACD Physician-Scientist Workforce

ACD Working Group on Diversity

https://acd.od.nih.gov/

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Good Luck!