Maximizing Access to Research Careers
Undergraduate-Science Training in Academic Research (MARC U-STAR) Program

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National Institute of General Medical Sciences, NIH
The MARC U-STAR program is an INSTITUTIONAL undergraduate research training program that is designed to provide structured training to high-achieving, underrepresented (UR) students to prepare them for doctoral programs in biomedical research fields.

Utilizes the T34 Ruth L. Kirschstein National Research Service Award (NRSA) funding mechanism.

NIGMS Funding opportunity announcement (FOA):

PROGRAM OVERVIEW
Goals

The overarching goal of the MARC program is to enhance the pool of students from UR groups who successfully complete baccalaureate and Ph.D. biomedical degrees.

Since MARC participants should have an interest in obtaining a Ph.D. degree, NIGMS expects that the following goals will be achieved:

- At least 90% of MARC U-STAR trainees will graduate with a bachelor's degree in a STEM field; and
- At least 60% of MARC U-STAR trainees, within three years of graduation, will matriculate into a biomedical Ph.D. or combined M.D./Ph.D. program at a research-intensive institution and at least 80% of those matriculants will obtain the degree(s).
Underrepresented Populations in the U.S. Biomedical Research Enterprise (NOT-OD-15-053)

A. Individuals from racial and ethnic groups that have been shown by the National Science Foundation to be underrepresented in biomedical research are: Blacks or African Americans, Hispanics or Latinos, American Indians or Alaska Natives, Native Hawaiians and other Pacific Islanders.

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.

C. Individuals from disadvantaged backgrounds, defined as:

1. Individuals who come from a family with an annual income below established low-income thresholds. These thresholds are based on family size, published by the U.S. Bureau of the Census; adjusted annually for changes in the Consumer Price Index; and adjusted by the Secretary for use in all health professions programs. The Secretary periodically publishes these income levels at http://aspe.hhs.gov/poverty/index.shtml.

2. Individuals who come from an educational environment such as that found in certain rural or inner-city environments that has demonstrably and directly inhibited the individual from obtaining the knowledge, skills, and abilities necessary to develop and participate in a research career.
MARC U-STAR Program

• Two-year program for research-oriented honors juniors and seniors

• Provides funds for:
  o Academic enhancements
  o Research training and guided discovery
  o Professional skills development

• Requires one summer research training experience at a Research-Intensive Institution
THE FIRST STEP IN PREPARING FOR A COMPETITIVE MARC U-STAR APPLICATION

READ ALL OF THE INSTRUCTIONS in the FOA CAREFULLY
Eligible Organizations

- Public/State Controlled Institutions of Higher Education
- Private Institutions of Higher Education
- Hispanic-serving Institutions
- Historically Black Colleges and Universities (HBCUs)
- Tribally Controlled Colleges and Universities (TCCUs)
- Alaska Native and Native Hawaiian Serving Institutions
- Asian American Native American Pacific Islander Serving Institutions (AANAPISIs)

- The sponsoring institution must assure support for the proposed program.
- Appropriate institutional commitment to the program includes the provision of adequate staff, facilities, and educational resources that can contribute to the planned program.

- Only one application per institution (normally identified by having a unique DUNS number or NIH IPF number) is allowed for the MARC U-STAR Program. Please check with your institution’s business office to check if there is a MARC program already in place.

- Foreign Institutions or foreign components are not allowed.
ELIGIBILITY

MARC Program Directors/Principal Investigators:

• The PD/PI must have a regular full-time appointment (i.e., not adjunct, part-time, retired, or emeritus) at the applicant institution.

• The PD/PI should be an established investigator and capable of providing both administrative and scientific leadership to the development and implementation of the proposed program.

• The PD/PI will be responsible for the selection and appointment of trainees to the approved research training program, and for the overall direction, management, administration, and evaluation of the program.

• The PD/PI will be expected to monitor and assess the program and submit all documents and reports as required.
MARC Mentors (upload biosketches under Participating Faculty Biosketches):

- Strong records as researchers in the area of the proposed research training program
- Strong record of mentoring students in research and career planning
- Researchers from diverse backgrounds, including racial and ethnic minorities, persons with disabilities, and women are encouraged to participate as mentors
- May be members of faculty at the applicant institution or external faculty who participate in the proposed program
ELIGIBILITY (continued)

MARC Trainees:

• Full-time honors students from UR groups at the applicant institution in science majors relevant to biomedicine.

• Full-time effort is 40 hours per week or as specified by the sponsoring institution in accordance with its own policies. 12-month appointments during the final two years of undergraduate training, typically called the junior and senior years. On an annual basis, trainee appointments for less than 12 months require prior written approval by NIGMS.

• Must be a citizen or a noncitizen national of the United States or have been lawfully admitted for permanent residence at the time of appointment.
TRAINING PROGRAM: Program Plan (25 page limit)

Include information on:

• Background
• Program Administration
• Program Faculty
• Proposed Training
• Training Program Evaluation
• Trainee Candidates
• Institutional Environment and Commitment to the Program
• Recruitment Plan to Enhance Diversity
PROGRAM PLAN

Background

• Describe the need for the proposed academic and research training program as well as the feasibility of success in the context of the institutional setting

• Include the information on enrollment of underrepresented students as well as the unique environment and strengths of the institution. Institution type according to the Carnegie Basic Classification system and describe their distinctive educational research environment.

• Complete the institutional self-assessment to include:
  - Baseline data regarding the student population
  - Graduation rates (subsequent completion of Ph.D. or combined M.D.-Ph.D. degrees for all students and for underrepresented student)
  - Relevant science programs
  - Use NIGMS suggested Tables A-C to provide the data to support the institutional self-assessment narrative

• Include the design of the MARC U-STAR program by showing the institutional baseline data as a starting metric, applicants should state the MARC U-STAR Program goals with respect to graduation rates, matriculation into biomedical Ph.D. graduate programs, and earned higher degrees, particularly doctoral degrees
PROGRAM PLAN (continued)

Program Administration:

• Describe the acknowledged strengths, leadership and administrative skills, training experience, scientific expertise, and active research of the PD/PI

• Describe the planned strategy and administrative structure to be used to oversee and monitor the program. If there are multiple PDs/PIs, then the plan for Program Administration is expected to synergize with the “Multiple PD/PI Leadership Plan” section of the application

• Applicants must also describe the administrative structure and leadership succession plan for critical positions (e.g. PD/PI) in the administrative structure

• If a program coordinator or administrator position is planned, a description of the person's administrative capabilities

Program faculty:

• Include information about the program faculty who will be available to serve as mentors to MARC trainees

• Provide information on their experience in research and training
PROGRAM PLAN (continued)

Proposed training:

Programmatic activities should include authentic research experiences, academic enhancements, skills development, and mentoring.

• Research Training
• Academic Enrichment and Skills Development
• Mentoring and advising activities
PROGRAM PLAN (continued)

Program evaluation plan:

- Plan for self assessment of the stated goals in context of the baseline data
- Plan to measure outcome metrics
- Plan to obtain feedback on program from current and former trainees

The measurable goals and specific objectives are set by the applicant institution

Trainee candidates:

- Include student selection criteria
- Description of the size and qualifications of the potential pool of trainees
- Specific plans for selecting the trainees
Institutional Environment and Commitment to the Program

• Explain what distinguishes the proposed MARC U-STAR program from the related programs at your institute and how the programs will synergize with one another

• Include a statement from the applicant institution describing the commitment to the planned program. The institution must confirm that sufficient time will be allowed for the PD(s)/PI(s), other faculty, staff and participating students to contribute to the proposed program

• A signed letter, on institutional letterhead, that describes the applicant institution’s commitment to the planned program is required
Recruitment Plan to Enhance Diversity

• Describe steps to be taken during the proposed award period regarding the identification and recruitment of research-oriented honors students from UR groups.

• Describe the specific efforts to be undertaken by the training program and how these might relate to the recruitment efforts of the institution.
Advisory Committee Plan (Upload under Other Attachments)

• A plan must be provided for the appointment of an Advisory Committee to monitor program and trainee progress. Composition, member expertise, responsibilities, frequency of meetings, and other relevant information should be included.

• Describe how the Advisory Committee will function in providing oversight of the development, implementation, and evaluation of recruitment strategies, the recruitment and retention of participants, and the evaluation of the overall effectiveness of the program.
Plan for Instruction in the Responsible conduct of Research
(Upload under Responsible Conduct of Research)

• Describe in detail the plans for teaching responsible conduct of research (RCR)

• The instruction in RCR is mandatory for all trainees

Please refer to NIH policy
<table>
<thead>
<tr>
<th>Table</th>
<th>Title of Table</th>
<th>New Applications</th>
<th>Renewals</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Current Institutional Setting</td>
<td>Yes</td>
<td>Yes</td>
<td>Suggested format, include data in Program Plan</td>
</tr>
<tr>
<td>B</td>
<td>Institutional Biomedical Ph.D. Completion Data</td>
<td>Yes</td>
<td>Yes</td>
<td>Suggested format, include data in Program Plan</td>
</tr>
<tr>
<td>C</td>
<td>Current Science Diversity-Focused Student Programs</td>
<td>Yes</td>
<td>Yes</td>
<td>Suggested format, include data in Program Plan</td>
</tr>
<tr>
<td>D1-D3</td>
<td>Past MARC Trainee Record (D1: 5 years, D2: 10 years, and D3: 15 years)</td>
<td>N/A*</td>
<td>Yes</td>
<td>Suggested format, include data in Progress Report</td>
</tr>
<tr>
<td>E</td>
<td>Institutional and MARC U-STAR underrepresented Ph.D. Rates</td>
<td>N/A*</td>
<td>Yes</td>
<td>Suggested format, include data in Progress Report</td>
</tr>
<tr>
<td>2</td>
<td>Participating Faculty Members</td>
<td>Yes</td>
<td>Yes</td>
<td>Required, upload in Data Tables Section</td>
</tr>
<tr>
<td>4</td>
<td>Research Support of Participating Faculty Members</td>
<td>Yes</td>
<td>Yes</td>
<td>Required, upload in Data Tables Section</td>
</tr>
<tr>
<td>8D</td>
<td>Program Outcomes: Undergraduate (up to 15 years)</td>
<td>N/A*</td>
<td>Yes, Part I</td>
<td>Required, upload in Data Tables Section</td>
</tr>
</tbody>
</table>

* Not Applicable

Tables 3 and 5C are not required for MARC U-STAR applications.
Table A: Current Institutional Setting

- Allows reviewers to assess the current student population which includes total number of students and percentage of UR students in proposed MARC departments and their graduation rates.

- Summarize and include the analysis in the Background section.

- Include the data for Table A in the Background Section of the Program Plan. (Do not upload under Data Tables).
**Table A: Current Institutional Setting (Sample)**

<table>
<thead>
<tr>
<th>Institution Name: XXX University</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Carnegie Classification:</strong> Research Intensive</td>
</tr>
<tr>
<td><strong>Most recent full academic year:</strong> 2016</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name the Proposed MARC Departments†</th>
<th>Biology</th>
<th>Chemistry</th>
<th>Chemical engineering</th>
<th>Psychology</th>
<th>Subtotal (#)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current number UR‡ students in proposed MARC departments¥</td>
<td>120</td>
<td>110</td>
<td>90</td>
<td>60</td>
<td>380</td>
</tr>
<tr>
<td>Current number of honors§ UR‡ students in proposed MARC departments</td>
<td>80</td>
<td>70</td>
<td>50</td>
<td>30</td>
<td>230</td>
</tr>
<tr>
<td>Total number of students in proposed MARC departments</td>
<td>1000</td>
<td>Percentage UR‡ students in proposed MARC departments</td>
<td>38%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student graduation rate in proposed MARC departments††</td>
<td>80%</td>
<td>UR‡ students graduation rate in proposed MARC departments††</td>
<td>50%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* The most recent full academic year with reliable data; all data on Table A pertains to that year
† MARC departments should prepare students to be competitive for entering a Ph.D. in a biomedically relevant area, e.g., biology, chemistry, physics, math, certain engineering fields, etc.
‡ UR, underrepresented, as defined by the NIH
§ Honors, as defined by the applicant institution
¥ Non-UR, students who are not from underrepresented Groups
†† If unable to identify institutional graduation rates for the science fields, overall graduate rate data may be provided through NCES or the Chronicle of Higher Education.
Table B. Institutional Biomedical Ph.D. Completion Data

- Allows the reviewers to assess total number of UR students who entered or completed B.S./B.A. in biomedically-related science fields in comparison to total number of students entered or completed B.S./B.A for the past 5 years.

- Summarize and include the analysis in the Background section.

- Include the data for Table B in the Background Section of the Program Plan. (Do not upload under Data Tables).
Table B: Institutional Biomedical Ph.D. Completion Data (Sample)

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Year 1 2013</th>
<th>Year 2 2014</th>
<th>Year 3 2015</th>
<th>Year 4 2016</th>
<th>Year 5 (Current*) 2017</th>
<th>Ph.D. Baseline Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of UR‡ students earning B.S./B.A. in biomedical science fields</td>
<td>250</td>
<td>280</td>
<td>300</td>
<td>350</td>
<td>380</td>
<td></td>
</tr>
<tr>
<td>Number UR‡ B.S./B.A. alumni COMPLETED Ph.D. programs†</td>
<td>15</td>
<td>12</td>
<td>19</td>
<td>20</td>
<td>25</td>
<td>6-7%</td>
</tr>
<tr>
<td>Total number of students earning B.S./B.A. in biomedical science fields</td>
<td>750</td>
<td>760</td>
<td>780</td>
<td>800</td>
<td>1000</td>
<td></td>
</tr>
<tr>
<td>Total number of B.S./B.A. alumni COMPLETED Ph.D. programs†</td>
<td>150</td>
<td>160</td>
<td>200</td>
<td>250</td>
<td>280</td>
<td>28%</td>
</tr>
</tbody>
</table>

* The most recent full academic year
†UR, underrepresented, as defined by the NIH
‡ includes Ph.D. as well as M.D./Ph.D programs in areas such as biology, chemistry, physics, math, and certain biomedical engineering fields. Data are available through WebCasper and the National Student Clearinghouse databases. Additional information may be obtained from records kept at the applicant institution through resources such as the Office of the Registrar, Office of Institutional Planning and/or Research, Alumni Office, Office of Institutional Development, Office of Sponsored Programs, etc.
Table C: Current Science Diversity-Focused Student Programs

- Allows the reviewers to assess the existing Diversity-focused program(s) directed towards increasing the number of UR individuals in science fields at the institution.
- Summarize and include the analysis in the Background section.
- Include the date for Table C in the Background Section of the Program Plan. (Do not upload under Data Tables).
Table C: Current* Science Diversity-Focused‡ Student Programs (Sample)

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Program 1</th>
<th>Program 2</th>
<th>Program 3</th>
<th>Program 4</th>
<th>Program 5</th>
<th>Program 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>STEM Diversity‡ Program Name</td>
<td>Dow STEM Scholars Program</td>
<td>IMSD</td>
<td>RISE</td>
<td>PREP</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Program Duration (in years) since inception</td>
<td>20</td>
<td>15</td>
<td>10</td>
<td>9</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Funding Source (Entity)</td>
<td>MSU</td>
<td>NIH</td>
<td>NIH</td>
<td>NIH</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Participant Number</td>
<td>240</td>
<td>10</td>
<td>20</td>
<td>12</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Student Population Targeted (academic level)</td>
<td>High school to Undergrad</td>
<td>Undergrad</td>
<td>Ph.D.</td>
<td>Undergrad</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

*The most recent full academic year; all data on Table C pertains to that year
‡Diversity-focused program directed towards increasing the number of underrepresented individuals in science fields
Tables D1- D3: Past MARC Trainee Period - Renewals

• Allows the reviewers to assess the effectiveness of the supported training program in achieving the training objectives of the prior award period(s) for 5, 10, or 15 years as applicable.

• Summarize and include the analysis in the Program Evaluation Section.

• Include the data for the table (D1: 5 years, D2: 10 years, or D3: 15 years) in the Progress Report section.
### Table D.1: 5 Year Past MARC Trainee Record (Sample)

<table>
<thead>
<tr>
<th>Row</th>
<th>ITEM</th>
<th>Year 1 2013</th>
<th>Year 2 2014</th>
<th>Year 3 2015</th>
<th>Year 4 2016</th>
<th>Year 5 (Current*) 2017</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Number of MARC slots awarded:</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>18</td>
</tr>
<tr>
<td>2</td>
<td>Number of MARC slots appointed:</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>18</td>
</tr>
<tr>
<td>3</td>
<td>Number of Junior level trainees appointed:</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>4</td>
<td>Number of Senior level trainees appointed:</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>5</td>
<td>Number of trainees who left MARC program without graduating:</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Number of trainees who graduated with B.S. or B.A.:</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>Number of MARC alumni enrolled in Ph.D. or M.D./Ph.D. programs:</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>8</td>
<td>Number of MARC alumni completed Ph.D. or M.D./Ph.D. programs:</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>9</td>
<td>Number of MARC alumni enrolled in/completed M.D. programs:</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10</td>
<td>Number of MARC alumni enrolled in/completed M.S. programs:</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>Number of MARC alumni enrolled in/completed post-bac programs:</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>12</td>
<td>Number of MARC alumni enrolled in/completed other higher degree program†:</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

*The most recent full academic year
†includes D.O. and clinical doctorate programs such as Pharm.D., D.D.S., D.M.D., D.V.M.
Table E. Institutional and MARC U-STAR Underrepresented Ph.D. Rates - Renewals

- Allows the reviewers to assess the effectiveness of the supported training program in achieving the training objectives of MARC U-STAR award for prior award of 5 years as applicable.
- Summarize and include the analysis in the Program Evaluation Section.
- Include the data for Table E in the Progress Report section of the application.
### Table E. Institutional and MARC U-STAR Underrepresented Ph.D. Rates (Sample)

<table>
<thead>
<tr>
<th>Row</th>
<th>ITEM</th>
<th>Subtotal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MARC U-STAR Ph.D. Numbers</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Total Number MARC Individuals Appointed in the last 5 years*</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td>Total Number MARC alumni who ENTERED biomedically-related† Ph.D. programs‡ in the last 5 years</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>Total Number MARC alumni who are ENROLLED in or COMPLETED biomedically-related† Ph.D. programs‡ in the last 5 years</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>Percentage of MARC alumni who are ENROLLED in or COMPLETED biomedically-related† Ph.D. programs‡ in the last 5 years</td>
<td>20%</td>
</tr>
<tr>
<td><strong>Institutional UR‡ Ph.D. Numbers</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Total Number UR‡ B.S./B.A. alumni in biomedically-related† fields in the last 5 years</td>
<td>200</td>
</tr>
<tr>
<td>6</td>
<td>Total Number UR‡ B.S./B.A. alumni who ENTERED biomedically-related† Ph.D. programs in the last 5 years</td>
<td>40</td>
</tr>
<tr>
<td>7</td>
<td>Number UR‡ B.S./B.A. alumni who ENROLLED in or COMPLETED biomedically-related† Ph.D. programs‡ in the last 5 years</td>
<td>4</td>
</tr>
<tr>
<td>8</td>
<td>Percentage of UR‡ B.S./B.A. alumni who ENROLLED in or COMPLETED biomedically-related† Ph.D. programs‡ in the last 5 years</td>
<td>10%</td>
</tr>
</tbody>
</table>

* Provide numbers for individuals over the past 5 years
† biomedically-related areas include, biology, chemistry, physics, math, certain engineering fields, etc.
‡ UR, underrepresented, as defined by the NIH
§ includes Ph.D. as well as M.D./Ph.D programs
Table 2. Participating Faculty Members

• Allows reviewers to assess the distribution of participating faculty by rank, research interests, and department or interdepartmental program. Faculty mentoring records permit an evaluation of the experience of participating faculty in facilitating the progression of trainees.

• Summarize and analyze these data in the Background section and the program faculty section of the program plan. **Upload the Table 2 under Data Tables.**
Table 2. Participating Faculty Members (Sample)

<table>
<thead>
<tr>
<th>Name</th>
<th>Degree(s)</th>
<th>Rank</th>
<th>Primary Department or Program</th>
<th>Research Interest</th>
<th>Training Role</th>
<th>Undergraduates In Training</th>
<th>Undergraduates Graduated</th>
<th>Undergraduates Continued in Research or Related Careers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abrams-Johnson, Jane</td>
<td>PhD</td>
<td>Asst. Prof.</td>
<td>Pharmacology</td>
<td>Regulation of Synthesis of Biogenic Amines</td>
<td>Preceptor</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Jones, Lisa S.</td>
<td>PhD</td>
<td>Res. Asst. Prof.</td>
<td>Biochemistry</td>
<td>Protein Structure, Folding, and Immunogenicity</td>
<td>Preceptor</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Sandoz, Miguel J.</td>
<td>MD, PhD</td>
<td>Assoc. Prof.</td>
<td>Neuroscience</td>
<td>Developmental Genetics in Drosophila</td>
<td>Preceptor</td>
<td>4</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Thomas, James C.</td>
<td>PhD</td>
<td>Prof.</td>
<td>Biochemistry</td>
<td>Molecular and Genetic Analysis of RNA Viruses</td>
<td>PD/PI</td>
<td>7</td>
<td>10</td>
<td>9</td>
</tr>
</tbody>
</table>

Mentoring Information for the last 10 years
Table 4. Research Support of Participating Faculty Members

- Provides evidence of the strength of the research environment, the availability of funds to support research conducted by the trainees, and the appropriateness of the participating faculty in terms of their active research support.

- Analyze and summarize these data in the Program Plan.

- Upload Table 4 under Data Tables.
### Table 4. Research Support of Participating Faculty Members

<table>
<thead>
<tr>
<th>Faculty Member</th>
<th>Funding Source</th>
<th>Grant Number</th>
<th>Role on Project</th>
<th>Grant Title</th>
<th>Project Period</th>
<th>Current Year Direct Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jones, Janine L.</td>
<td>NIH</td>
<td>1 R01 GM76259-01</td>
<td>PD/PI</td>
<td>Structure and Function of Acetylcholine Receptors</td>
<td>06/2014–05/2018</td>
<td>$190,000</td>
</tr>
<tr>
<td>Jones, Janine L.</td>
<td>NIH</td>
<td>5 K08 AI00091-03</td>
<td>PD/PI</td>
<td>Purification &amp; Identification of Receptors</td>
<td>11/2012-11/2017</td>
<td>$140,000</td>
</tr>
<tr>
<td>Ehlers, Roger G.</td>
<td>Univ</td>
<td></td>
<td>PD/PI</td>
<td>University start-up funds</td>
<td>08/2014-07/2017</td>
<td>$350,000</td>
</tr>
<tr>
<td>Mack, Thomas R.</td>
<td>Fdn</td>
<td></td>
<td>PD/PI</td>
<td>Control of Angiogenesis</td>
<td>03/2011-02/2015</td>
<td>$185,000</td>
</tr>
<tr>
<td>Mack, Thomas R.</td>
<td>NSF</td>
<td>PCM 80-12935</td>
<td>PD/PI</td>
<td>Cell Culture Center</td>
<td>12/2012-11/2015</td>
<td>$180,000</td>
</tr>
<tr>
<td>Mack, Thomas R.</td>
<td>NIH</td>
<td>1 P01 HL71802-05</td>
<td>Project PI</td>
<td>Subproject 4: Oncogenic Kit Receptor Signaling in vivo</td>
<td>10/2011-09/2015</td>
<td>$165,000</td>
</tr>
<tr>
<td>Smith, James P.</td>
<td>None</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zachary, Andrew</td>
<td>NIH</td>
<td>1 U01 AI28507-01</td>
<td>PD/PI</td>
<td>Human Monoclonal Antibodies as a Therapy for Staphylococcal Enterotoxin</td>
<td>07/2013-06/2018</td>
<td>$200,000</td>
</tr>
<tr>
<td>Average Grant Support per Participating Faculty Member</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$282,000</td>
</tr>
</tbody>
</table>
Table 8D. Program outcomes: Undergraduate – Renewals (Part I)

• For new applications, Table 8D is not required.

• For renewal applications, this table provides information about the use of undergraduate training positions (e.g., distribution by faculty member, year in program, years of support per undergraduate student). The data also permits an evaluation of the effectiveness of the supported training program in achieving the training objectives of the prior award period(s) for up to 15 years. Summarize the data in the Program Plan Section or the Progress Report Section, as appropriate.

• **Upload Table 8D under Data Tables.**
Table 8D. Program outcomes: Undergraduate (Sample)

Part I. Those Appointed to the Training Grant (up to 15 years as applicable)

<table>
<thead>
<tr>
<th>Undergraduate Student Participant</th>
<th>Faculty Member</th>
<th>Start Date</th>
<th>Summary of Support During Training</th>
<th>Degree(s) Received and Year(s)</th>
<th>Topic of Research Project</th>
<th>Initial Position Department Institution Activity</th>
<th>Current Position Department Institution Activity</th>
<th>Subsequent Grant(s)/Role/Year Awarded</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Smith, Jerry</td>
<td></td>
<td>TY 4: GM T34</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>TY 4: GM T34</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phelps, Ryan</td>
<td>Vasquez, Richard</td>
<td>09/1999</td>
<td>TY 3: GML T34</td>
<td>BS 2001 MS 2004</td>
<td>Viral infections</td>
<td>Grad Student/Dept. of Microbiology/Temple University</td>
<td>Laboratory Manager Pfizer Research-Related</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>TY 4: GM T34</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 8D. Program outcomes: Undergraduate (Sample) (cont.)

Part I. Those Appointed to the Training Grant

<table>
<thead>
<tr>
<th>Undergraduate Student Participant</th>
<th>Faculty Member</th>
<th>Start Date</th>
<th>Summary of Support During Training</th>
<th>Degree(s) Received and Year(s)</th>
<th>Topic of Research Project</th>
<th>Initial Position Department Institution Activity</th>
<th>Current Position Department Institution Activity</th>
<th>Subsequent Grant(s)/Role/Year Awarded</th>
</tr>
</thead>
</table>
| Miller, Fred                      | Harper, Bruce & Smith, Jerry | 09/2011    | TY 3: GM T34  
TY 4: GM T34 | BS, 2013          | Effect of manganese catalysts on fluorination reactions | 3rd Yr Graduate Student, Dept Biochemistry Emory University |                      |                     |
| Smith, Pamela                     | Sanchez, Augusto | 09/2012    | TY2: GM R25  
TY 3: GM T34  
TY 4: GM T34 | BS, 2014          | Role of unsaturated lipids in pore formation in mitochondrial membranes | 1st Yr Grad Student, Dept of Genetics, UC San Francisco |                      |                     |
| Estrada, Alberto                  | Vasquez, Esther   | 09/2014    | TY 3: GM T34  
TY 4: GM T34 | BS expected 2016 | Epigenetic effects on aging | |                      |                     |
Appendix Policy


DO NOT INCLUDE ANY MATERIALS UNDER APPENDIX
There are several options available to submit your application

- Use the NIH ASSIST system to prepare, submit and track your application online.

- Use an institutional system-to-system (S2S) solution to prepare and submit your application to Grants.gov and eRA Commons to track your application. Check with your institutional officials regarding availability.

- Go to Grants.gov to download an application package to complete the application forms offline or create a Workspace to complete the forms online; submit your application to Grants.gov; and track your application in eRA Commons.

Learn more about the various submission options.
Application Instructions

Please review the instructions at this website on how to fill the application forms

Important dates

• **Application Due date(s):** May 24, 2017; May 24, 2018 by 5:00 PM local time of applicant organization

• Plan to submit early to allow adequate time to make any corrections to errors found in the application during the submission process by the due date

• **Peer Review:** October - November 2017, 2018

• **Advisory Council Review:** January 2018, 2019

• **Earliest Start Date:** June 1, 2018
PEER REVIEW
Peer Review

All from FOA Section V under Application Review Information

Scored Criteria:
• Training Program and Environment
• Training Program Director(s)/ PI(s)
• Mentors
• Trainees
• Training Record

Additional Review Criteria:
• Resubmissions (responses to previous reviews/changes)
• Renewals (progress from last 5, 10, or 15 years as applicable)

Additional Review Considerations: Acceptable/Unacceptable
• Recruitment Plan to Enhance Diversity
• Training in the Responsible Conduct of Research
Tips about Format

Page Limits
- Supply all requested materials within page limits
- Do not “overstuff” sections that don’t have page limits or use appendices to get around the limits

Appendices
  - Still allowed:
    - Blank informed consent/assent forms
    - Blank surveys, questionnaires, data collection instruments
    - FOA-specified items
Application Preparation Tips

Content

• Read the program announcement and ensure that your application contains the necessary elements
• Successful submission through Grants.gov and eRA Commons does not mean appropriate responsiveness to the program announcement

Context

• Present the institutional framework and environment of your program
• Be realistic in your program’s goals
Application Preparation Tips (cont.)

Comprehensive

• Address all of the requirements of the program announcement
  – For example:
    • If you don’t have institutional baseline data, explain how you plan to obtain it
    • If you haven’t fully formed your evaluation plan, at least acknowledge that you are working on it

• Describe how your program “works”
  – For example:
    • How are students recruited and selected? By whom?
    • What does the advisory committee do? How often do they meet?
    • How have you used evaluation information in designing/improving your program?
Application Preparation Tips (cont.)

Clear

• Don’t bury important information

• Don’t expect reviewers to “read between the lines” to figure out what you are proposing

• Present outcomes data in a straightforward manner:
  – Don’t exaggerate
  – Don’t hide data (reviewers will “do the math”)
  – It is far better to present results as they are and address how the program aims to improve
Application Preparation Tips (cont.)

Current
• Make sure faculty biosketches are up-to-date, in correct format, and relevant for training program
• Provide data on current and prior students
• Use the most recent institutional data

Consistent
• Data in tables and text should match
• Data should be consistent across tables
• Match justification to budget items
• Refer to the correct program in text and tables
# Review Process: Usual Timeline

<table>
<thead>
<tr>
<th>Timeframe</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>(From submission date)</td>
<td></td>
</tr>
<tr>
<td>1 - 2 months</td>
<td>Referral</td>
</tr>
<tr>
<td>2 - 6 months</td>
<td>Review Panel</td>
</tr>
<tr>
<td>6 - 7 months</td>
<td>Summary Statement Available</td>
</tr>
<tr>
<td>7 - 8 months</td>
<td>Advisory Council</td>
</tr>
<tr>
<td>8 - 9 months</td>
<td>Funding Decisions</td>
</tr>
<tr>
<td>9 - 10 months</td>
<td>Award Start Date</td>
</tr>
</tbody>
</table>
BUDGET
MARC U-STAR: Allowable costs

• **STIPEND:** $12,336/yr. for students in junior/senior year.

• **TUITION AND FEES:** Equal to 60% of the level requested by the applicant institution, up to $16,000 per year, will be provided. [http://grants.nih.gov/grants/guide/notice-files/NOT-OD-16-062.html#](http://grants.nih.gov/grants/guide/notice-files/NOT-OD-16-062.html#)

• **SUMMER RESEARCH EXPERIENCE:** NIGMS provides funds for the summer research training experience for up to 50% of the appointed number of MARC U-STAR trainees at the time a competing award is made. Applicants should not factor in these summer research experience costs into their budgets since NIGMS will automatically calculate the amount.

• **TRAVEL:** Trainee/faculty travel including attendance at scientific meetings.
MARC U-STAR: Allowable costs (continued)

• TRAINING RELATED EXPENSES: A maximum cap of $350,000/year for the TRE portion of a proposed MARC U-STAR budget. PD/PI/Co-I support: 3.0 person months/yr. or 25% on a 12-month basis (total)
  - Program Coordinator: 6.0 person months (i.e., 50% on a 12-month basis) depending on the size and scope of the program.
  - Seminar speakers; equipment and research supplies for a research classroom course(s), if proposed; program website design and maintenance; faculty/staff travel directly related to the program; faculty training in pedagogical skills development; student academic skills development workshops (e.g., problem-solving, critical thinking, effective communication and time management).
  - PROGRAM EVALUATION: $3,000/ 5 year grant period

• FACILITIES AND ADMINISTRATION COSTS: Indirect costs are reimbursed at 8% of modified total direct costs (exclusive of tuition and fees, consortium costs in excess of $25,000, and expenditures for equipment), rather than on the basis of a negotiated rate agreement.
Training Related Expenses (TRE)

New Applications (Type 1)

- Research Intensive Institutions
  - Up to $16,800 per trainee/year

- Non-Research Intensive Institutions
  - Up to $25,200 per trainee/year
Training Related Expenses (TRE)

Competing Renewal Applications (Type 2)

• Research Intensive Institutions
  ○ Up to $8,400 per trainee/year

• Non-Research Intensive Institutions
  ○ Up to $12,600 per trainee/year
Responsibilities

• MARC T34 Training Grants are required to submit an NIH Federal Financial Report (FFR) annually
• Delinquent FFRs will delay the funding of the next non-competing grant award
• Carry over of unobligated balances from one budget year to the next is unallowable
• Trainees appointed for a consecutive 24 month period no later than September 30 of each year
X-Train for Student Appointments

• All MARC T34 trainees must have an appointment form submitted through the eRA Commons to X-Train before they may receive their stipend

• If trainees cannot continue in the grant program for the full appointment period an amended appointment must be submitted to X-Train with the correct appointment period

xTrain Web Page - application guide, quick reference sheets, FAQs, training materials:
https://era.nih.gov/services_for_applicants/other/xTrain.cfm
Final Research Performance Progress Reports (Final RPPR)

- Effective January 1, 2017 the new F-RPPR will replace the Final Progress Report (FRP) for closeout of all project periods of a grant award.
- At the end of the fifth year of all MARC T34 grants the grantee must submit through the eRA Commons the F-RPPR.
- This F-RPPR must be submitted no later than 120 calendar days from the period of performance end date for the grant award.
Links to F-RPPR announcements


Overview

• MARC U-STAR FOA: https://grants.nih.gov/grants/guide/pa-files/PAR-17-068.html


• FAQs about MARC U-STAR FOA: https://www.nigms.nih.gov/Training/MARC/Pages/FAQs.aspx
Overview, cont.

- Biosketch Requirements:

- Biosketch FAQs:

- New Biosketch Formats:
Questions

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