NSF REU

Summer Research in
Biochemistry, Biophysics, and Biodesign (B³)

Departments of Chemistry & Biochemistry,
Biology, Physics, Biomedical Engineering
and Chemical Engineering,
at the City College of New York
2016 National Science Foundation Research Experience for Undergraduates Program in Biochemistry, Biophysics, and Biodesign (B³)

The City College of New York (CCNY) seeks highly motivated applicants for an NSF-funded Research Experience for Undergraduates program in Biochemistry, Biophysics, and Biodesign (B³-REU). The program in Biochemistry, Biophysics and Biodesign (B³) is a research initiative at CCNY comprised of members of the Departments of Chemistry & Biochemistry, Biology, Physics, Biomedical Engineering and Chemical Engineering.

The goal of the program is to provide an intensive faculty-mentored research experience for participants over a 10-week period during the summer. Experiences at the laboratory bench or in front of a computer will be supplemented with activities to promote interactions between students, peers, senior colleagues, faculty mentors, and expose students to science outside the laboratory.

Participants in the B³-REU will be asked to indicate a preference for joining up to three of the research groups listed below. Participants will have completed their second year (or equivalent) at CCNY or a CUNY Community College, have a strong academic record, and a motivation to do research. Prior supervised research experience is not required. Participants must be US citizens or permanent residents. Applications from students who are members of under-represented groups or from economically under-resourced backgrounds are especially welcome. Students may only accept one award during their undergraduate career.

The 10 week program will run from June 6, 2016 to August 12, 2016 and provide a weekly $525 stipend. Selected fellows will also be given monthly MTA passes for travel to City College. For students who experience long commute times to CCNY, support is available for accommodation in the CCNY Towers dormitory.

The members of the B³ initiative and their respective research interests are:

<table>
<thead>
<tr>
<th>Faculty Name</th>
<th>Department</th>
<th>Research Focus Areas</th>
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<tbody>
<tr>
<td>Debra Auguste</td>
<td>Biomed. Engineering</td>
<td>Targeted drug delivery, breast cancer, tissue engineering</td>
</tr>
<tr>
<td>Zimei Bu</td>
<td>Chemistry/Biochem</td>
<td>Molecular machines and switches.</td>
</tr>
<tr>
<td>Amadee Des Georges</td>
<td>Chemistry/Biochem</td>
<td>Protein synthesis, ion channels.</td>
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<tr>
<td>Kevin Gardner</td>
<td>Chemistry/Biochem</td>
<td>Environmentally-switched protein/protein interaction domains</td>
</tr>
<tr>
<td>Ranajeet Ghose</td>
<td>Chemistry/Biochem</td>
<td>Structure, dynamics, and regulation of proteins.</td>
</tr>
<tr>
<td>M. Lane Gilchrist</td>
<td>Chem Engineering</td>
<td>Biomembrane systems for microdevices, 3D biomaterials.</td>
</tr>
<tr>
<td>Paul Gottlieb</td>
<td>Pathobiology</td>
<td>Viral pathogenicity, structure, and assembly.</td>
</tr>
<tr>
<td>Marilyn Gunner</td>
<td>Physics</td>
<td>Transmembrane proton pumping through proteins.</td>
</tr>
<tr>
<td>Anu Janakiraman</td>
<td>Biology</td>
<td>Bacterial cytokinesis, tyrosine kinase signaling.</td>
</tr>
<tr>
<td>David Jeruzalmi</td>
<td>Chemistry/Biochem</td>
<td>DNA replication and repair.</td>
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<tr>
<td>George John</td>
<td>Chemistry/Biochem</td>
<td>Oleogels, antibacterial paints, and oil spill recovery materials.</td>
</tr>
<tr>
<td>Reza Khayat</td>
<td>Chemistry/Biochem</td>
<td>Host-pathogen interactions, cytoskeletal regulation.</td>
</tr>
<tr>
<td>Ronald Koder</td>
<td>Physics</td>
<td>Protein design, bionanotechnology, biomaterials, solar energy.</td>
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<tr>
<td>Themis Lazaridis</td>
<td>Chemistry/Biochem</td>
<td>Recognition of peptides and proteins by membranes.</td>
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<tr>
<td>Kevin Ryan</td>
<td>Chemistry/Biochem</td>
<td>RNA processing, and olfactory molecular recognition.</td>
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<tr>
<td>Ruth Stark</td>
<td>Chemistry/Biochem</td>
<td>Lipid metabolism, plant polymer membranes and fungal melanins.</td>
</tr>
<tr>
<td>Raymond Tu</td>
<td>Chem Engineering</td>
<td>Biosensors, drug delivery vehicles, and molecular electronics.</td>
</tr>
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</table>
How to Apply to the B³-REU Summer Program

Choice of research laboratory:
Prior to applying, applicants may affiliate with a research group. Alternatively, applicants may indicate three preferred research groups from the list above with which they wish to be matched. Applications will be evaluated without consideration of whether the applicant is affiliated with a group.

Eligibility:
Undergraduates who have finished their second year (or equivalent) with a grade point average of at least 3.0, depending on curricular rigor, will be considered eligible to apply to the B³-REU program. The successful applicant will have taken the equivalent of General Chemistry with Lab, Foundations of Biology with Lab, and Organic Chemistry with Lab. The following courses are also recommended: General Physics with Lab, Calculus-based, Quantitative Analysis with Lab, Cell and Molecular Biology with Lab, Thermodynamics.

Required documents:
1) Completed cover sheet (below).
2) Copy of your unofficial transcript, with an official transcript supplied on acceptance
3) Description of career goals and reasons for applying to the B³ NSF-REU program.
4) Provide two letters of recommendation. These should be from prior research experiences or science or mathematics faculty. Recommendation letters are required to use the attached cover sheet and submit their letters on letterhead by email by 5 pm on March 30th, 2016.

If you are affiliated with a research group:
1) Provide a short summary of the proposed work.
2) Provide a letter of support from the research mentor as one of the letters of recommendation.

The application should be typed, single-spaced, 1” margin and employ a 12-point font. Applications should be submitted to djadmin@ccny.cuny.edu (please use the email subject line “Application to the B³ NSF-REU program”) or hand-deliver to Professor David Jeruzalmi’s office in the Center for Discovery and Innovation RM 1316 by 5 pm on April 8th, 2016.

We will do our best to notify successful applicants by April 29th, 2016. Late or incomplete applications or those that do not conform to the guidelines will not be considered. NOTE: It is the applicant's responsibility to obtain the letters of recommendation and ensure that the recommenders submit letters by the deadline.
Application for the B^3-REU Summer Program
Cover Sheet

1) Name:

2) School:

3) Overall GPA:

4) Mentor (if selected):

5) Mentor choice:
   First choice:
   Second choice:
   Third choice:

5) Will you need dormitory space: ☐ Yes ☐ No

6) Estimated travel time to CCNY (indicate bus and subway routes):

7) Description of career goals and reasons for applying to the B^3 NSF-REU program.

8) If you have affiliated with a research group, provide a short summary of the proposed work.
Application for the B³-REU Summer Program
Mentor’s Letter of Recommendation

To be filled out by the applicant:
Applicant Name:
Major:
Mentor:
Complete address, phone and e-mail:
Address:

Phone number:
Email address:

Research area:
I do [ ] do not [ ] waive access to the contents of this letter.

Applicant signature: Date:

To be filled out by recommender:
Name:
Phone number:
E-mail address:
How long have you known the student and in what capacity?
Briefly include your candid assessment regarding the applicant’s (1) research aptitude and motivation (2) understanding of the project (3) degree of effort and (4) independence, particularly if the student is currently in your lab. Where possible, give examples in support of your assessment. Please also indicate current external funding for this project in your lab.

Please evaluate the applicant relative to the other students that you have trained. (please use a scale of 1-10 (1 being the lowest, 10 being the highest))

(1) Research aptitude and motivation:

(2) Understanding of the project:

(3) Degree of effort:

(4) Independence and initiative:

(5) Overall assessment:

Mentor’s signature                        Date

Please submit this letter electronically to djadmin@ccny.cuny.edu by March 30, 2016 (please use the email subject line “STUDENT’S LAST NAME Recommendation to the B³ NSF-REU program”).
Application for the B³-REU Summer Program
Letter of Recommendation

To be filled out by the applicant:
Applicant Name:
Major:
Mentor:
Complete address, phone and e-mail:
Address:

Phone number:
Email address:

Research area:
I do □ do not □ waive access to the contents of this letter.

Applicant signature: Date:

To be filled out by recommender:
Name:
Phone number:
E-mail address:
How long have you known the student and in what capacity?
Briefly include your candid assessment regarding the applicant’s (1) research aptitude and motivation (2) understanding of the project (3) degree of effort and (4) independence, particularly if the student is currently in your lab. Where possible, give examples in support of your assessment. Please also indicate current external funding for this project in your lab.

Please rank this student relative to all other students you taught/mentored/work with

☐ Top 1%
☐ Top 5%
☐ Top 10%
☐ Top 25%

Recommender’s signature ________________________________ Date __________

Please submit this letter electronically to djadmin@ccny.cuny.edu by March 30, 2016 (please use the email subject line “STUDENT’S LAST NAME Recommendation to the B³ NSF-REU program”).