



# BOMINDS

AT UPR

Funded by Amgen Foundation

Biotechnology Mentorship Initiative to Develop Scientists

# *Bio-MINDS* Overview

- The project aims to provide UPR students stipends to allow them to conduct research experiences in the thrust areas of industrial biotechnology, industrial microbiology, bioprocess engineering, bioengineering, bioseparations, biochemistry, and biostatistics to strengthen their undergraduate experiences.
- After its four year duration, the Amgen *Bio-MINDS* Program will have impacted 200 students in their final years of their BS degrees. These 200 students will be prepared on a sound, scientific basis, to assume professional careers or to begin graduate studies in their fields of specialization.



# *Bio-MINDS* Objectives

- Incorporate research experiences within the undergraduate science and engineering curricular activities in order to strengthen our student's exposure to cutting edge technology and a science-based approach to solve problems in the biosciences.
- As a result, critical thinking, ethical behavior, communication skills, and teamwork will be embedded into their research experiences.
- This will result in a professional more competitive to continue graduate school or be part of a highly educated workforce needed to support a knowledge-based economy.

# *Bio-MINDS* Approach

- **200 students will be impacted in a four-year period.**
- **Student eligibility:**
  - Two cohorts of 100 students each will participate in a maximum period of two years.
  - Science and engineering students from their junior year of undergraduate studies.
  - Students in one cohort will renew the second year (their senior year) based on performance.
- **Research:**
  - Research thrust areas: industrial biotechnology, industrial microbiology, bioprocess engineering, bioengineering, bioseparations, biochemistry, and biostatistics.
  - Under the mentorship of a faculty member at the corresponding UPR campus.

# Student's Benefits

- Each student will receive a monthly stipend of \$200 (four months per semester, eight months per academic year).
- Each academic unit can select 20 *Bio-MINDS* students. Out of this population, no more than 8 (40%) can hold other research fellowships.
- *Bio-MINDS* faculty mentors will be assigned \$465 per student per semester to acquire materials and supplies to support the student's project.



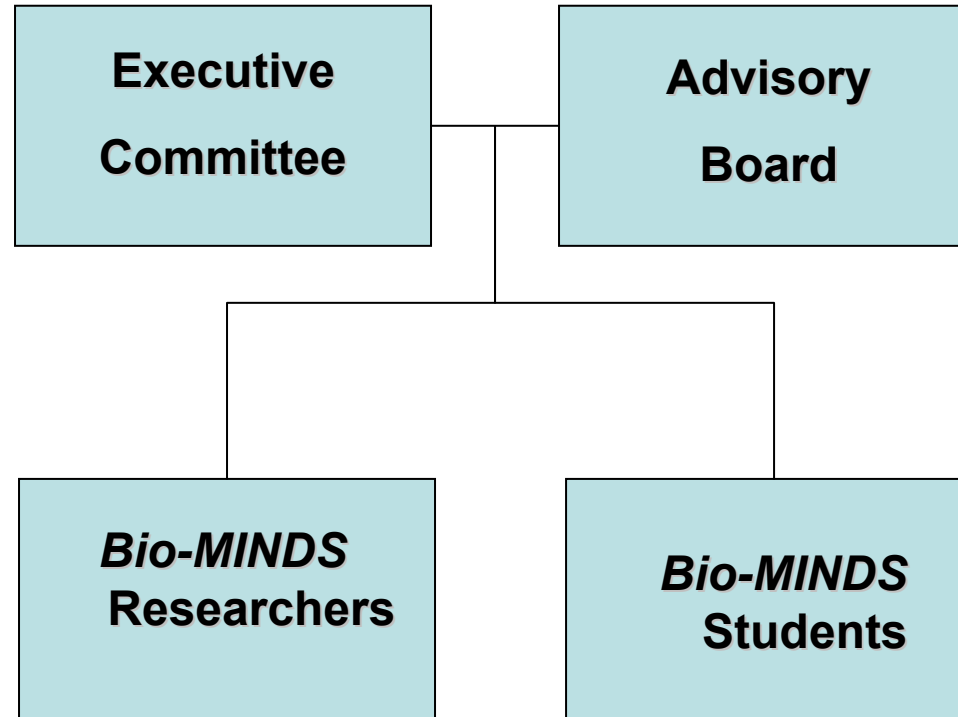
# Student Commitments

- Each student commits to perform a minimum of 6 hours a week in research activities. A monthly attendance form signed by his research mentor must be submitted to receive the monthly stipend.
- Must submit on a bi-weekly basis a briefing on his research experience in the *Bio-MINDS* blog.
- Must keep a minimum overall and major grade point average of 3.00. A grade of D or F in any course will result in the end of the participation in the *Bio-MINDS* Program.
- Must present his research results in the Annual *Bio-MINDS* Meeting.
- Will be periodically evaluated and subject to end of participation in the *Bio-MINDS* Program if performance criteria are not met.

# Matching Funds

- **UPR matching funds for annual selection of best research projects to be presented in national and/or international scientific meetings.**

# *Bio-MINDS* Organization



# *Bio-MINDS* Organization

- **Executive Committee**

- **UPR Vice President of Research,**  
Dr. Emma Fernández
- **Systemic Program Manager,**  
Dr. Rosa Buxeda
- **Assessment Coordinator,**  
Dr. Lorenzo Saliceti
- **Faculty liaisons:**
  - Dr. Doris Ramírez, UPR-Mayagüez
  - Dr. Robert Ross, UPR- Cayey
  - Drs. Héctor Ayala & Tania Malavé,  
UPR- Humacao
  - Dr. Luz Muñiz, UPR- Medical  
Sciences Campus
  - Dr. Carlos I. González, UPR- Río  
Piedras

- **Advisory Board**

- Representatives from industry will meet annually to provide feedback and recommendations



# Advisory Board

- **A *Bio-MINDS* Advisory Board will be established to assess overall program performance. This board will meet annually to discuss program implementation and outcomes. The board will be presided by the UPR Vice-President of Research. Other members include the Program Manager, the Assessment Coordinator, the five liaison faculty members representing each UPR campus unit participating in the project, and a local representative appointed by Amgen. Board recommendations will be incorporated to improve the following year's strategic plan for ongoing project improvement.**

# Dissemination

- ***Bio-MINDS* Annual Meeting**
- **Institutional websites**
- ***Bio-MINDS* blog/web page**
- **Educational and formal research presentations**

# Project Milestones and Timeline

- Announcement of Program – August 07
- Designation of Executive Committee – September 07
- Constitution of Advisory Board – September 07
- Selection of faculty research mentors, Cohort #1 – October 07
- Distribution of student application forms, Cohort #1 – October 07
- Selection of student awardees, Cohort #1 – December 07
- Undergraduate research Cohort #1 – January – May 08, August – Dec 08, Jan 09 – May 09
- *Bio-MINDS* Annual Meeting – September 08, 09, 10, 11
- Funding for external presentations – January 09 – 11
- Assessment – ongoing during the research experience

# Project Milestones and Timeline

- Annual report to Amgen Foundation – June 08-11
- Distribution of student applications Cohort #2 – March 09  
Selection of students Cohort #2 – April 09

# Assessment

1. Weekly electronic entry in a *Bio-MINDS* blog.  
to share their experiences among all participants.
2. Filling assessment form twice in an academic semester to assess:
  - a. Ability to follow scientific methodology.
  - b. Capacity for critical thinking.
  - c. Ability to work in teams.
  - d. Organizational and interpersonal skills.
  - e. Development of technical skills.
  - f. Ability to prepare a scientific report.
  - g. Enthusiasm for the research project.
  - h. Quality of student contribution to the research project.
3. Tracking of *Bio-MINDS* graduates with regard to career paths and how their experience contributed to their career pursuits.
4. End of semester meeting with liasons to assess semester progress.
5. Annual evaluation of poster presentation during the annual meeting.

# Budget Distribution

|                       | 2007-08      | 2008-09      | 2009-10      | 2009-10      |
|-----------------------|--------------|--------------|--------------|--------------|
| <b>Administrative</b> | \$28,585.36  | \$28,585.36  | \$28,585.36  | \$28,585.36  |
| <b>Stipends</b>       | \$80,000.00  | \$160,000.00 | \$160,000.00 | \$160,000.00 |
| <b>Lab Materials</b>  | \$46,500.00  | \$93,000.00  | \$93,000.00  | \$93,000.00  |
| <b>Total</b>          | \$155,085.36 | \$281,585.36 | \$281,585.36 | \$281,585.36 |

# Budget

- Students Funding:
  - 90% of the requested amount is for student funding.
    - Student stipends
      - \$200 monthly stipend during the four months of duration of the academic semester.
      - A \$800 check will be issued to each student by the end of the semester, subject to research mentor confirmation of attendance.
    - Laboratory materials and supplies
      - \$465 to be assigned to the researcher/student/ semester.

# Budget

- UPR has committed \$25,000 per year to promote *Bio-MINDS* participants to present their research work in national and/or international scientific meetings.

# Administration Budget

- 10% of the requested amount for administrative expenses.
- Systemic Program Manager
  - Overview of the *Amgen Bio-MINDS* initiatives at the five UPR campuses.
  - Prepare and implement the dissemination strategy.
  - Coordinate annual *Bio-MINDS* Advisory Board meetings.
  - Visit the five UPR campuses each semester to monitor program development.
  - Coordinate semestral meeting with Advisory Board that includes the unit liassons and representatives from Amgen.
  - Collaboration in student selection.
  - Preparation of annual report.

# Administration Budget

- Assessment Coordinator
  - Establish a student track record.
  - Design and implement instruments that determine impact of the experience by *Bio-MINDS* students and researchers.
  - Collaborate in annual report by providing an assessment component to measure project outcomes.
  - Participate in the Advisory Board meetings.
- Administrative Official
  - Dedicate 10 hours per week to purchase materials, process students stipends.
  - Provide budget reports.

# Administration Budget

- Unit Liasons
  - Tasks:
    - Will facilitate dissemination
    - Student and faculty research mentor selection
    - Collaborate with the assessment coordinator for distribution of assessment instruments.

# Timetable

|               |                                                               |
|---------------|---------------------------------------------------------------|
| October 8     | Promotion and opening of applications.                        |
| October 31    | Application submission deadline.                              |
| November 1-16 | Selection of first cohort of <i>Bio-MINDS</i> participants.   |
| November 19   | Notification to students.                                     |
| December 3    | Submission of material requisitions for research experiences. |

# Items for Approval

- Dissemination form
- Application form
- Assessment forms