Puerto Rico Biomedical Research Education Program

NCRR-SEPA Grant R25-RR017415
What is BREP?

- The Biomedical Research Education Program of Puerto Rico (BREP-PR) is a **federally funded program** sponsored by the National Center for Research Resources (NCRR) at the National Institutes of Health (NIH).

- It was initiated at the University of Puerto Rico, Medical Sciences Campus, on **January 1, 2003**.
Overall Goal

• To develop the interest of Puerto Rican children in biomedical research by making science fun and entertaining
How we achieve our goal?

- Student Enrichment Program
- Student Summer Internship Program
- Professional Development Program
- Community Outreach Program.

These initiatives emphasize diseases such as: diabetes, diseases of the heart, cancer, hypertension, obesity, AIDS, and cerebral vascular diseases, which are the leading causes of death in Puerto Rico and other Hispanic/Latino groups.
Who makes it possible?

Odalis García, Ricardo Loperena and Felipe Padilla

BREP STAFF

Dr, Abe Schwartz, Dra. Emma Fernández and Dr. Tony Beck
PARTNERSHIPS

RCMI Program (Basic and Clinical Research)
UPR Medical Sciences Campus G12-RR03051

School of Visual Arts

Puerto Rico Cancer Center
PRCC/MDACC: “Partners for Excellence in Cancer Research Award NCI U54-CA96297

Puerto Rico Diabetes Center
PARTNERSHIPS

Comprehensive Center of Health Disparities in AIDS
NCRR-U54-RR019507

Puerto Rico Department of Education

Private Schools (Elohim and Montessori Schools)

BORDERS®

INDUNIV

PFIZER Foundation ($40,000)
Student Enrichment Program

Comic Book Series
“BioMed Battle Team”
“BioMed Battle Team”
Adventure Comic Books

- Stories focus on the **adventures** of the “BioMed Battle Team”.

- Stories are based on the **diseases that affect the Puerto Rican population**.

- Each comic book contains a **glossary of scientific terms as well as puzzles and games** that reinforced the scientific content of the comic book.
Students’ Comments:

“I would like to read other adventures of the “BIOMED BATTLE TEAM” because…
...there are very funny and a good way to learn.”
...you learn about diseases.”
...they are interesting and you learn science.”
...they are cool to read and funny”
...they teach about teamwork!
“BioMed Battle Team”
Adventure Comic Books

Characters
Science
Heart Diseases
Diabetes
Coming Soon!!!

HIV-AIDS
Summer Internship Program
What is the Internship Program?

The Summer Internship Program is a fast pace program for middle school students that includes visits, conferences, and hands-on laboratory experiments in the research facilities supported by the Research Centers in Minority Institutions (RCMI) Program at the UPR Medical Sciences Campus. The students also have the opportunity to meet and interact with the investigators and other professionals who are conducting research in biomedical research.
Topics Included

- DNA Extraction
- Thin Layer Chromatography
- Use of the Microscope
- Transgenic Animals
- Forensic Sciences (CSI)
- Laboratory Security
- Scientific Method
- Use of Laboratory Animals in Research (IACUC)
- Clinical Research
- Careers in Biomedical Sciences
Summer Internship 2004
Summer Internship 2005
A Student Response

Letter from Student:

“I would like to thank you for the invitation to participate in the Summer Internship at the Medical Sciences Campus. It has been an unforgettable experience. You are all very special people with a great commitment to your job. Day to day you made sure we learned different and interesting things. This has been a very important experience for me as I have learned about how research is done.

I would love to have the opportunity to attend next year.

Thank you for everything and God bless you.”

Veronica Cordero Jimenez

Escuela Jesus T. Piñero, Cidra
A Teacher Response

Letter from a Teacher:

“Thank you for the opportunity offered to my student. She loved the internship and learned a lot about science. This has motivated her to study microbiology and has sparked her interest in all sciences in general. The internship has been an excellent experience and opportunity for my student.

Once again, thank you for a very special experience.”

Gladynell Letiz Crespo

Escuela Apolo San Antonio, Vega Alta
Summer Internship in the News

Local Newspapers

Television

Awards
Professional Development Program
Program Goals

To develop and sustain activities focused on stimulating biomedical research in the classroom as well as interactions among teachers, students and investigators participating in the program.

To offer training and conferences to educators in order to provide the tools necessary to disseminate effectively biomedical research in the classroom.
Activities

• Training for the use of the BioMed Battle Team Web Site

• Methods for integrating research into the science classroom

• Workshop for the integration of Forensic Science in the classroom

• Access to industry sponsored workshops for science teachers (i.e. Pfizer: Microbes by the Sea)

• Seminar on How to Write a Successful Educational Proposal
Integrating Research into the Science Classroom

How Satisfied are you Having Participated in this Workshop?

- 93% Very Satisfied
- 0% Satisfied
- 0% Neutral
- 0% Unsatisfied
- 7% Very Unsatisfied

93%
Integration of Forensic Science in the Classroom Evaluation

How Satisfied are you Having Participated in this Workshop?

Number of Teachers

100%
How to Write a Successful Educational Proposal Evaluation

Overall Evaluation of the Workshop

Excelent: 25%
Good: 5%
Satisfactory: 5%
Regular: 5%
Unsatisfactory: 5%

90%
“Microbes by the Sea”

BREP science teachers, Ms. Evelyn Díaz Valdés from the Jesús T. Piñeiro School in Cidra and María J. Cruz Ocasio from the S. U. Ramón E. Betances School in Arecibo, were invited to participate in the workshop “Microbes by the Sea” held at the Department of Marine Sciences, University of Connecticut in July, 2005. This international workshop was supported by the Pfizer Foundation.
Community Outreach

- Health Fairs
- Biomedical Education
Biomedical Research Education Program (BREP) of Puerto Rico

Dissemination of BREP Materials

Puerto Rico-BioMedical Research Educational Program supported by NCRR-SEPA Grant R25-RR017415
# General Distribution
## 2003 - 2006

<table>
<thead>
<tr>
<th>Locations</th>
<th>Comic Book Distribution</th>
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<tbody>
<tr>
<td>Health Fairs (2)</td>
<td>1250</td>
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<tr>
<td>Shopping Malls (3)</td>
<td>1000</td>
</tr>
<tr>
<td>Biotech Weeks (2)</td>
<td>250</td>
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<tr>
<td>Pfizer Educational Congress (1)</td>
<td>250</td>
</tr>
<tr>
<td>Technology Incentive Week (1)</td>
<td>750</td>
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<tr>
<td>Science Fairs (3)</td>
<td>250</td>
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<tr>
<td>Science Fair Week</td>
<td>500</td>
</tr>
<tr>
<td>Diabetes Center Exhibits (1)</td>
<td>150</td>
</tr>
<tr>
<td>Cancer Center Exhibits (1)</td>
<td>350</td>
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</tbody>
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Focus Group Evaluations
2003 - 2006

Class Room Presentations
(with written evaluations)

<table>
<thead>
<tr>
<th>Year</th>
<th>Classroom/Teachers</th>
<th>Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>15</td>
<td>420</td>
</tr>
<tr>
<td>2005</td>
<td>28</td>
<td>848</td>
</tr>
<tr>
<td>2006</td>
<td>8</td>
<td>189</td>
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</table>
Future Dissemination

Board of Education
Private School Councils
Educational Alliances

• Corporate Foundations (Pfizer, Abbot, etc.)
• Private Foundations (specific disease related)
• Private Organizations (WHO, Rotary Clubs, Lion)
• Philanthropic Organizations (Gates Foundation)
Future Dissemination Regions

Puerto Rico Education System

Educational Regions: 10
Municipalities: 79
Students: 575,993
Schools: 1,523
Teachers: 43,054
Future Dissemination Regions

Outside Puerto Rico

- English
  - Mainland States in the USA
  - Caribbean Islands (English)
  - Canada
  - Singapore

- Spanish
  - Mainland States in the USA (Florida, Texas, New York, California)
  - Central and South America
  - Caribbean Islands (Spanish)
Additional Materials

• Three new comic books with teacher guides

• Reprinting of previous comic books

• Translation and printing into other languages as demand requires
BREP Program

“Web Page”

http://brep.rcm.upr.edu
The "BioTwins" do research