

IB Team

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The Industrial Biotechnology Program welcomes you to the new year hoping it is full of great challenges and accomplishments.

This edition records many activities that took place at the end of year 2006. Students have participated in short courses, awarded for outstanding participation in poster presentations and have received a private fellowship for undergraduate studies.

IB Alumni share their tremendous experiences with us all, while the IB Pro-

gram continues striving to reach community members like high school students, industrial associates and possible collaborators in Dominican Republic.

We hope you enjoy this issue and continue looking forward to our interesting events.

Sincerely,

Rosa Buxeda, Coordinator

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New Office Location:

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Process Control in Biotechnology Manufacturing offered by Abbott & Amgen



Twenty IB students visited the facilities of Abbott and Amgen as part of the short course **Process Control in Biotechnology Manufacturing of Recombinant Proteins** that took place on October 21st and 28th.

The course, designed by **Manjarres, Santana** and their respective teams, allowed for the discussion and practice of process control and its computer module and site visiting in order to carry out different applications.

The IB Program thanks both companies for collaborating in making a difference in these students curriculum. Process Control was one of the areas identified last year by the Industry Advisory Board as an opportunity to improve.



From left to right: Dr. Lorenzo Saliceti, Dr. Rosa Buxeda, Ismary Colón, Mr. Carlos Rodríguez, Mrs. Coral Parrilla, Kendrick Hernández & UPR-M Chancellor Dr. Jorge I. Vélez Aracho.

IB Freshman students **Kendrick Hernández Crespo** and **Ismary Colón Angueira** are the recipients of the first private fellowship offered to students in the program. **Mr. Carlos Rodríguez** and wife **Coral Parrilla** made the announcement in the ceremony that took place in the Chancellors Office.

The Chancellor, IB Coordinators, Dean of the College of Arts & Sciences, Dean of Students, and IB Faculty & Staff were present, as well as the student's parents.

The students will received the fellowship throughout the five years of study in the program.

Besides the gratitude demonstrated by the students, **Mr. Carlos Rodríguez**, President of VWR Puerto Rico, **expressed his firm belief in the University of Puerto Rico and its students.**



From left to right: Dr. Lorenzo Saliceti, Dr. Rosa Buxeda, Ligia Amada Melo de Cardona & Dr. Bernarda Castillo.

IB Coordinators, **Dr. Rosa Buxeda** and **Dr. Lorenzo Saliceti** were invited to the **First Colloquium in Industrial Biotechnology in Dominican Republic**. The invitation from **Dr. Ligia Amada Melo de Cardona**, Dominican Republic State Secretary for Higher Education in Science and Technology and **Dr. Bernarda Castillo**, Director of the "Instituto de Innovacion en Biotecnologia e Industria", was for a plenary conference during the colloquium, which took place on November 14, 2006.

The opportunity provided the coordinators with the opportunity to meet researchers in the field of biotechnology and to **identify possible areas of collaboration with UPR-M.**



IB Students Gustavo Afanador-González & José Javier Díaz Torres

IB students **Gustavo Afanador** and **José J. Díaz Torres** were honored with awards for research they presented at the Annual Biomedical Research Conference for Minority Students (ABRCMS) in Anaheim, California in November 2006.

ABRCMS is an annual conference organized by the American Society for Microbiology (ASM) and supported by a grant from the National Institute of General Medical Sciences. A total of 120 undergraduates received monetary awards for their outstanding research presentation. **José Javier Díaz** (Molecular Science) and **Gustavo Afanador** (Biochemical Sciences) represented UPR-Mayagüez and were recognized for research on the effects of cyclin-dependent kinase phosphorylation of the origin recognition complex in transcriptional silencing of *Saccharomyces cerevisiae* and for work comparing hemoglobin II, from a clam, with recombinant hemoglobin II from bioengineered bacteria and his findings that both have similar oxygen-binding properties, respectively.



Industrial Biotechnology Learning Center
University of Puerto Rico at Mayagüez

The Industrial Biotechnology Learning Center (IBLC) opened its doors on October 16-18, 2006 to receive 20 employees of Amgen-Juncos in Mayagüez.

Dr. Rosa Buxeda and **Dr. Lorenzo Saliceti** offered the training in **Microbial Fermentation** that allowed for hands on applications in the facilities.

The topics discussed included **Fundamentals of Suspended Microbial Culture and Bioreactor Monitoring I & II.**

In the near future, another training will be offered in the IBLC to former employees of different pharmaceuticals with the **expectation to capacitate the participants in fundamentals in Biotechnology and opportunities of employment in the area.**

HARVARD IB ALUMNI



On February 1, 2007, Fernando Cruz Guilloty, IB Alumni, shared his experiences at Harvard with students of the IB Program and participants of the Marc Program. Fernando was the first recipient of the Barbara McClintock Prize in 2001. We are sure the conference stimulated students interest in applying to summer internships and considering several programs at Harvard as an option for graduate studies.

From Biotechnology to Biomedical Research; a Grad Student's Perspective

The year 2007 will be very special for me, for a number of reasons. The way things are going now, I should be able to defend my doctoral dissertation after 5 tough but life-changing years of grad school at Harvard Medical School. That precious, if anticlimactic, moment will also mark a new beginning for me and I look forward to what the future may bring, even if it is unknown to me. Ten years ago, when I joined the Industrial Biotechnology Program at UPR-Mayaguez, I could not have predicted where life would take me, but it has certainly been a great journey so far, with the many great experiences and the many friends I have gained along the way, and I think the Biotech program has been instrumental in shaping my destiny. Here is a very short story of how I went from being a naïve undergrad to a

less-naïve (but naïve nonetheless, as we all are) Dr. to be, a story I share, with the obligatory differences inherent in individualism, with my fellow Biotech alumni from El Colegio.

I became very interested in genetic engineering during high school, in part because it involved the word "engineering" and growing up I had wanted to be an engineer, not a doctor (a medical doctor, that is). After actually reading about the topic in more detail, I found the world of DNA to be really fascinating. Those were the decisive days of the Human Genome Project and the promise of such a grand endeavor, not only in terms of understanding fundamental aspects of biology but also in the fight against disease, led me to search for a college curriculum that would allow me to start a career in this field of study, namely biomedical research. I did not have to look for long; the interdisciplinary nature of the Biotech program was everything I could hope for, and more.

In short, I can say the following about my time as an undergraduate at Mayagüez. I had great mentors and teachers, people who inspired me to develop a career in research. I was exposed for the first time to bench research and it was amazing to me that I could do science with my own brain and hands. I was actually taking biological concepts out of the textbook and looking at them in a whole different way, not as undeniable facts but as works in progress; there is always something new to learn, about everything. The Biotech program was invaluable in preparing me for my next step, the doctoral program here at Harvard. I would be remiss if I did not say how special it was to receive the Barbara McClintock Medal during graduation. After all my hard work the previous five years, that medal symbolized much more than just another award, it was both an ending and a new beginning.

I had the opportunity to spend 7 months in Boston when I was still a Biotech student. I came for a summer research program and stayed the following semester to fulfill my internship requirement. For the first time in my life, I knew what autumn is really like.

But, on the other hand, to witness the foliage colors of New Hampshire in early October is to see unspeakable beauty. The city itself had a gravitational pull that I could not explain. I felt I could make Boston my home away from home. So I moved here with all my dreams in a bag and I haven't looked back. My PhD program is fairly large, with some 60 grad students coming in each year, and I was able to make some good friends early, in addition to the other Puerto Ricans who were already living in the area. Therefore, the transition to living far away from home was not too difficult for me. I also had little time to dwell on things; I had a full load of work, including classes and lab rotations. In that sense, I was well prepared from my days at El Colegio; I was able to multitask very efficiently while absorbing large amounts of material and to distinguish what topic was more important than the others in relation to my own studies. I did that for the first year and a half, after which I have been devoted full time to my thesis work.

Choosing a thesis advisor was another easy decision for me and I am very confident I made the right choice. The very first time I met Dr. Anjana Rao I knew she was going to be the best advisor to me because, not only were her research interests in perfect tune with my own, she made it clear she respected my ideas and would be willing to do anything necessary to cultivate my growth as a scientist and thinker. I work very long hours in the lab, and there are times when it seems like the work will never end (and it never does) but it is still an amazing feeling when I get an interesting result, even if it will never be published. The environment here at Harvard, while very competitive, is also very unique, having so many brilliant people around to aid in my research in many different ways, from sharing protocols and reagents to just talking about crazy ideas. Thinking about it now, the same thing could be said about the Biotech program. Be sure to discuss all your ideas with your peers, even if they don't make sense to you. That's how we all advance our collective knowledge and that can only be good for everyone.

BIOTECH SUMMER CAMP
UNIVERSITY OF PUERTO RICO AT MAYAGUEZ

26 Municipalities represented in the Third Biotech Summer Camp

The IB Program will be celebrating its Third Biotech Summer Camp from June 4-15, 2007 at the UPR-M Campus. A variety of workshops and activities will be offered to the 11th grade students thanks to the sponsorship of the Amgen Foundation. The participating faculty members are Dr. John Gill, Dr. Rafael Montalvo, Dr. Vivian Navas, Dr. Carlos Ríos-Velázquez, Ms. Gladys Toro, Mrs. Magaly Zapata, Dr. Rosa Buxeda and Dr. Lorenzo Saliceti.

IB Alumni at Berkeley

I am Vimalier Reyes-Ortiz, current Graduate PhD student of the University of California at Berkeley (UCB) and San Francisco (UCSF) jointed Bioengineering Joint Program. After my first semester as a graduate student, I can only thank the Industrial Biotechnology Program of the UPR-M. I am still amazed of how helpful this program has been on my academic preparation towards this new path I am starting.

The combination of biological, chemical, and engineering areas into one curriculum, lets students obtain knowledge on updated scientific research areas, which are also relevant on the worldwide economy. Aware of the economical aspect, the program works hard for the professional success of IB students. Standard operating procedures (SOPs), good manufacturing practices (GMPs), and a mandatory industrial internship, are important tools that put IB students on an advanced position before obtaining a position in a company.

Today I can proudly say that I formed part of one of the best academic programs of the island; what could not be possible without the excellent labor of the IB Coordinators, faculty and staff. They are always looking for the best for their students. They work hard to meet the needs of very competent students, in order to refine them into the reliable human sources for this very competent world.

SHORT COURSE IN ENVIRONMENTAL RESTORATION

The IB Program will sponsor the short course entitled **Advances in Environmental Restoration** organized by the "Instituto Comunitario de Biodiversidad y Cultura" of Casa Pueblo in Adjuntas, Puerto Rico.

The one-credit academic course will take place from April 1-4, 2007 will emphasize molecular tools and data analysis to solve microbiological problems in areas of bioremediation, waste water treatment, and biotechnology.

The participating faculty are Dr. Terry Hazen (Lawrence Berkeley National Lab), Dr. Gary Toranzos (UPR-Río Piedras), Dr. Francisco Fuentes (UPR-Humacao), Dr. Héctor Ayala (UPR-Humacao), Dr. Carlos Rodríguez and Dr. Arturo Massol-Deyá (UPR-Mayagüez).

CURRICULUM REVISION

Dr. Lorenzo Saliceti will be holding group meetings to discuss the new curriculum with students. The meetings will take place on February 27 and March 13 at 10:45 a.m. in Biology 280. In order to transfer to the new curriculum, student must be evaluated.

Among the changes made, an Introductory and Advanced course in Industrial Biotechnology will be offered as well as a seminar in biotechnology and physical chemistry with applications in biotechnology.

IB STUDENT AWARDEE

IB student Juan B. Rodríguez received a travel award from the Minority Affairs Committee to participate in the American Society for Cell Biology Annual Conference at San Diego, CA in December 2006.

Juan presented his research project: Generating amino acid substitutions to alter the activity and response specificity of the anti-sigma factor ChrR and won 3rd place.

OUR GRADUATING CLASS REPRESENT...

- ✓ The first Amgen Fellows
- ✓ The first Pfizer Fellows
- ✓ The class that participated in the First Latin American and Caribbean Biotechnology Congress
- ✓

