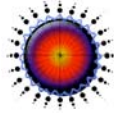


Harlem Children Society
'The Purpose of Souls is to Assist Each Other'



Harlem Children Society
Internship Program in Science, Medicine & Engineering
2007 Workshop & Lecture Series # 3

Weill Cornell Medical College, Uris Auditorium
1300 York Avenue, 68th Street Entrance between 68th & 69th Street on York Avenue
July 24th 2007

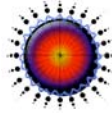
The third lecture in an extensive series presented an array of important information from three experts in diverging fields. A liaison from UNESCO, a doctor in pharmacology, and a professor of chemistry shared their knowledge with the students, who wrote feverishly trying to keep up with the detailed speeches. Four interns also reported on their progress in the lab.

Hon. Xuesong Shen is the Education Program Specialist and Liaison Officer for UNESCO's New York office. After the students settled down in their seats, she began her presentation on universal problems facing education, both in the present and for the future. Ms. Shen displayed a quote from Martin Luther King, which reminded us that "We aren't going to have peace on earth until we recognize...the interrelated structure of all reality." This is a theme that spread to all of her major goals, including eradicating extreme poverty, achieving universal primary education and gender equality, reducing child mortality, and combating AIDS and other diseases.

Though the audience could see her outrage at a multitude of global crises, she could not discuss all of them, and focused on sustainable education. She wants to create a system of education which "enables people to foresee, face up and solve the problems that face our planet." It is key to highlight and stress how the world is interconnected, a theme of the Harlem Children Society. People need to understand that the way they treat the earth affects themselves and the rest of world's population.



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Her introduction begs the question: What do we do to help? Ms. Shen answered that as best she could. Eight basic steps should be taken simultaneously. We must work towards gender parity, and gender equality. Women are unfortunately lagging in many areas around the world. We need to promote better health for all people. There are millions who are not well enough to attend school. We must protect the earth, including seriously addressing global warming. We have to insist on development for rural areas, where half the world lives. We must insist on cultural diversity, and understanding of different races and ethnicities. We must do our absolute best to keep international peace. We need to teach sustainable urbanization and consumption, or there will be no earth to live on. If these steps are all included within global education, the world will be a much freer place.

After Ms. Shen stepped down from the podium hearing applause, two pairs of students gave presentations.

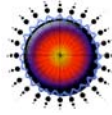
Katrina Boston and Kenyatta Thompson spoke about their work at *Science Friday*, a news program on National Public Radio (NPR). The goal of the program is to keep the American people informed and interested in science, and current environmental issues.

Katrina and Kenyatta explained the process of creating a segment. You must first pitch an idea. If it is accepted, you have to find guests who understand the issue. Then you will create a series of questions, which is modified several times before the show airs. You finally present promos and the finished list to the producer (which is Ira Flatow at *Science Friday*).

The two interns talked about the specific show they created on “Green Packaging.” After the San Francisco mayor outlawed plastic water bottles, they wanted to do an episode explaining where the country should go from there. They had a biochemist come on the show, and explain several future alternatives to the mass production of plastic bottles, which included bottles made from canola oil and TerraSkin, a tree-free substance. Kenyatta and Katrina hope to work on the Science YouTube project NPR will produce, putting science videos on the web and inspiring young people to take an interest in science.



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Stacie Semple and Kimberley Small did research on DNA strands to better understand the evolution of primates. Through a process of heating, elongating, and cooling DNA strands, they were able to duplicate specific DNA strands exponentially and examine them. By looking at DNA from several different primates, they were able to formulate a general linear tree of what directions primates have taken over time. This research included the links in DNA between humans, gorillas, gibbons, and more, and how closely tied the different species are. However, they acknowledge that not even the best scientists have fully completed a primate origination tree. With this knowledge, scientists can do research on vaccines in different primates, and see how they would affect humans. This is an important step in pharmaceutical study.

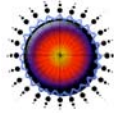
After lunch, two chemistry experts gave extensive presentations, one on pharmaceutical drugs, the other on vitamins.

Dr. Hakim Djaballah began by explaining that a drug is any substance that alters an organism's functions. This includes both natural and synthesized drugs, from coffee and Advil to cocaine and heroine. Dr. Djaballah focused his project on synthesized drugs, and how they are made. First, he explained, pharmacologists identify the chemicals which will likely lead to chemical change and biological activity in humans. This includes the synthesis of millions of different chemicals, as well as extracting natural substances from plants and other organic materials.

He then laid out the "Classical Drug Discovery Pathway." There are three stages in producing a drug. The first is the pre-clinical discovery, in which all the correct chemicals are gathered, and an idea is formed for a new drug. Next is the exploratory development, in which the optimal chemicals are set and safety concerns are discussed. Finally there is end development, in which the drug must be registered with the FDA and launched. The whole process takes a long time, often up to fifteen years. Dr. Djaballah used the Boehringer Ingelheim Viramune (BIV) drug as an example of the procedure. BIV is used to reverse the effects of HIV. The process began in 1987. Scientists tested 1,600 patients, and conducted experiments for five years until the exact chemical make-up was produced. The drug was eventually approved in 1996.



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Despite the importance of constantly discovering and creating new drugs, funding is a major issue. Each drug that goes through an extended process costs between \$500 million and \$1 billion. Only 20% of drugs become profitable, creating a net loss in most drug exploration. This does not even include the drug candidates that are defeated along the way, but have cost millions of dollars to research. Many drugs are effective, but do not serve enough of the population for large companies to mass-produce them. HMO's and drug companies have taken over the business, and have created difficulties for many pharmacologists.

Dr. Djaballah finished with a review of the evolution of therapeutic intervention. There was very little of this until the 1980's, when the industry really exploded. Genetic engineering and biotechnology began, reshaping the drug industry. He then explained that stem cell research is the way of the future. If politics and funding are on their side, pharmacologists have very few limits on what they can help cure.

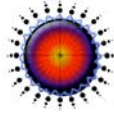
Dr. Thomas Brennan was then introduced as the final speaker. His presentation, entitled "Cobamax: A Vitamin B12-Amino Acid Formulation," discussed what role vitamin B12 plays in HIV-infected people, and what the drug Cobamax does to help those with B12 deficiencies.

AIDS patients show a deficiency in vitamin B12, which "may play a more crucial role in HIV/AIDS than previously thought." B12 is a natural potential inhibitor of HIV infections received via needle. In contrast, using drugs like tobacco and marijuana increase B12 deficiencies, and might make it easier for at-risk people to contract HIV. Ingesting antioxidants, on the other hand, along with enough B12 vitamins, has the reverse effect.

And this does not just pertain to HIV/AIDS. B12 levels also affect Anemia and other diseases. This leads right into his discussion of Cobamax, a B12 formulation. Cobamax is a drug that can deliver high doses of B12 to the body without the need for certain proteins, which makes the process much quicker and more efficient. Cobamax has also been proven to penetrate cell membranes more effectively than any of its competitors.



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Direct injection of Cobamax into muscle is the best means of obtaining the drug. But taking it orally is still effective, and much cheaper. The drug proved to alleviate extreme neurological pain in patients with diabetes, AIDS, and other diseases in three days or less, and continued to do so over an extended period of time. The AIDS symptoms relieved include fatigue, dry mouth, heartburn, nausea, skin rashes, and fevers. Dr. Brennan wants to do additional studies to see whether Cobamax reduce the growth of a virus itself, and restore natural antioxidants, which the body needs to naturally treat diseases.

The lecture ran longer than usual, but the students were exposed to a rich array of ideas and data. It was a day of work, but valuable to the aspiring scientists.

