

Genetic counselor speaks at biology colloquium

Travon Cooman

COPY EDITOR

Genetic Counseling At the Forefront of Today's Medicine' was the topic Sara Cherny, a Genetic Counselor, presented to the Biology Colloquium students and some faculty on September 30th. Cherny, who works at the Central DuPage Hospital, a private hospital which is part of the Cadence Health System pursued her undergraduate studies at Washington University, St. Louis where she majored in Biology and minored in Psychology. She graduated from the University of Minnesota with her Master's of Science degree in Cellular and Molecular Biology where she focused on Genetic Counseling.

One summer during her High School, Cherny was browsing through a course book while seated in one of the administrative offices at Brandeis University, Boston when she accidentally encountered Genetic Counseling. Her desire to become a Marine Biologist was displaced by Genetics where she would no longer be studying whales but serving as an advocate and counselor to patients.

Cherny enjoys meeting people daily and being able to have an impact on their lives. She expressed that her career has molded her in many aspects, especially as a leader. Unlike many persons who continue their jobs at home when the work day is over, she is delighted that her home is mostly a haven for relaxation and

not for a continuation of her daily work tasks. Cherny describes herself as someone who enjoys diversity, being engaged, an opportunist and an optimistic person.

Genetic Counseling involves helping people understand genetic information that is going to affect their life and health care. This includes educating patients about genetic concepts, interpretation of family and medical history, and serving as a counselor.

She currently works with Prenatal Genetic Counseling, where she advises and educates couples who are planning to have children about the screening and diagnostic process; Pediatric and Adult Genetics where she advises patients with symptoms; and Cardiology, she enjoys most. Other subspecialties include Cancer and laboratory Counseling but more is emerging as the field is developing.

As a Genetic Counselor, in her patient facing role Cherny identifies whether the patient is at risk of genetic complications, she interprets their medical history after analyzing the inheritance patterns she observes and suggests ways the patient can be helped. Although licensed, she is limited in terms of the treatment she can administer to her patients and sometimes has to refer them to other specialists. This aspect of her career shows that no one career is more important than the other; rather, they all work in synchrony.

Though challenging, Cherny counsels distraught patients that she cannot withhold test

results from due to her professional guidelines and ethics. In her Inward (Medical Community) Facing Role, she advises Physicians who can sometimes be reluctant and rigid in their thoughts about treating patients with genetic disorders.

A common genetic disorder, Down syndrome, which affects babies, was mentioned. By conducting tests, it can sometimes be known whether the baby is going to be born with this disorder, but the mother's care during her prenatal period can also influence this possibility. It can be a demanding task for nurses as well as the Genetic Counselor to comfort parents whose baby is affected by Down syndrome.

Another genetic disease, Marfan syndrome, a disease which many people thought affected Abraham Lincoln, is a genetic disease of the connective tissues. Patients with this disease tend to have an error in the way fibrillin is made. Sufferers have symptoms in their eyes, skin, joints and heart and commonly suffer from an aneurysm, which is the abnormal widening of the artery due to weakness in the wall of the blood vessel. This is a life threatening disease.

Microarray technology is one of the developed technologies that is currently being used to assist Genetic counselors in their diagnoses. A DNA microarray is a collection of microscopic DNA spots attached to a solid surface. It is used to measure the expression levels of large numbers of genes simultaneously

or to genotype multiple regions of a genome.

After doing a microarray of the entire genome at once, the results are used to explain to the patient the possibility and risk of them developing a particular Genetic Disease. Cell-free Fetal DNA testing, which involves analysis of freely circulating fetal DNA in a pregnant woman's bloodstream is a non-invasive method used for prenatal diagnoses. Another technology commonly used, Next Generation Sequencing (NGS), is a relatively fast and cheap technique.

Measures are being taken to treat babies at risk of genetic diseases by taking a blood sample from their heel 24 hours after they are born and analyzing it. This sample is screened for over 50 diseases in some states and less in others. It is important that such analyses be done because it can help prevent life threatening conditions and help to treat any conditions they have at birth. Treatment may include dietary changes, especially for people who have phenylketonuria, a genetic disorder where the body is unable to metabolize phenylalanine to tyrosine, which could lead to mental retardation, among other problems and even death.

Despite the effort that Genetic Counselors put into their occupation, it is rewarding and comforting for them to know that they console people, advocate for them and advise them to the best of their knowledge and understanding of their field.

IEEE Student Leadership Conference

Swasti Khuntia

LAYOUT EDITOR

The IEEE Region 4 Student Leadership Conference was hosted by the University of Minnesota from October 4 to October 6. A group of six students from IIT including four undergraduates and two graduate students, as well as participants from other universities in Region 4 attended the conference. Region 4 includes all and or parts of the states of Illinois, Indiana, Iowa, Michigan, Minnesota, Nebraska, North and South Dakota, Ohio, and Wisconsin, USA and Windsor Area Canada.

There were invited speaker sessions, leadership trainings and contests in which IIT students won first place. The speaker session covered a variety of topics including the current state of art scientific research, professional and leadership development.

The first speaker session was by Ms. Cheryl Moeller on IEEE STEP (Student Transition and Elevation Program). She spoke about how the STEP program introduces opportunities and benefits of IEEE membership while providing a swift transition from student member to professional member. Dr. Nikolas Papanikolopoulos of University of Minnesota talked about his projects on vision-based sensing and classification of vehicles, and the recognition of human activity patterns in public areas and while driving.

Dr. Greg Mowry of University of St. Thomas was one of the most interesting speakers. He is a brilliant scientist, engineer and professor today who left his six-figure paying job for ethical reasons. Dr. Mowry attended Iowa State University, Stanford and University of Minnesota for his B.S., M.S., and PhD. He spent his entire corporate life as an inventor in fortune 500 companies as an R&D scientist and engineer. He talked about his

experience in all these work environments and how he moved to academia.

The various contests in the conference included Micromouse (a challenging and popular robotics competition), Brown Bag (circuit design competition), Ethics competition and Project showcase competition. The team for Micromouse was led by Gabriel Vlas, Michal Bialas, and Swasti R. Khuntia. They had to construct an autonomous mouse that navigates to the center of a random maze starting from a specified corner. Brown bag team comprising of Alejandra Rodriguez and Rohit Agarwal won the first place. For the Ethics competition, Aditya Kumar from IIT had to team up with students from other universities in which they had to devise a solution for an ethical dilemma.

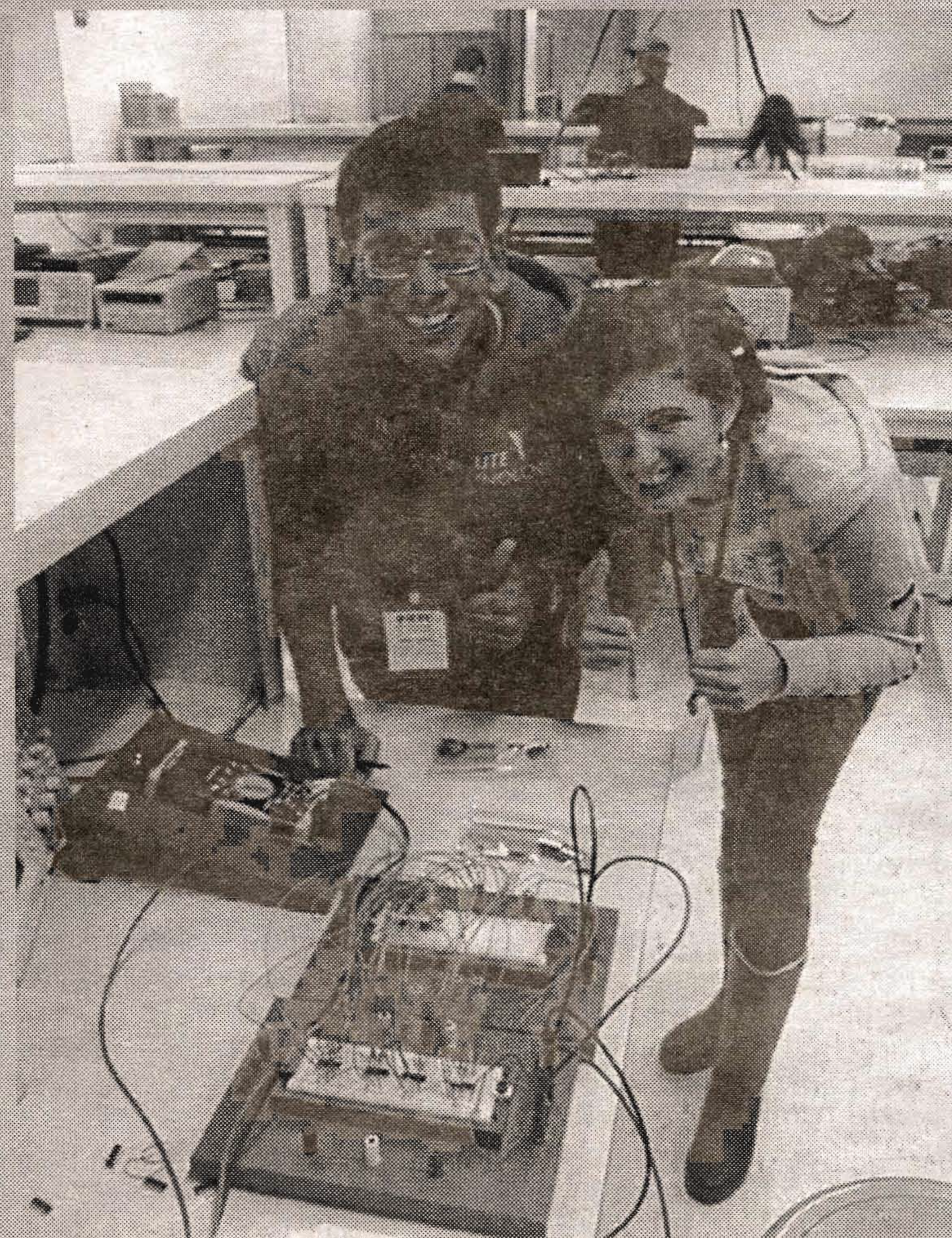
The banquet dinner had a remarkable keynote speaker, Dr. Massoud Amin. He holds multiple responsibilities in the University of Minnesota. Dr. Amin is

the Director of the Technological Leadership Institute (TLI), Honeywell/H.W. Sweatt Chair in Technological Leadership, Professor of Electrical and Computer Engineering and University Distinguished Teaching Professor. Prior to that, he has served Electric Power Research Institute (EPRI), United States (US) Dept. of Defense, US Air Force, US Army Research Office, US Dept. of Energy, NSF, etc.

He talked about his experience as a power system researcher as how he initiated, successfully created and managed research and development towards the smart self-healing electric power grid. Then he described how he developed more than twenty four advanced technologies to enhance the security of national critical infrastructures.

It was one of the most informative talks in the conference.

Overall, the conference was an amazing experience for all the attendees.



Photos by Swasti Khuntia