

All four of CU's undergraduate nominees win Goldwater Scholarship

By Blaine P. Friedlander Jr., Franklin Crawford, Linda Myers and Bill Steele

For the third consecutive year, all four of Cornell's nominees to the national competition for the prestigious Barry M. Goldwater Scholarship -- the premier undergraduate award of its type in the fields of mathematics, natural sciences and engineering -- are winners of the scholarship.

The winners for 2000 from Cornell are Raymond H. Mak, a junior in the College of Agriculture and Life Sciences; Yanerys Ramos, a junior in the College of Arts and Sciences; Daniel Ramras, a sophomore in Arts and Sciences; and Krishanu Saha, a junior in the College of Engineering.

While more than 500 institutions nominate students, Cornell is one of only nine institutions to have all of its nominees awarded, said Beth Fiori, fellowship coordinator in the Cornell Career Services office.

The scholarship is designed to foster and encourage outstanding students to pursue careers in their fields. It is named in honor of the late U.S. Sen. Barry M. Goldwater and covers the cost of tuition, fees, books and room and board, up to \$7,500 per year.



When **Raymond Mak** received his envelope from the Goldwater Scholarship Foundation, his hand started shaking.

"It was a big envelope. I was psyched, I was thrilled, I pretty much guessed it was good news," said Mak.

Mak Good news, indeed, for this biology major. Mak, of Toronto, plans to use his scholarship toward tuition, and following graduation from Cornell next year, he plans on studying for a combination M.D./Ph.D.

Last summer, Mak worked as a Hughes Scholar in the laboratory of Jeffrey J. Doyle, Cornell professor of plant biology, to study the wild relatives of soybeans. He is continuing his work in Doyle's lab, examining how gene expression changes when the genes in the plant genome are doubled.

One of Mak's passions is writing. In addition to his academic work, he writes for the Cornell pre-med student newsletter *Caduceus*; and writing on the subject of bio-ethics, he won the College of Agriculture and Life Science's Alfred N. Schwartz Prize for Excellence in Agriculture Journalism last year.

For the past two years, Mak has also held the highest grade-point average in his class. He is a member of: the college's honor society Ho-Nun-De-Kah; the national honor society Golden Key; the national agriculture honor society Gamma Sigma Delta; the National Society of Collegiate Scholars; and in 1988, he won a CALS Charitable Trust Undergraduate Research Grant.

In what spare time Mak has left, he enjoys playing basketball. And he jokingly says of the sport: "Basketball has gotten in the way of many things -- but I have it under control now."



Neurobiology and behavior major **Yanerys Ramos** is interested in the evolution of social



behavior, in general, and in the ecology and behavior of reptiles and amphibians. She currently is engaged in research on aggressive behavior in the social wasp *Polistes dominulus*, under the guidance of H. Kern Reeve, Cornell professor of neurobiology and behavior.

Ramos Reeve recommended Ramos for the Goldwater Scholarship, as did Kraig Adler, Cornell vice provost and professor of neurobiology and behavior, and Ramos said both have been mentors to her at Cornell.

"Last year she took a senior level course of mine and outperformed even the graduate students," said Reeve. "She has all the tools and potential to become a top notch evolutionary biologist."

That's exactly what Ramos has in mind. In the summer of 1999, she assisted on a National Science Foundation research project in the Dominican Republic under Robert Powell of Avila College, and in the fall of 1998, she worked with Cornell's James A. Perkins Professor Eloy Rodriguez at the university's Bailey Hortorium, researching the medicinal properties of the plant *Lobelia wollastonii*. This summer she will have an internship at the Smithsonian Tropical Research Institute in Panama, where she will work on a study of female choice in Tungara frogs.

Ramos eventually would like to teach at the college level, but in the meantime she will use her scholarship for tuition and "as incentive to keep working hard," she said.

Ramos has made the Dean's List in all her semesters in the College of Arts and Sciences and was a winner of the William T. Keeton Award in Introductory Biology. She is president of the Puerto Rican Student Association, treasurer of the Cornell Herpetological Society and a member of the Science Organization of Latinos. She also is a resident adviser in Donlon Hall and a biology student adviser.



Daniel Ramras, a mathematics major from Concord, Mass., said, "It's very exciting" to be a recipient of a Goldwater scholarship. He studies with Jon Kleinberg, an assistant professor in the Department of Computer Science, and their research involves graph theoretic algorithms related to matchings. He has two papers are in progress.

Ramras "Matchings can be used to model a variety of real-world phenomena," Ramras said. The overall goal is to develop efficiently computable measures for the reliability of matching solutions. He also has worked with Eva Tardos, professor of computer science, on graph theoretic algorithms to solve image segmentation problems in computer vision.

Ramras, who said he will use his scholarship to cover school costs, is a Cornell Presidential Research Scholar and a past recipient of an Armed Forces Communications and Electronics Association (AFCEA) fellowship. He also garnered second place in the AFCEA National Science Awards in 1998. He is involved with the Cornell Undergraduate Math Club, where he was secretary in 1998-1999. He took part in Brandeis University's Summer Odyssey Program in 1997, where he did original research on lattice paths. He has also been a computer technical support specialist at Raytheon Corp. during summer and midwinter breaks, and he hopes, eventually, to become a professor of mathematics.

Krishanu Saha is a junior majoring in chemical engineering, and he also is fulfilling the requirements for an alternative major in chemistry and a minor in materials science. His goal, he said, is "to become an active member of the chemical research community."



Saha

Saha has been active in original research since his freshman year, when he helped to design an ultra-high-vacuum system to deposit copper thin films on surfaces under the guidance of Shefford Baker, Cornell assistant professor of materials science and engineering. He continued that work through his sophomore year and is currently investigating the effect of heat and mechanical stress

on thin copper films, a line of research that will be useful in the design and construction of a new generation of microcircuits that will use copper for interconnections. He spent the summer of 1999 as a research intern with Mobil Chemical Co. in Edison, N.J., studying catalysts for the manufacture of polyethylene.

A native of Huntsville, Ala., Saha graduated from Virgil I. Grissom High School there in 1997. "My high school had very good math and chemistry programs," Saha said. "I think one reason I got this scholarship is that they helped me develop my skills." In addition, his father, Pabitra Saha, is a professor of civil engineering at Alabama A&M University, and his mother, Sikha Saha, teaches computer science there on a part-time basis. They are originally from Calcutta, India.

At Cornell, Saha received the Undergraduate Materials Research Initiative Award from Materials Research Society for 1999-2000 and the BP-Amoco Research Prize for Freshman/Sophomore Research for 1999. He holds a Xerox Technical Minority scholarship and a Chares H. Ferguson scholarship.

For the past year, Saha has volunteered with EYES (Educate Youth Encourage Society), teaching BOCES high school students through interactive science projects. He also is a peer adviser for Cornell freshmen.

Cornell's Goldwater Scholarship Endorsement Committee is composed of Mark Bain, associate professor of natural resources; Barbara Bedford, senior research associate in natural resources; David Cassel, professor of physics; Donald Farley, the J.P. Levis Professor of Electrical Engineering; and Stephen Sass, professor of materials science and engineering.

Students in math, engineering and the sciences who will be sophomores or juniors this fall can find information on the Goldwater Scholarship at www.career.cornell.edu/ccs/Graduate_School/Fellowships/prestigious.html. Those interested in applying for the scholarship should contact Beth Fiori at 255-6931 or at btfl@cornell.edu.

April 13, 2000

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