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## NIH's Youngest Researchers



**Image Title:** NIH senior postdoctoral research fellow Carlo Colantuoni, center, mentors Maryland High School students Mariam Khan and Nicholas Evoy. - Tom Kochel

When Mariam Khan was 13, she and her family visited her father's home country of Bangladesh. There she witnessed a degree of poverty to which she had never been exposed. Now a Montgomery Blair High School senior in Silver Spring, Maryland, she is determined to become a physician and return to Bangladesh to help her father's people get better health care.

When Nicholas Evoy, a senior at Walt Whitman High School in Bethesda, Maryland, was 12, a gasoline fire caused severe burns on his legs. Months of hospitalization and rehabilitation sparked his interest in pursuing a career in biomedical research. "There were tissue-engineering products that could be used for the second-degree burns but not for the third-degree burns," he says. He'd like to help develop such materials.

Both students already are doing actual medical research in the HHMI-sponsored Student and Teacher Program at the National Institutes of Health (NIH). Under the tutelage of NIH scientists, Khan, Evoy, and 19 other Montgomery County high-school student researchers design and carry out experiments, analyze data, draw conclusions, and present their findings at an HHMI dinner symposium, scheduled this year for May 12.

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"It's really motivated me to reach my goal of becoming a doctor," says Khan of her internship at the Clinical Brain Disorders Branch of the National Institute of Mental Health (NIMH). She is studying how three variants of the gene for catechol-O-methyltransferase may increase the risk for schizophrenia and affect cognitive functioning or thinking.

This fall she will enter the University of Maryland, College Park, where she plans to major in physiology and neurobiology. "I don't think sitting in advanced science classes, learning from textbooks, can equate to the research I've experienced," she says, noting that the internship gave her perspective on the realities of scientific research. "Science is not all about findings," she discovered. "It's about what you learn daily."

Adds Evoy, "It's always exciting to find out and figure out where you went wrong, what's really going on here, pushing the boundary of knowledge." He credits his acceptance into the biomedical-engineering program at The Johns Hopkins University in Baltimore, which he will enter in the fall, to the HHMI internship and a prior NIH Intramural Research Training Award, in addition to his academic achievements.

Like Khan, Evoy has been working at the NIMH Clinical Brain Disorders Branch, searching for additional single-nucleotide variations that may influence the development of schizophrenia and/or changes in cognitive function. Nucleotides are the building blocks of DNA.

Khan, whose mother was born into an impoverished family in Afghanistan and adopted by an Afghan family in the United States, is active in diversity-related clubs at school. In fact, she founded one: IMPACT@Blair (Integrating More People And Cultures Together), which focuses on the student achievement gap and how race affects achievement. Evoy is a member of the Whitman High School varsity tennis team.

Carlo Colantuoni, Ph.D., a NIH senior postdoctoral research fellow who mentored Khan and Evoy, calls both "bright and a pleasure to work with." In

addition to helping hands around the lab, the interns' questions and feedback provide, "a great perspective check" on the research, says Colantuoni.

"I think it's an incredibly valuable opportunity at an early stage in the educational process," says Thomas M. Hyde, M.D., Ph.D., who was Khan's and Evoy's preceptor, the senior scientist in charge of the interns' research. "It allows students to see hands-on what biomedical research is all about—the ups, the downs, the excitement, the panic, the boredom. It takes a lot of effort to get to that eureka moment at the end. Many college students don't get that experience as undergraduates. It takes away a lot of the romantic misinformation and disinformation about what's involved in research."

Even so, most interns find the program "enthralling and enjoyable," says Hyde, who has hosted nine HHMI interns in his lab over the past six years. He calls it an excellent way to recruit students to the biomedical sciences.