



On the Journey to Excellence



Technological innovation is the driving force behind the global knowledge economy. Science, technology, engineering, and math (STEM) are the basic skills needed to fuel the research that makes that innovation possible. The Intel International Science and Engineering Fair (Intel ISEF) provides young scientists with the opportunity to be recognized for their research. Many students who have represented Pakistan at the event have won laurels, but the impact that the program has on these students is far greater than winning an award at a science fair.

For Fatima Shami, the journey started in 2005 with a project called "Harmful effects of re-used edible oil on human health". She was one of the finalists at the Intel ISEF event which was held in the United States. Although Fatima did not win an award at the event, the experience had a strong and lasting impact on her. She



Fatima presenting her project at the affiliated National Science Fair 2007

came back from the competition and started working on another project with new zeal and zest. The experience she gained from competing on the international stage made her more confident, more observant of the world around her, and she had learned how to conduct her research with more depth and focus.

Upon returning from ISEF in 2005, 15 year old Fatima said, "I really like people who want to help others and make a difference in the world. Personally I want to help special people and make their lives as normal as possible." Her new project was titled, "Device for Speech Impaired and Deaf (D-S.I.D) - Life Changing Communication an alternative to sign language", proving that she was true to her words. In May of 2007, a more determined and committed Fatima participated in the Intel ISEF event a second time. With her new project, she won an alternative study scholarship from the University of New Mexico. But Fatima did not stop there... she kept on winning laurels. She won the "National Youth Award*" that year for her contributions in the field of science and technology and represented Pakistan in China as a Youth Ambassador. She also won "Silver Award" at the World Virtual Science Fair* where she represented Asia. While her efforts were being acknowledged at international events, her home country bestowed her with yet another award, first place in the "Pakistan Telecommunication Authority Research Competition*", which was given by Yousef Raza Gilani, Prime Minister of Pakistan.

Fatima is now a junior in the Department of Chemical Engineering at the University of Mexico, studying Bioengineering and Therapeutics. Her outstanding abilities were quickly recognized by the university authorities and she was awarded the "Outstanding Freshman Award" by the School of Engineering in 2009.

*other events / competitions...

She is currently working as a research associate under the patronage of Professor Elizabeth Hedberg-Dirk at the Center of Biomedical Engineering at the University of New Mexico. She is part of a team that is working on heart valve tissue as part of a collaborative research project between the University of New Mexico and Harvard University. Fatima is responsible for developing RT-PCR protocols (reverse transcription-polymerase chain reaction: which is a sensitive method for the detection of mRNA expression levels) to characterize non-homogeneous cell populations from aortic heart valves in vitro. If successful it will help researchers to understand how different properties of biomaterials influence gene/protein expression; thus leading mankind towards better understanding of soft tissue diseases.

Fatima was recently named a University of New Mexico, School of Engineering Scholar. She also participates in several volunteer programs at the university. She volunteers with both Medical Services and Student Outreach programs. She is an active member of the American Institute of Chemical Engineers, the Society of Women Engineers, and the Hispanic Engineering and Science Organization. In her spare time she likes to fence and sleep. Fatima says: "Work hard and love what you do, soon success will follow."

Long term, she is looking forward to pursuing her Ph.D in Biomedical Engineering and she has her eyes set on winning the second Nobel Prize for her country. She says, "Now, I am more confident and have learned never to give up."

Intel ISEF opens a world of opportunities to young and talented youth like Fatima by encouraging them to study science and learn about research. It not only helps them to dream big, but teaches them the skills required to achieve them as well. Fatima's participation in the Intel ISEF program meant much more than winning a science fair, it gave her the opportunity to develop her skills so she can work to bring about positive change in the world for coming generations. Fatima's story is not only about reaching the destination of Intel ISEF, but rather about Intel ISEF being a milestone in her journey to excellence.



Fatima working on her new project developing RT-PCR protocols, checking the columns and tanks

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