



FOR RELEASE

Better bone cement research earns Hamilton's Samna Aziz

Young Canadian Innovator status at national science fest

FREDERICTON, NB (May 15, 2015) – Samna Aziz, a Grade 11 student at Hamilton's Westmount Secondary School, this week turned her passion for developing better innovations into more awards and cash rewards. Her recent research to enhance human bone cement, triggered by a three-hour clinical wait after wrenching her knee while stretching, was presented at the 54th Canada Wide Science Fair (CWSF) held at the University of New Brunswick campus.

Samna Aziz was named a Manning Young Canadian Innovator by the Ernest C. Manning Awards Foundation, a designation that earned her a cash award of \$7,500, an October trip to Saskatoon for the Foundation's National Awards Gala, and membership in a network of nationally recognized innovators. She also captured a Bronze Medal of Excellence award for the Senior Category and received the \$1,000 Canadian Society for Clinical Chemists Award.

The CWSF featured 400 projects in three age categories and involved 468 finalists, representing the top one percent of science fair projects conducted across Canada this year.

"Nearly one out of every 10 Canadians over the age of 40 suffers from osteoporosis and related fractures. The application of work done within orthopedics and kinesiology inspired me to pursue a research endeavour within the field of biomedical engineering," explained Aziz.

"The basis of my project is on redeveloping standard acrylic bone cements into biodegradable materials as trabecular (spongy) bone-replacing material. Future research includes experimenting with the cement properties -- adding strengthening agents, antibiotics, and retardants into the solution to suit a range of applications," she concluded.

"Bone cements have been considered reliable anchorage materials used in various procedures such as vertebroplasty, to aid with stability in the trabecular bone region during the bone regeneration process," said Aziz, who created a new bone cement alternative. She explains that the bone cement most commonly in use today "may contain toxic residual monomers, releasing non-degradable particles into the body during cement wear." Aziz continued on to say that the problems didn't stop there as the

current cement delivers a hardness that is stronger than the surrounding bone, and “this ‘hardness’ can cause additional fractures in adjacent vertebrae and cause damage to surrounding tissue.”

Aziz’s solution to this problem cement was to create a calcium phosphate based cement mixture that is biocompatible, ensuring the body does not reject the cement; non-toxic, allowing for degradation without release of toxic materials into the body; has a similar tensile strength to human bone, to avoid additional fractures and damage to surrounding tissues; is completely degradable, allowing for the body to remove the cement when fully recovered. Aziz’s project demonstrates all the necessary features of an effective bone cement to be used in the human body and by using her calcium and phosphate mixture for bone cement, Aziz hopes to remove the use of the existing cement and to implement the use her novel calcium phosphate cement. This could become a reality as her new bone cement will soon be entering into clinical trials.

“My advice to students thinking about doing a project would be to pursue it. Find something that both interests you and has a meaningful application. Think about something you would change in the world,” said Aziz.

“The caliber and ingenuity of Samna’s project is proof that age is no barrier to innovation,” said Don Pether, Hamilton-based Trustee of the Ernest C. Manning Awards Foundation. “For the past 23 years, the Foundation has been celebrating outstanding young Canadians competing at the Canada Wide Science Fair. The 2015 winners are passionate and creative visionaries and we and our sponsors believe supporting them is critical to creating a culture of Canadian innovation.”

The Ernest C. Manning Awards Foundation introduced its Young Canadian Program in 1992 to recognize outstanding high-school students at the Canada-Wide Science Fair. Each year, the Manning judging team selects eight winning projects, to receive a \$500 Manning Innovation Achievement Award. From the eight, four are honoured with the Manning Young Canadian Innovation Award, which includes a further \$7,000 prize. More information about the Manning Awards is available at www.manningawards.ca, Twitter @ManningAwardsCA Facebook/ManningAwards.

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