



STUDENT PROFILE

Innovating for the Future of Health Care

A team of dental students is honored at a University-wide competition

What better way to generate promising new health care ideas than by gathering bright young minds at top universities for a 36-hour innovation competition, complete with cash prizes? This is the concept behind the Rothberg Catalyzer Makerthon, a cross-disciplinary event sponsored by the Penn Center for Health, Devices and Technology (Penn Health-Tech).

The Catalyzer, held at universities across the country, is the brainchild of scientist and entrepreneur Dr. Jonathan Rothberg. With his funding, students work in teams to develop a product aimed at solving a health care challenge.

“The Rothberg Catalyzer gives students the opportunity to learn about many facets of health technology innovation, from empathizing with the unmet needs of patients to building early prototypes and pitching their ideas to a panel of judges,” says Victoria Berenholz, Executive Director of Penn Health-Tech.

ABOVE: (left to right) Odontoblasts team members Sam Kang (D’19), Sam Caruso (D’20), Mordy Fried (D’20), and Elizabeth Soulas (D’20); Nick Branson (D’20) not pictured.

A TALENTED TEAM

When Sam Kang (D’19) learned that Penn would be hosting its first Catalyzer event, and that his classmate Sam Caruso (D’20) was forming a team, he knew he wanted to be involved. Both students are members of DICE (Dental Innovators, Creators and Entrepreneurs), a club founded by students with a passion for innovation.

Kang, who majored in economics and worked as an investment banker before dental school, was eager to blend his insights in business development and dentistry.

“I felt strongly that dental students should be represented at this university-wide event,” he says.

“Dentistry is historically an extremely innovative field,” adds Caruso, who holds an undergraduate degree in bioengineering. “The strong tie between problem-solving and clinical dentistry fills our field with creative thinkers from all sorts of backgrounds.”

Soon both Sams, joined by fellow DICE members Elizabeth Soulas (D’20), Mordy Fried (D’20), and Nick Branson (D’20), formed a team called Odontoblasts and began to discuss possible product ideas, eventually focusing on a toothbrush for the elderly.

INNOVATION AT WORK

Penn Health-Tech purchased the supplies the team would need, and the Odontoblasts arrived at the competition on a March weekend ready to build a prototype. Immediately, Kang was impressed with the environment at the Catalyzer, held in Penn’s Towne Building.

“It was very collaborative, not at all secretive,” he says. “The idea was for teams to talk to each other to help make all of the products even better.” There were 29 teams from across Penn, including Engineering, Arts & Sciences, Medicine, and Nursing.

“Most teams had biomedical or engineering students,” he remembers. “We were the only clinicians.”

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— SAM CARUSO (D’20)

As the Odontoblasts got to work, it became clear that the toothbrush was not a viable product. They discussed their options with other students and mentors, and made a bold decision to switch to another innovation, a retractable device for capping a needle after an injection.

"Many patients, especially kids, are afraid of needles," explains Kang. "In our product, a sheath disguises the needle so it's not as scary, and the cap automatically locks after use so there's no danger of sticking someone. We felt that our innovation would lessen patient anxiety while enhancing user safety."

THE ABILITY TO ADAPT

The experience of changing their product in mid-plan was both challenging and rewarding.

"We were very excited by the new directions that our idea took, and grateful for the mentorship we received from faculty and students alike," says Soulas.

"We were challenged to continually 'pivot' our idea based on the feedback we received until we perfected our concept," adds Fried.

When the time came to present the product, it was the team's ability to evolve and adapt that impressed the Catalyzer's panel of judges, leaders from the biomedical, pharmaceutical, and business fields. After the top three prizes were announced, the Odontoblasts were awarded a special prize for pivoting their idea to better fit patients' needs. The team received \$500, presented by Dr. Rothberg at the Penn Health-Tech Spring Symposium in April.

A COMMON GOAL

"From meeting other Penn students to pitching our idea in front of the judges, the Catalyzer was a fantastic experience," says Soulas.

Caruso agrees: "It was exciting to get a group together with one goal in mind," he says. "The process of innovation is very much a 'push and pull' between identifying a need and validating a proposed solution."

Based on its success, a second Rothberg Catalyzer was held at Penn this October.

"I hope competitions like these will help the field of dentistry progress even further," says Fried.

EDITOR'S NOTE: At press time, we learned that a Penn Dental Medicine team took 3rd place in the second Rothberg Catalyzer held in October for an idea to use fluorescent light to screen for childhood caries.