

Excellence

Center for Excellence in Education

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*Joshua Dong,
Co-Rickoid of the Year 2016*

Much like the atoms and particles that he studies, **Joshua Dong** compares his experience this summer at the 33rd annual Research Science Institute (RSI) to that of a successful chemistry experiment.

“The opportunity to conduct research at MIT was humbling ... even more amazing were my fellow RSI Scholars,” Dong said. *“Leaving 82 intensely energized particles to collide for over a month forms the strongest bonds. The same chemistry happens to 82 Rickoids intensely passionate about research.”*

Dong’s passion for research and exuberance for the program did not go unnoticed. He was named by his peers as one of two recipients of the “2016 Rickoid of the Year,” in honor of the Center for Excellence in Education (CEE) Founder and father of the nuclear Navy, the late Admiral H.G. Rickover. He shares the award with Kathy Liu of West High School in Salt Lake City, Utah, honored for their academic acumen and personal demeanor.

“I was inspired by so many of my peers, but I did not realize how they felt about me until I received this prestigious honor,” Dong said. *“I am humbled and greatly encouraged to have been for them what they were for me.”*

The Chapel Hill, N.C. student spent much of his time during the six-week intensive summer program working on his 3D printing research. He hopes his work will set the path to commercialize a technology that can grow new tissues and organs for patients.

“Every day, 22 people die in the U.S. while waiting for an organ – a number steadily increasing since 2003,” Dong said. *“And even after a successful transplant, patients must often suppress their immune system with medications to avoid organ rejection. But new advances in the lab are working to transform these numbers. By placing cells from patients themselves into extracellular matrix-mimicking scaffolds, scientists have successfully regenerated tissue such as knee cartilage. In particular, hydrogels exhibit many similarities to the extracellular matrix, making*



Joshua Dong (left) with RSI '16 peers in Boston

them ideal for these scaffolds. Complex hydrogel structures, important for complex tissue growth, can be defined layer-by-layer using light-based 3D printing (stereolithography). I was working to accelerate the production of hydrogels with this technique.”

While at RSI, Dong worked with German Parada, a graduate student under Professor Xuanhe Zhao.



*Joshua Dong (right) with RSI '16 peers
on MIT Campus*

“Having conducted laboratory research before, I appreciated German’s confidence in my research ability. Despite my age, he gave me the freedom to drive my own progress. I also had the chance to test similar ideas in another form of stereolithography with help from Huifeng Du in Professor Nick Fang’s lab.”

Dong, currently a senior at the North Carolina School of Science and Mathematics, is thankful for the opportunities that RSI has created and is excited for

what the future holds.

“By seeing what fellow students have done, I am inspired to see what I can still do,” he said. “Early

involvement in STEM research taught me that, regardless of age, anyone can make a difference. Students can learn to think outside the box the same way professional researchers do.”