

## BIDMC TODAY

# High School Students Become BIDMC Scientists

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Sixteen-year-old Jerry Han didn't seem nervous as he stood at the end of a conference room table. The math tutor, student science magazine editor, swim team member and tennis star had poise to spare - even when he presented his research project about the role of non-coding RNA in cancer to Frank Slack, PhD, Director of BIDMC's Institute for RNA Medicine, who is a pioneer in that field.

Han, who attends the nearby Boston Latin School, is one of five high-achieving high school students selected to conduct meaningful biomedical research alongside BIDMC graduate and medical students and researchers this past summer. The BIDMC High School Summer Research Program - a newly formalized internship supported by a donor's generosity - gives high school students an early, realistic glimpse of life in a research laboratory.

The program, run by breast cancer researcher Jan Heng, PhD, Assistant Professor of Pathology, allows students to design and execute sophisticated cancer-related research projects. But Heng has seen to it that the summer experience also exposes students to the lesser known but equally important skills scientists need. Those range from fastidiousness at the laboratory bench to comfort behind the lectern presenting one's ideas to peers.

That is why Han and his fellow 2017 interns - Adithya Vellal, Rinni Bhansali, Jimmy Lin and Katherine Tian - each presented three times this summer; first, in early summer, to introduce themselves and sum up their research backgrounds to the group, once midsummer to describe their BIDMC research projects and finally, at summer's end, to present their results.

Leni Jacob, PhD, a post-doctoral fellow in Slack's group and Han's mentor, couldn't have been more impressed with her mentee's persistence, professionalism and hard work as he conducted research on a gene neighboring the infamous breast cancer gene *BRCA*.

"It's a really great thing BIDMC is doing," Jacob said. "When I was in high school, I don't know if opportunities like this existed and I didn't really understand what research was until I left college and started working in a lab as technician."

That will not be the case for the high school students who have conducted research at BIDMC for the last five summers. The program started organically when, Andrew Jin, a student from San Jose, California, emailed Andy Beck, MD, PhD, (who has since departed BIDMC) out of the blue and asked if he could help him do a research project for the summer. Beck said yes.

After Beck mentored Jin long-distance that year, the student went on to win tens of thousands of dollars in scholarship money in the prestigious Regeneron Science Talent Search competition and the Siemens Competition in Math, Science and Technology.

"All of the sudden, Andy became famous in Andrew's school," said Heng. "Then by 2015, we had a little explosion."

Each successive year, more students from San Jose and eventually schools across the country began seeking summer mentorship with Beck. By now, students from Texas, New York, Kentucky and Massachusetts have applied for the opportunity.



BIDMC summer interns with mentors, from left: Frank Slack, PhD; Korsuk Sirinukunwattana, PhD; students Adithya Vellal, Katherine Tian, Jimmy Lin, and Rinni Bhansali; Jan Heng, PhD; students Jerry Han, Michael Pyle, and Lisa Walker; and Leni Jacob, PhD.

“It’s all word of mouth,” said Heng. “We haven’t done any outreach at all.”

And the projects continue to rack up serious scholarship money for these participants. In 2016, BIDMC summer interns were semifinalists and national finalists for both the Siemens and Regeneron Competitions. This year, the BIDMC mentors have high hopes for all five summer interns who have already submitted their projects to these competitions.

With help from a grateful parent who provided five years’ worth of funding, Heng, who took over after Beck’s departure, worked with Slack to establish an official application process to provide a more formal structure to this summer internship program. The program offers cancer research experiences in both wet- and dry-laboratory techniques, including computational biology, medical imaging and artificial intelligence.

“This inter-disciplinary approach is what really sets this program apart, and, wow, what a great group of high school students we attract” said Slack. “Each is smart, motivated, creative and hard-working.”

With only five available slots this year, Heng reluctantly turned down one up-and-coming academic star this summer simply because she was too young to work in a laboratory. Heng hopes the young woman will apply again, but there is no lack of high schoolers vying for the opportunity—Heng received her first inquiry about next summer’s program in June.

That is good news—not just for the future scientists of the world, but also for the researchers already hard at work at BIDMC.

“I really like mentoring, imparting my knowledge to them, but in such a way that they understand,” said Heng. “I’ve always mentored students—medical, graduate, undergraduates and now high school students. It gives me great teaching experience and also, it helps me to remember, ‘Oh, I’ve come pretty far.’”