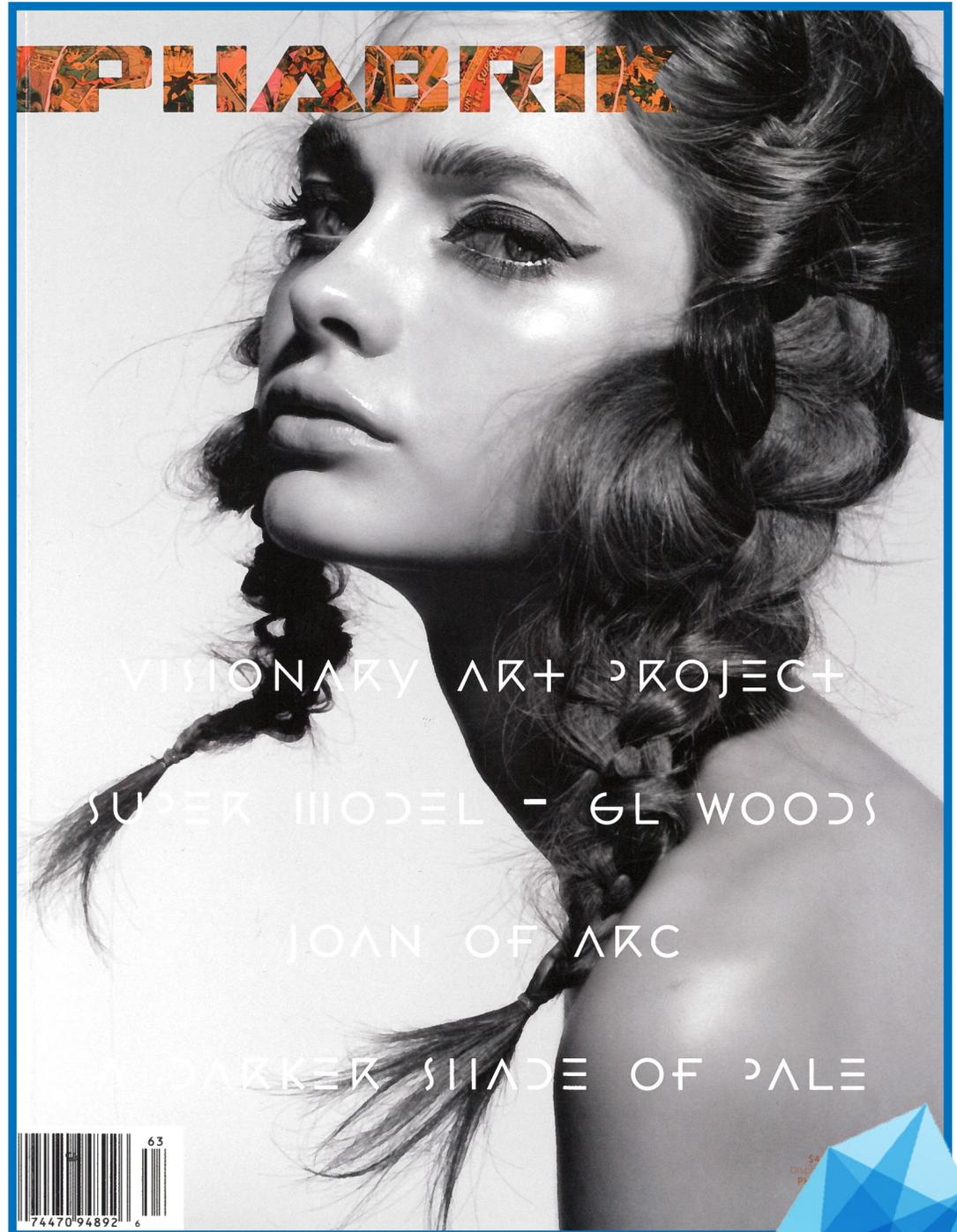


EXCITING SHAD FIRST

PHABRIK Magazine based out of Western Canada has a special feature on SHAD in Winter Issue

PHABRIK Magazine was launched with the mission to support and provide exposure for talent at all levels, to discover the new and exciting, to see the unseen, and to bring experiences from all over the globe to their discerning readers.

They are a fresh and independent publication that explores art, fashion, design, and architecture.



SUMMER SCHOOL

SHAD's students think beyond the classroom

Teddy Katz

All leaders and changemakers start somewhere. In Canada, SHAD is a one-of-a-kind program for students showing exceptional potential in academics and leadership. Founded in 1980, the Ontario-based charity has been offering Canadian and international high school students the chance to participate in a month-long summer program at one of 12 university campuses across Canada. More than 700 teenagers gather each year for an intensive enrichment program that incorporates activities both inside and outside of the classroom. The programming is built around a theme of national significance and students are challenged to find bold solutions for big issues.

The program gives teens a taste of university as they experience dormitory living, complete with early morning alarms and late nights. It's a busy schedule - each day, their time is split between attending lectures by leading university faculty and community guests, participating in workshops, going on field trips, as well as engaging in recreational and community-building activities.

SHAD is multidisciplinary, emphasizing STEAM subjects (science, technology, engineering, arts, and math). Its competitive application process means participants are



well-rounded and are often talented musicians, artists and athletes in addition to being high academic achievers.

The keystone of the summer program is the design challenge, where the students collaborate in small groups to develop an original product or service. More than just a brainstorming exercise, they build business and marketing plans and develop a prototype for their idea. This experiential learning opportunity is a safe space for participants to discover the importance of iterative design and working in teams to solve large problems.

SHAD students bring their own experiences and story to the design challenge. For Rameez Virji, Bruce Gao and Darlene Lim, SHAD was a launching point for projects they're still working on today. From solar panels to space exploration, SHAD alumni have worked on a diverse range of topics during and after their time in the program.

A FRIENDLIER VACCINE

No one enjoys getting needles or vaccines, but most of us just grumble and cope with the unpleasant process. Rameez Virji was inspired to develop a way to immunize people with a pill by his grandfather's fear of needles and refusal to be vaccinated. After travelling abroad and seeing some of the medical care



in the developing world, he empathized with his grandfather's reluctance.

Virji says, "I had just been overseas on a school trip and had seen firsthand how they vaccinate there. It's a horrible, terrifying process. I wouldn't wish it on anyone."

Virji was 17 when he went to SHAD and began working on this project; he's currently awaiting patent approval on the groundbreaking pill-based vaccine he started developing. He hopes the pill will make lifesaving vaccinations safer, more affordable and easier to administer to people in the developing world.

AN ENERGETIC MIND

During a trip to China in 2010, high school student Bruce Gao visited an orphanage and saw many of the children miserably cold due to issues with the heating system. When he returned home to Canada, he spent a lot of time daydreaming about ways to keep underprivileged people warm. He wondered if the solar panels on the orphanage were not aligned properly, causing the heating issues, and how many other buildings faced the same problem.

During his summer at SHAD, Gao attended SHAD Speaks, a session where students each have ten minutes to talk about one of their ideas or passions. Gao spoke about his preliminary plans for an Android app that would use a smartphone's GPS coordinates to find the best angles for aligning solar panels properly anywhere around the world. The other SHAD Fellows loved the idea.

"They just rallied around me and thought it was awesome," Gao said. "That flipped a switch in my head. I think that was a key moment."

Gao built the app and created a company called Simply Solar; the app is now used in more than 130 countries around the world. The improved alignment of the solar panels improves energy efficiency by as much as 40 per cent, allowing building occupants to leave their lights on longer into the evening and to heat more water.

The now 21-year-old has several different new ideas for apps every week. He's currently attending medical

school at the University of Calgary, and in the long term, he sees himself as a physician entrepreneur.

He says it won't be easy introducing new ideas to medicine because the stakes are so high and people are reluctant to change, but "it's a really exciting interdisciplinary field where you can make some big impact on real people."

EXPLORING NEW FRONTIERS

SHAD's focus on STEAM fields is also a great opportunity to young women. 60% of participants are female, but many of them still say there are stereotypes that need to be overcome so that women can succeed and make their mark as leaders in the workforce and society. One SHAD alumna from 1989, Darlene Lim, is going where no woman or man has gone before.

For the last 12 years, Lim has worked closely with NASA, spending hours piloting submersibles -- small vehicles that operate underwater, typically with the support of another vessel or team located nearby or on the shore -- and leading field research extreme remote locations. Her latest venture, for the NASA Ames Research Centre in California, has her heading up scientific exploration with a team of experts at volcano sites in Idaho and Hawaii which she hopes will help humans get to Mars. Some of the work her team is currently doing includes simulating the conditions they expect to find on Mars, such as communication delays up to 45 minutes.

"Even though the environments that we go to are fairly remote and sometimes dangerous, it's much safer than operating on Mars... My secret hope is that my children's children's children are walking around on Mars

and conducting science that Grandma Lim actually had a small little tiny part to play in," Lim says.

Companies like Space X have made it their mission to get humans to Mars, their enthusiasm has added another stream of funding to NASA and other space agencies from around the world. According to Lim, it's not a question of if, but when humans will land on Mars. "Since I started working in the planetary and human exploration community, it's always seemed to be 30 years out. But now I am more confident than I have ever been."

In 2013, Wired Magazine named Lim one of the world's 50 brightest minds -- an honour she was selected for by fellow Canadian and astronaut Chris Hadfield.

Even though she is at the peak of her career with no hints of slowing down, she says she will never forget her time at SHAD. Lim adds, "I certainly know that the exposure I got early on from programs like SHAD helped me realize that a person could do things that a guidance counsellor wouldn't necessarily name off to you."

SHAD lets youth experience the impact they can have on society at an early age and gives them an incentive to continue on their paths in research and leadership. SHAD's network of 14,800 alumni, including 30 Rhodes Scholars and many other accomplished professionals, is a lasting resource for participants, particularly those in rural areas or with fewer enrichment programs. From ongoing relationships and learning, to internships and mentorships, SHAD is truly a vibrant community.