

Next Generation **Innovation**



360

Illinois Mathematics and Science Academy®

Winter 2017

IMSA is nurturing a strong and diverse pipeline of innovative leaders for Illinois and the world, preparing them to solve the most complex social problems of our time.

Innovation is part of IMSA's legacy. In fact, IMSA alumni have been driving the technology sector over the past decade. Andrew Baptist '94, Greg Dhuse '99, Dusty Hendrickson '01 and Ethan Wozniak '99 are responsible for 212 of 350 patents generated by data storage leader, Cleversafe. Sam Yagan '95 relocated his tech company, ShopRunner, to Illinois and also co-founded OkCupid, SparkNotes, Techstars Chicago and Corazon Capital. Jessica Droste Yagan '95, CEO of Impact Engine invests in socially minded early-stage startups that improve economic empowerment, education, health and resource efficiency.

The work of alumni Steve Chen '96, YouTube co-founder, Yu Pan '95, PayPal co-creator, Russell Simmons '95, Yelp co-founder and Clara Shih '00, Hearsay Social cofounder, has empowered people of all backgrounds to share information and knowledge to a global community. Alumni Chris Jones '02 and Scott Powers '07 are forging new career paths in data analytics combining their love of numbers and passion for baseball (see story on page 6).

Current IMSA students, under the direction of world-class faculty, continue to build on the IMSA innovation legacy collaborating on chemistry-engineered plant breeding (see story on page 5), tracking systems for maritime mobile satellite communications and virtual reality science labs.

In recognition of our work in this area, we were humbled and honored that IMSA was named People's Choice winner for IN2 at the 16th annual Chicago Innovation Awards on October 30, 2017.

Over the next few months, we will be rolling out a number of new initiatives from my office. I am working with Robert Chang '89 to develop some strategic initiatives that will strengthen our institution and harness our ability as the IMSA community to collaborate together in impacting the world. We'll be contacting you shortly with both a brief survey and announcements. We invite you to join us as partners, mentors and creators as we prepare the next generation of discoverers, creators and thinkers through STEM education that reflects the evolving collaborative, cross-sector and high-tech nature of innovation.



José M. Torres, PhD

**Respectfully,
José M. Torres, PhD
President**

Pictured from left to right at the Chicago Innovation Awards: Sam Yagan '95, ShopRunner CEO, Dr. Robert Hernandez, IMSA Principal, Kristi Ross, tastytrade Co-CEO & President, Luke Tanen, Chicago Innovation Executive Director

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Mission

The mission of IMSA, the world's leading teaching and learning laboratory for imagination and inquiry, is to ignite and nurture creative, ethical, scientific minds that advance the human condition, through a system distinguished by profound questions, collaborative relationships, personalized experiential learning, global networking, generative use of technology and pioneering outreach.



IN2 Named Winner of 16th Annual Chicago Innovation Awards

IN2 was named a winner of the 16th annual Chicago Innovation Awards. The winners were announced at an event held at Chicago's Harris Theater on Monday, October 30, with nearly 1500 business and civic leaders, and supporters of innovation in attendance. The Chicago Innovation Awards, celebrating its 16th year, is the Chicago region's foremost recognition of the most innovative new products or services brought to market or to public service each year.

In true entrepreneurial spirit, IN2 Steve and Jamie Chen Center for Innovation & Inquiry, IMSA's startup raised \$2M in private funds from alumni, corporations, foundations and friends., Illinois' first secondary education innovation center, IN2 is an incubator for the next generation of discoverers, creators and thinkers through STEM entrepreneurship and makerspace education.

"Our vision is to create a model for U.S. education that empowers young people to transform their ideas into reality and into solutions to the complex social challenges of our time through entrepreneurship and innovation," explains IMSA President Dr. José Torres.

IN2 collaborates with corporate partners that include British Petroleum, ComEd, Caterpillar, First National Bank, and organizations such as Illinois Computing Educators. Additionally, IN2 has partnerships with Illinois higher education including Illinois Institute of Technology, Northwestern, and the University of Illinois. Volunteer idea baristas, community members with specific areas of expertise, assist students and community startups in idea development and guide them to take their concept to the next level.

The winning organizations receive a variety of honors including the opportunity to ring the NASDAQ Bell in New York City, and meetings with the Mayor, Governor and Cook County President.

"Over 530 organizations nominated for this year's awards," said Luke Tanen, Executive Director of the Chicago Innovation Awards. "As a group, these nominees generated record totals in economic output, with nearly \$3.4 billion in new revenues achieved from their new products and services, along with the creation of over 15,000 new jobs. The winners represent the best from this very impressive group."

The complete list of this year's Chicago Innovation Award winners can be found at chicagoinnovation.com.



PROMISE

143 7th-9th grade underrepresented students are attending IMSA PROMISE programs on Saturdays through early December. IMSA is committed to excellence and equity including active recruitment of students from all areas of Illinois. IMSA's PROMISE programs address the challenges of underrepresented and underserved students through year-round academic enrichment programming at low or no cost.

Held on IMSA's campus in Aurora with transportation provided from Chicago, PROMISE programs provide students the opportunity to work with IMSA faculty, staff and student mentors learning more about IMSA's unique learning laboratory and encouraging future admission to the tuition-free residential Academy for 10th through 12th grades.

Program Highlights:

- Exposure to curriculum that increases skills in math, science and English
- Hands-on learning
- SAT preparedness and practice testing
- Experience IMSA's residential environment
- Prepare for the IMSA application process
- Family involvement in the program

For more information, call 630-907-5949 or e-mail promise@imsa.edu.



44%

of 9th grade PROMISE participants last year were admitted and enrolled at IMSA.

Faculty Corner

English Faculty, Tracy Townsend Authors Fantasy Fiction Novel

IMSA students, faculty and staff congratulate Tracy Townsend on her newly published novel, "The Nine". Townsend is a member of the IMSA English Faculty and Chair of the English Department. She holds a master's degree in writing and rhetoric from DePaul University and a bachelor's degree in creative writing from DePaul University. Her short story "Late Arrivals" was published by Luna Station Quarterly in March 2016. "The Nine" is available from on-line retailers. Congratulations Tracy!



Partnership with Ball Horticultural Company Helps IMSA Students Bloom

When Jayaraj Alappat, PhD, Senior Analytical Chemist for Ball Horticultural Company, reached out to Dr. Sanza Kazadi, Director of IMSA Student Inquiry Research (SIR), about collaborating with students at IMSA on engineering new and more lasting flower and plant colors, Kazadi knew it would be a “win-win.”



IMSA students Rebecca Ellington '19 and Shivani Sharma '18 are working with Alappat on an innovative new model of chemistry-guided plant breeding. “Typically, we evaluate plant colors just by looking at them,” says Alappat. “But the students are using their expertise and cutting edge computer modeling software to present the molecular structure of the chemicals in the plants that make up the colors in 3D. This allows us to understand the properties of these unique chemicals that make up the colors of such flowers as a red rose, or a petunia and also help us to direct breeders to develop unique chemical profiles that make colors novel and stable in various crops,” he says.

“Thanks to the Ball Horticultural Company, Rebecca and Shivani have the unique opportunity to utilize what they learn in their organic chemistry and molecular biology classes; also as they learn about 3D modeling and computational chemistry in an applied research experience,” says Kazadi.

Michael Williams, Director of Ball Horticultural Human Resources, believes a talented and innovative workforce is central to the company’s vision to color the world as a leader in plant development and distribution. Both Williams and Alappat agree that an IMSA hallmark is the rigor of the math and science classes as well as the experiential and problem-solving approaches that serve to prepare students to work for companies like Ball Horticultural.

Since 1905, Ball has consistently supplied professional growers with the highest quality products and services. Founder George J. Ball’s tradition of leadership is being carried forward with innovative varieties and growing technology, advances in research, and new models for sustainable horticulture. The corporation, whose headquarters is in West Chicago, is led by his third generation granddaughter and Friend of IMSA, Anna Ball. Ball Horticultural Company has a strong presence on six continents and in 18 countries.

**For more information about Ball Horticultural Company, visit ballhort.com.
For information on IMSA’s SIR program, call Dr. Kazadi at 630-907-5899.**



June 27-July 1, 2018
IMSA is proud to host the
 International Student Science Fair (ISSF)



Learn more at issf2018.com

IMSA Alums Innovate Data Analytics for MLB Teams

IMSA alumni are driving the data behind home plate for the Major League Baseball Chicago Cubs and Los Angeles Dodgers forging new career paths for data scientists and combining a love of numbers with a passion for sports.



The two teams and IMSA alumni squared off in the National League Championship Series this past October. While the Dodgers prevailed, both Chris Jones '02, data analyst for Cubs, and Scott Powers '07, data analyst for the Dodgers, had more traditional career paths in mind growing up.

"I had designs on becoming an actuary," says Powers. "I didn't think that working in baseball was a realistic possibility. Part of me wanted to come back to IMSA as a math teacher." As a statistics PhD student at Stanford University, Powers worked on baseball research on the side and presented his work at several conferences where he caught the attention of the Oakland Athletics. He joined the Dodgers after graduating.

Jones recalls his early career interests, "When I was in high school, I was hoping to go into public policy analysis. You know, saving the world with math." After studying Politics and Economics in college, he realized that baseball research was more fun and accepted a baseball at internship with Baseball Info Solutions (a company that provides data to teams) and the New York Yankees. "To my good fortune, I stumbled across a great opportunity with my favorite team and have been helping the Cubs baseball operations ever since!" he says.

Jones was among several alumni who participated in a Career and College Choice panel discussion on data science at IMSA on October 26.

Titans Celebrate Successful Fall Season

Sports is one of the boundless opportunities IMSA students have to expand beyond their math and science talents. This fall, our student athletes not only branched out, they stood out.

IMSA's Boys Soccer Team had one of its most successful seasons ever. They claimed the conference championship for the first time in program history, won a first ever 2A regional game and finished with a 16-3-1 record.

IMSA golfer sophomore T.J. Ptak advanced to the IHSA Boys State Golf Tournament and placed 65th. T.J. was the first golfer in IMSA's co-ed program history to make it to state since 2013 and the first male 2009. T.J. was only the fourth boy from IMSA ever to qualify for the state tournament. Senior golfer Abi Ramakrishnan advanced out of her regional to play in her sectional for the third consecutive year. She is the only IMSA golfer ever to make it to sectionals all three of her years at IMSA. Abi is also only the fifth IMSA female ever to advance to sectionals.

The IMSA/Yorkville Girls Varsity Swim Team won the IMSA Invitational meet held at IMSA on September 30.

The IMSA Boys Cross Country Team won the following meets: Northeastern Athletics Conference Flight, Harvest Christian 2017 Midseason Classic and the Oregon 7 person invitational. Individually, Daniel Chen '19, Istvan Kovach '18, Daniel Soto '18, Kir Nagaitsev '18 and Valynn Rinkel '20 placed in the Regional meet and advanced to Sectionals. Daniel Chen continued on and advanced to the State meet in November.



Congratulations to all 158 of our Titan student athletes on their season accomplishments!

Youth Teaching, Mentoring Program Grows



The IMSA Allies program is growing with the addition of a peer mentoring pilot and the most participation ever from students on campus in Aurora as well as the program in Chicago.

Allies utilizes the “Kids Teaching Kids” model that was established over a decade ago at the Illinois Mathematics and Science Academy. It prepares high school students to deliver inquiry-based, hands-on science, technology, engineering and mathematics activities (STEM) to younger students. Allies learn 21st century workforce readiness skills, including best practice collaboration, critical thinking, leadership and communication skills by leading IMSA FunShops and summer programs.



Summer Internship for College Students Expands, Applications Due March 1

IMSA's Outreach team will be expanding its Summer Internships for Tomorrow's Educators (SITE) program in the Summer of 2018. The program provides college students who are majoring in education or STEM with training, mentorship, feedback, and classroom opportunities to teach hands-on, inquiry-based STEM content to students in IMSA's summer programs.

The application portal for this paid (stipend) internship program is now open and available at goo.gl/forms/Os4nNp2pDVgLRDFE3.



Watch for IMSA's Summer program lineup in January.

Registration opens for residential programs February 13, 2018 and day programs February 20, 2018!



IMSA Fusion Welcomes Waukegan School District

IMSA Fusion continues to grow and expand welcoming all 15 elementary and middle schools from the Waukegan school district to our Fusion family. Over 300 educators throughout Illinois are trained Fusion teachers, now leading the way in STEM education.

IMSA Hosting Regional NOAA Conference

Educator outreach will be in the spotlight when IMSA hosts the regional National Oceanic and Atmospheric Administration (NOAA) conference in conjunction with Professional Development Day for Educators throughout the area on March 1, 2018. Over 200 formal and informal educators from the Chicago area will attend the multi-session conference focusing on the UN Sustainable Development Goals of Clean Water & Sanitation, Climate Action, Life Below Water, and Life on Land. This will be an exciting precursor to the International Student Science Fair hosted by IMSA June 27-July 1, 2018.

For the most recent updates from IMSA Outreach, visit our blog, outreachatimsa.wordpress.com.

IMSA Noteables

Students

IMSA junior **Trisha Sudhaker** was honored for her participation in U.S. Representative Hultgren's Women in STEM Scholars Program!

Six IMSA students have been named Semifinalists in the 2017 Seimens Competition in Math, Science and Technology!

Congratulations **Irena Gao '18**, **Abhay Gupta '18**, **Hanson Hao '19**, **Sheehwa Hong '18**, **Neil Wary '18**, and **Claudia Zhu '18**.

The National Merit® Scholarship Program recently named 46 semifinalists from IMSA in its 2018 competition. IMSA semifinalists represent 27 different communities throughout Illinois. Nearly 25% of IMSA's senior class are recognized as semifinalists. Approximately 16,000 semifinalists throughout the nation now have the opportunity to continue to the finalist level of the competition. They must fulfill several requirements to advance to the Finalist level. About 90 percent of the semifinalists will attain finalist standing, and about half of these finalists will receive National Merit Scholarships for undergraduate study totaling more than \$32 million. Merit Scholars® will be announced in the spring of 2018.

For a complete list of the semifinalists please visit imsa.edu.

Staff/Faculty

IMSA President, **Dr. José Torres** was named one of the most influential people in edtech in 2017 by Tech&Learning.

Swarms are big in **Dr. Sanza Kazadi's** '90 SIR lab! Dr. Kazadi, his 2016 Summer Research Training Program participants, and collaborator, **Dr. Suranga Hettiarachi** from Indiana University Southeast presented at the 2017 International Conference on Agents and Artificial Intelligence in Porto, Portugal.

English faculty member **Dr. Adam Kotlarczyk's** "Confluence" was awarded the 2017 Tillie Olsen Short Story Award. Named for American writer and activist Tillie Olsen (1912-2007), the award is granted by The Tishman Review, a quarterly literary journal.

Liz Martinez, Curriculum Manager, mentored CPS teachers during the 2017 Bio Lab Basic Training for Middle School, part of the Baxter Box Loaner Program held by the Northwestern's Office of STEM Education Partnerships!

Alumni Award nominations are open!

Submit yours today!

imsa.edu/alumni/alumni-awards





Preview Day: December 3

Academy Application Deadline February 1, 2018

To register, visit imsa.edu/admissions/experienceIMSA or call 630-907-5028.