

Twenty years ago, Illinois citizens

BOLD IDEAS IMSA 20

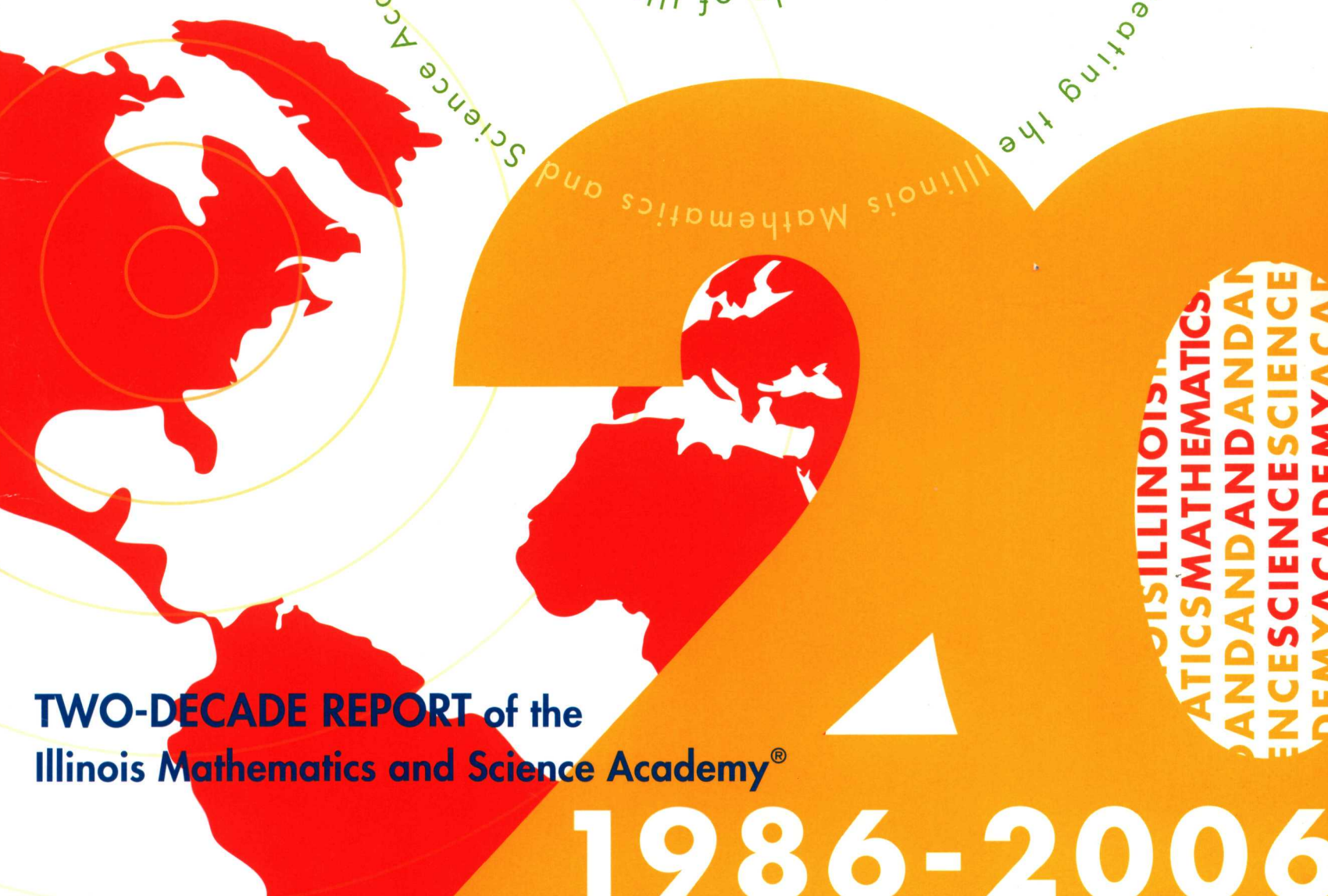
dared to

WORLD-CLASS RESULTS CELEBRATE

"a gift from the people of Illinois to the human future."
Dr. Carl Sagan

Science Academy®

design a bold future by creating the



**TWO-DECADE REPORT of the
Illinois Mathematics and Science Academy®**

1986-2006

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IMSA20

● **IGNITING WORLD-CLASS TALENT
AND LEADERSHIP IN MATHEMATICS,
SCIENCE AND TECHNOLOGY FOR
OUR STATE, NATION AND WORLD**

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BOLD IDEAS WORLD-CLASS RESULTS

How will unprecedented technological advances benefit citizens of Illinois, our nation and world?

Twenty years ago, Illinois citizens dared to design a bold future by asking this visionary question. One of the astonishing outcomes of their brave imaginations is the Illinois Mathematics and Science Academy...

In the mid 1980s, the state of Illinois, recognizing a sharply increased need for highly skilled leaders in mathematics, science and technology, founded the **Illinois Mathematics and Science Academy**[®]. Twenty years later, the national demand for mathematics, science and technology leaders has never been greater. The National Academies report – *Rising Above the Gathering Storm* and *President Bush's American Competitiveness Initiative* – address the growing concern that the United States is losing its competitive advantage as countries abroad invest heavily in the education and training of scientists and engineers. Both initiatives **call for increased commitments in scientific research and in mathematics, science and technology education programs**.

Illinois citizens can take pride in their visionary role in creating an innovative institution that has become **one of the world's leaders** in developing talent and leadership in mathematics, science and technology. Underlying our work is a **dynamic design** that prepares learners to be leaders in the 21st century. Our rapidly changing world – whether spurred by technology, shifting economic influences, diminishing natural resources or political transitions – calls for leaders who are **bold inquirers, integrative thinkers, innovative problem solvers, resourceful inventors and imaginative futurists**. This report illuminates the design of the "IMSA Way" and IMSA's **strong returns to investors**.

IMSA's strong returns include our **highly accomplished graduates** who now are forging new frontiers in mathematics, science, technology and education at our state's and nation's universities, school systems, corporations, national laboratories and government agencies. They also are entrepreneurs and leaders of new start-up company ventures. Our returns also include nationally recognized statewide programs that help Illinois teachers to keep pace with the latest developments in mathematics, science and technology instruction and ensure that young students, especially the historically underrepresented, have opportunities to excel in mathematics and science.

State and global leaders are joining us in creating a **bold and exhilarating vision** for the next two decades. Together, we will ensure that IMSA continues to thrive as a world-class powerhouse that produces compassionate and ethical leaders whose breakthrough discoveries, extraordinary innovations and bold policies will contribute to **a just and sustainable world for all**.

Luis Nuñez, Ph.D.
Chairman



Stephanie Pace Marshall, Ph.D.
President



"a gift from the people of Illinois to the human future."

Dr. Carl Sagan

BEAUTIFUL MI

“one of the 20 scientists to watch in the next 20 years”

SCOTT GAUDI '91 On the Search for Extrasolar Planets



To say that Harvard Astronomer Scott Gaudi's accomplishments are “out of this world” is an understatement. In fact, IMSA Class of 1991 graduate **Scott Gaudi** already has discovered two planets. When asked about his planetary discoveries so far, he modestly responds, “Two planets, so far. Hopefully, there will be more to come.”

Only in his 30s, Gaudi has set the planetary research world on fire and was named by *DISCOVER* magazine as “one of the 20 scientists to watch in the next 20 years.” As reported in *National Geographic*, his most recent discovery is a new, low-mass planet found using a microlensing technique.

As an **astronomer at the Harvard-Smithsonian Center for Astrophysics**, Gaudi performed extensive data analysis that confirmed the existence of the planet. This newfound world, a discovery resulting from a collaborative effort with 35 other astronomers, weighs about 13 times the mass of Earth and is probably a mixture of rock and ice.

“Most interestingly, the discovery of this planet implies that cool, super-Earths are very common,” Gaudi said.

IMSA Grad Is NCAA MODEL SCHOLAR-ATHLETE



As an NCAA scholar-athlete, IMSA Class of 1998 graduate **Princess Imoukhuede** excelled at everything from biomedical engineering to track and field.

In fact, Imoukhuede became a household name during the NCAA 2005 basketball championships when she appeared on its national television public service announcements.

How did she become one of only four college students in the nation chosen for the television announcements?

“I believe my life as a student-athlete captured what the NCAA was trying to portray,” Imoukhuede said. “I was an undergraduate researcher in biomedical engineering, publishing three papers in cancer-therapy by my junior

year,” she said. “I also taught courses in HTML, physics, and mechanical engineering and held offices in the National Society of Black Engineers,” she added. “I sang with the MIT Concert Choir and was an actor in MIT's Black Theater Guild, all the while, training and competing and serving as a captain of my field and track team.”

Imoukhuede went on to earn an undergraduate degree in chemical engineering from MIT. Continuing on her path to academic stardom, she is currently **pursuing her Ph.D. in bioengineering at the California Institute of Technology.**

“I love research and teaching, so I feel a career in academia would best combine my strengths and interests.”

GOODNESS & GENIUS for the World

ROI: Returns to Our Investors...

Return on Intellectual Capital

How can Illinois produce exemplary leaders in mathematics, science and technology for our state, nation and world?

Rising Above the Gathering Storm, the 2006 publication by the National Academies, advocates establishing statewide specialty high schools of mathematics, science and technology in every state, an action that places the Illinois General Assembly and the people of Illinois "20 years ahead of the curve" when they created the Illinois Mathematics and Science Academy® (IMSA) in the mid-1980s.

IMSA, widely acclaimed for its leadership in innovative approaches to teaching and learning, serves students, educators and policy makers in Illinois and beyond. It is a model upon which a number of other institutions in the United States and abroad are based.

IMSA's world-class advanced college preparatory program enables students to reach extraordinary levels of achievement. **Newsweek** named IMSA among the "Public Elites" in its list of 21 public high schools with the highest average ACT and SAT scores in the nation. In 2006, the College Board Advanced Placement program recognized IMSA as having the **strongest AP results in the world** among like-size schools for AP Physics C: Mechanics and AP Physics C: Electricity and Magnetism.

IMSA's innovative mentorship and research programs have enabled students to earn numerous awards and recognition from national and global competitions including Intel Science Talent Search,

Siemens Westinghouse Competition, American Junior Academy of Science at the American Academy for the Advancement of Science, High School Mathematical Contest in Modeling (HiMCM) and the International Physics Olympiad. IMSA was the only secondary institution in the nation to produce **two of the top 10 student winners in the prestigious 2005 Intel Science Talent Search Competition**.

IMSA graduates are highly recruited by the nation's most competitive colleges and universities. **The Wall Street Journal** and **Worth Magazine** ranked IMSA among the top public college preparatory institutions in the nation to place its graduates in Ivy League and highly selective colleges and universities. As undergraduate and graduate students, they receive numerous academic, research and leadership accolades including **Fulbright, Marshall, National Science Foundation, Rhodes, Truman and Siebel Scholarships**.

IMSA graduates are making significant contributions to their chosen fields and to society. They are enhancing our economy and quality of life as they publish groundbreaking research, find cures for diseases, file patents, bring new technologies to market and start new companies. They are delivering **strong returns to IMSA shareholders** as they use their goodness and genius to create a sustainable world that works for everyone.

IMSA graduates, who now number 3,363 strong, represent every Senate and House district in Illinois.

There are more than 20,000 public high schools in the nation. *The Wall Street Journal* ranks IMSA among the top 10 for placing its graduates in Ivy League and highly selective colleges and universities.

"attracting the attention of major national research organizations and popular news media outlets."

Gaorav Gupta '96 Makes National Headlines With Cancer Gene Discovery

Still in his 20s, Gaorav Gupta '96 already is attracting the attention of major national research organizations and popular news media outlets.

Why all the attention?

Gupta, a graduate student and researcher at Memorial Sloan-Kettering Cancer Center in New York City, has identified a set of genes that could predict if breast cancer will spread to the lungs and just how aggressive the disease will be.

"We are the first to identify a clinically relevant set of genes that can predict metastasis [spread] of breast cancer to the lungs," Gupta told *HealthDay News*.

Gupta is the co-author of the study that appears in the July 28, 2005 issue of *NATURE*. The findings could someday help physicians to better target therapies for more aggressive types of breast cancer.

The American Cancer Society (ACS) praises Gupta's study in *HealthDay News* as an important first step. "Being able to identify a patient with a higher probability of developing metastasis would be of tremendous importance in terms of managing these patients," said William Phelps, scientific program director of the research department for the ACS.



NO LIMITS TO LEARNING AND LEADERSHIP

ROI: Return on Inquiry

How can we bring energy and passion to learning?

Inquiry draws a line back to the days before we were in kindergarten – when we learned with wonder, with fierce concentration and without fear of failure or censorship, when we had vivid imaginations that took us to places where we've never been, when we built things, knocked them down and built them again.

IMSA takes learners back to that time. Whether we are working with our talented residential students, fourth graders or experienced teachers, we start with a premise – our learners come to us with rich and unique life experiences and with personal interests, passions and curiosities. Our work is to guide learners along disciplined paths that enable them to create their own compelling questions and rich learning environments.

Inquiry in Action! – On IMSA's campus and throughout Illinois

The **Student Inquiry and Research (SIR) Program** at IMSA serves as a world-class model learning environment. It presents a framework for IMSA students to pursue their own compelling questions of interest, conduct research with prominent scientists and scholars, and create products. With the **"world as their classroom"** students reach extraordinary levels of achievement. **Inquiry in Action!** Cindy Wang '06 conducted her IMSA research project under the guidance of Research Staff Scientist Dr. Bo Chang at The Jackson Laboratory in Bar Harbor, Maine. Wang's research, *nm2608A: A New Naturally Arising Mouse Model for Human Autosomal Recessive Achromatopsia 2*, is focused on mapping the Cnga gene, which is involved in achromatopsia (color blindness). During her research, Wang

WHY NOT?

IMSA Partner Teacher Takes SPACE AGENCY TO NEW HEIGHTS

Peoria elementary school teacher **Becky Jaramillo** probably never dreamed that her relationship with IMSA would eventually lead her to a yearlong fellowship with the National Aeronautics and Space Administration (NASA).

A **K-6 science and special education teacher at Norwood Elementary School**, Jaramillo has had an extensive history of involvement with IMSA's professional development and student enrichment programs.

She has worked with IMSA's Problem-Based Learning program as a learner and as a coach. Later, her class was featured in the Problem-Based Learning (PBL) video, *Three Classrooms in Action*, in which students developed a plan for road relocation that was later accepted by the highway commission. She also served as a

science teacher in IMSA Excellence 2000+, an afterschool mathematics and science program for middle school students.

Now Jaramillo has the opportunity to impact others nationwide with the knowledge and skills gained from IMSA. After one of NASA's staff members heard her presentation at IMSA's PBL Symposium in 2003, NASA invited her to help develop curriculum for its online SciFiles program.

Always seizing new opportunities, Jaramillo spent two summers working with NASA to develop curriculum. In addition, she also served at the space agency in a yearlong fellowship and is a **recipient of the Presidential Award for Excellence in Science Teaching**.



found a specific genetic mutation that causes color blindness, a discovery that will make it possible to develop and test treatments such as drugs or gene therapy leading to the prevention and cure for color blindness in humans. Wang was a finalist in the prestigious **2006 Intel Science Talent Search Competition** and named to the **2006 USA Today's All-USA High School Academic First Team**. Wang currently attends Harvard University.

In **IMSA Kids Institute® (KI)**, IMSA students share their love of learning by designing and delivering hands-on enrichment activities in mathematics, science and technology to thousands of children in Illinois. **Inquiry in Action!** As a 10-year-old, you are about to experience *KI Science Explorers Summer Camp* at IMSA. It's a fact of life that everyone gets sick, but whether that illness is a common cold or an infectious disease depends on what kind of germ is in the body. In this camp, IMSA students guide you in diagnosing a patient who has come down with a mysterious illness. Through research and labs, you solve the problem of the "Guilty Pathogen" and prevent a possible epidemic. You present your findings to a captive audience. This is learning at IMSA!

IMSA Excellence 2000+ (E2K+) is a statewide after-school enrichment program for middle school students who are talented, interested and motivated in mathematics and science. The program includes a teacher professional development component for participating schools. **Inquiry in Action!** As a middle school student in "*CSI: E2K + Style*," you engage in inquiry and problem solving as you investigate a case of vandalism at a local high school. In the course of using forensic science to "solve the case," you apply concepts in physics, biology and mathematics.

INNOVATION Unbound

ROI: Return on Innovation

How can 21st century learning resources bring equity and access?

21st century advanced technologies and communications have enabled IMSA to expand the boundaries of space and time and provide Illinois students and teachers with increased equity and access to quality educational opportunities. From Chicago to Carbondale, IMSA is at work delivering statewide professional development and enrichment programs to thousands of Illinois educators and students. Programs are held at IMSA's Aurora campus, at locations throughout Illinois and online.

Virtual Learning Through online courses, Webcasts, teleconferences, Web-based tutorials and other digital resources, IMSA is expanding its reach to schools throughout Illinois. **Innovation Applied!** IMSA's virtual learning programs gain national and global attention. *U.S. News and World Report* reported "Gifted sixth graders in Chicago can log into Illinois Virtual High School [IMSA delivered] for algebra lessons." The IMSA Webcast, "Live Learners Roundtable Featuring High School Students From Across the U.S.," received the prestigious 2005 LOLA Award, given to only eight programs from across the globe for outstanding achievement in the design, delivery and production of live online learning events.

TALENT While IMSA's accomplished alumni have conceived, designed and developed products that have changed our lives, we believe our young students at IMSA can too. That's why we launched "Total Applied Learning for Entrepreneurs" (TALENT), the

program that provides on-campus, off-campus and virtual learning experiences and resources to encourage, stimulate and champion entrepreneurial applied science and technology projects. **Innovation Applied!** Students in the new program already are recognized for their energy and remarkable perspectives. Here is business reporter Ron May's reaction to TALENT students who participated in a meeting hosted by the Illinois Technology Development Alliance (ITDA): "This....was without a doubt the most entertaining and inspiring meeting I've seen in the tech world all year. Students from the Illinois Math and Science Academy hijacked the ARCH/ITDA meeting with keen insights and refreshing honesty while the rest of us sat in awe of what we were witnessing."

Mathematical Investigations Mathematical Investigations (MI) is IMSA's core mathematics program that integrates topics from all areas of pre-calculus mathematics including algebra, geometry and trigonometry. MI enables students to explore mathematical concepts, make conjectures, present logical, valid arguments for their assertions and apply problem-solving techniques to new situations – all skills that have life-long applications. IMSA faculty members serve as coaches who facilitate student interaction and dialogue. **Innovation Applied!** MI has applications for secondary school systems. Following an extensive search, St. Charles District 303 in Illinois selected IMSA's MI curriculum as the best-in-class program to prepare its students for the challenges of an advanced mathematics program.

The Illinois Virtual High School has had more than 9,000 semester course enrollments.

IMSA's 21st Century Information Fluency Program enrolled nearly 2,200 Illinois educators in online courses and workshops.

GENIUS APPLIED

DAN MOOREHEAD '05

Gamer, Student, Entrepreneur, CEO

Who says you have to graduate from college first before following your dreams and passions of helping others?

While studying for undergraduate classes at the University of Illinois and serving as president of its College Entrepreneurs Club, Dan Moorehead '05 also holds three other titles: president of RealmWare Corporation (www.v-3d.net), software architect of Visual3D Architect.NET (www.visual3d.net) and partner in Suva Interactive, LLC (www.suvainteractive.com).

Moorehead's flagship product, the Visual3D Architect.NET, is a visual authoring environment

for simulations, rapid prototyping, architecture design and game development. This product is based upon the success of his open-source RealmForge product featured in the July 2005 issue of *Software Developer's Journal* in the article "RealmForge GDK: Cross-platform Game Development Middleware for .NET."

To say that Moorehead's product is popular is an understatement – RealmForge is ranked as 7th-in-class of the 240 products listed on DevMaster.net and has achieved over 40,000 installations.

World's Information Technology Giants RELY ON IMSA GRAD

Ben Chelf '96 helps provide state-of-the-art automated source code analysis for customers as varied as NASA, IBM, Sun Microsystems, the Lawrence Livermore National Laboratory and Naperville-based Tellabs.

"At the core of our software," says Chelf, Coverity's Chief Technology Officer, "is technology that looks for defects in other people's software – known in the industry as Static Source Code Analysis," he said.

"This enables our customers to find defects earlier in the development process, thus saving hundreds of thousands, if not millions of dollars from the cost of fixing bugs that hit in the field," Chelf said.

The beginnings of the company came out of research that Chelf and other Stanford graduate students were exploring. "The resulting research project with my fellow grad students gained notoriety quickly and before long, there was enough market demand for our technology to warrant the founding of Coverity," said Chelf.

Of the 40 full-time employees at Coverity, four are IMSA alums – all from the IMSA Class of '96: Chelf, a co-founder, Arun Bhalla, Jared Wadsworth and Matt Hayward. "When it came time to start filling out our Coverity team, these guys came to my mind as 'must-haves' for Coverity," Chelf said. "They have all helped us tremendously in growing our business."

Coverity was recognized by the 2006 Technology Innovation Awards sponsored by *The Wall Street Journal*. The awards recognize innovations that "should break with conventional processes and should go beyond marginal improvements in existing products and services."

Chelf, a member of the IMSA Fund for Advancement of Education Board of Directors, feels he gained much from IMSA that contributed to his success. "IMSA gave me a very 'I can do it' attitude," said Chelf. "I never planned to be an entrepreneur, but when the opportunity arose to start Coverity, I was ready and excited to tackle the challenge."

"IMSA gave me a very
'I can do it' attitude"



"to help...overcome a variety of critical challenges"

REBECCA WILLETT '96 Forges Engineering Frontiers



Any way you look at it, **Rebecca Willett**, assistant professor of electrical and computer engineering at Duke University, is in top demand.

After graduating from IMSA, Willett earned a B.S. in engineering from Duke University and an M.S. and Ph.D. in electrical and computer engineering from Rice University. In addition, Willett worked as a Fellow of the Institute for Pure and Applied Mathematics at UCLA, as a visiting researcher at the University of Wisconsin-Madison and the French National Institute for Research in Computer Science and Control, and as a member of the Applied Science Research and Development Laboratory at GE Medical Systems (now GE Healthcare).

Willett's teaching and research interests are focused on information processing techniques and how these can be applied to help further other fields including medical imaging, astrophysics and bioinformatics.

Looking to future medical breakthroughs, Willett's research also **could have a significant impact on the ability to diagnose and treat life-threatening diseases.** "One aspect of my research is focused on photon-limited medical imaging modalities such as PET, SPECT, and other forms of nuclear medicine," Willett said. "I am designing methods which use the very noisy and distorted raw data collected by such instruments to accurately localize tumors and other harmful lesions."

As testimony to the broad implications of her research, Willett also is **assisting the Department of Defense through her work on the Computer Science Study Panel**, run by the Defense Advanced Research Projects Agency (DARPA) and the Institute for Defense Analyses. "The goal of this program is to help the Department of Defense and intelligence agencies overcome a variety of critical challenges through the development of cutting-edge information processing and analysis methods," said Willett.

Nearly 21,000 teachers and 52,500 students in Illinois and beyond have benefited from IMSA's professional development programs and student enrichment/pathway programs.

Challenge "REALITY"

ROI: Return on Integration

How can we fully engage the learner to solve real-world problems?

At the core of our design is the belief that each person is capable of changing the world. At IMSA, no dream is too big. By challenging today's realities, we create new realities for tomorrow. IMSA provides unlimited opportunities for students to apply all they have learned to solve real-world problems.

Student Leadership Development At IMSA, leadership is a fundamental quality that infuses every classroom, team and project with possibility and responsibility. Through co-curricular activities, residence hall activities and local and global service opportunities, the IMSA Student Leadership Development Program (SLD) challenges students to become ethical leaders and to make significant contributions to the community and world. **Integration Put Into Practice!** Margot Seigle '05 organized 23 IMSA juniors and seniors along with IMSA faculty, staff and parents to build a home in Tijuana, Mexico for the Baldovinos-Martines family. "Not only has IMSA allowed our daughter to benefit from the academic program, she has been encouraged to share her individuality and creativity...to create learning opportunities for herself and others," said Margot's parents, Mark and Robin Seigle.

Science, Society and the Future is just one IMSA course example where IMSA's talented faculty members guide students to engage in inquiry, think critically and creatively, and apply their cross-discipline knowledge to address significant real-world issues. In this class, students bring all they have learned of science and ethics to analyze and address a current societal problem.

WETA

More than 1,900 teachers and 612 students have participated in IMSA's Problem-Based Learning Programs.

IMSA-Inspired Scientist Pushes the Limits in HIGH ENERGY PHYSICS

Andy Hocker '91 got the physics bug while a sophomore at IMSA.

"Sophomore physics was my introduction to the subject, and the depth of IMSA's science curriculum allowed me to pursue my interest further with classes in modern physics and astrophysics," Hocker said. "By the time I graduated from IMSA, I was confident that physics was what I wanted to do and that I had the capability to do it."

After receiving his B.A. in physics from Rice University, Hocker enrolled in graduate school at The University of Chicago and then completed his dissertation research at the European Laboratory for Particle Physics (a.k.a. CERN) in Geneva, Switzerland.

"I finished and graduated in 2000, at which time I began a postdoctoral research position with University of Rochester (NY) at Fermilab. Four years later, I was hired as an associate scientist in Fermilab's Technical Division," Hocker said.

Currently, Hocker is working on the next big project for Fermilab, the International Linear Collider (ILC). "The ILC will be the result of a worldwide design and construction effort, and Fermilab hopes to serve as the host laboratory for this enormous new facility," said Hocker.

Hocker says the construction of the ILC would have worldwide implications. "A fully-realized ILC has the potential to revolutionize our understanding of the physical world in a number of ways," Hocker said. "In addition, particle accelerators themselves are becoming important tools in cancer treatment, materials science and chemistry research."

"the potential to revolutionize
our understanding of
the physical world"

Integration Put Into Practice! In the Science, Society and the Future course, students conducted research and analysis on the use of sustainable energy sources for Illinois. They learned how to support their ideas with evidence and present their conclusions with power and clarity before a distinguished panel that included IMSA Resident Scholar and Nobel Laureate Dr. Leon Lederman and experts from the Illinois Lieutenant Governor's Office, a community-based conservation group and the media.

Problem-Based Learning The world-renowned IMSA Problem-Based Learning Network serves teachers in Illinois and beyond as they learn to use Problem Based Learning (PBL), a powerful educational model that organizes curriculum and instruction around carefully crafted situations adapted from real-world issues. Learners gather and apply knowledge from multiple disciplines in their quest for solutions. Educational delegations from around the globe come to IMSA to learn our PBL model. **Integration Put Into Practice!** In IMSA's PBL Summer Sleuths Program, Illinois teachers practiced their PBL skills by coaching 45 Chicago-area students who addressed a real-world problem presented by a local dairy farmer. Should the dairy farmer enter into a partnership with a pharmaceutical company and raise transgenic cows that give medicine in their milk? To answer this question, students learned about genetics, farming and medicine. They conducted genetic modification experiments and gathered resources from experts at the DuPage County Farm Bureau, the American Medical Association, Illinois Milk Producers and the Northern Illinois University Bioinformatics and Genomics Center. Their research culminated in formal presentations.



BOLD IDEAS THAT C

Invention + Application = CHANGED LIVES

ROI: Return on Invention

How do prominent partners add synergies that benefit many?

Throughout two decades, IMSA has forged connections with prominent organizations in the private and public sectors to combine financial and intellectual resources that lead to new bodies of knowledge, services and programs. Our partners' generous support and sustained commitment to our vision and work enable IMSA to further stimulate excellence for children, educators and school systems throughout Illinois and beyond.

U.S. Department of Education + American Association for the Advancement of Science + Tellabs Foundation + Smithsonian Institution + International Society for Technology in Education + BP + Illinois Board of Higher Education + The Grainger Foundation + Illinois State Board of Education + Northwestern University + Illinois Institute of Technology + The University of Chicago + University of Illinois at Urbana-Champaign + University of Illinois at Chicago + Fermi National Accelerator Laboratory + Toyota USA Foundation + Chicago Public Schools + Argonne National Laboratory + Andrew Corporation + The Harris Family Foundation + Illinois Computing Educators + Lloyd A. Fry Foundation + Illinois School Library Media Association + Caterpillar Foundation + Illinois Council of Teachers in Mathematics + Israel Arts and Science Academy + Illinois Association for Supervision and Curriculum Development + Illinois Science Teachers Association + Korea Science Academy + Harvard University + World Academy of Young Scientists + National Consortium for Specialized Secondary Schools of Mathematics, Science and Technology + Grand Victoria Foundation + Association for Supervision and Curriculum Development + ComEd, an Exelon Company + SciMat International

IMSA Grad, Skilled Surgeon Shares Expertise on HIGH-TECH PROCEDURES



It is easy to see from his resume that **Dr. Daniel DeUgarte**, IMSA Class of 1990 graduate, has all the right credentials to be a skilled surgeon. DeUgarte brings the latest in clinical advances when he enters the operating room.

DeUgarte, pediatric surgery fellow at the University of Michigan, has received **advanced training in minimally invasive and emerging technologies** such as robotic surgery, advanced videoendoscopic surgery and pediatric endosurgery.

Following his graduation from IMSA, DeUgarte graduated magna cum laude from Harvard College in Biochemical Sciences and then attended medical school at the University of California, Los Angeles (UCLA) where he also completed his general surgery residency.

DeUgarte continues to **share his expertise through publications and presentations to other surgeons worldwide** at venues such as the 4th International Meeting of the Tissue Engineering Society International, Association for Academic Surgery, Plastic and Reconstructive Surgery Council Meeting, Pacific Association of Pediatric Surgeons and the Pediatric Association of Pediatric Surgeons.

DeUgarte's recently published articles about a variety of clinical advances can be found in the *American Surgeon*, the *Journal of Vascular and Endovascular Surgery*, *Plastic and Reconstructive Surgery*, *Tissue Engineering* and the *Journal of Pediatric Surgery*.

CHANGE THE WORLD

MCCOOL TWINS

Changed the Way We Learn, Work and Live

Before there was Netscape, there were the McCool brothers.

IMSA Class of 1991 graduates **Mike and Rob McCool** were on the team at the University of Illinois at Urbana-Champaign that created Mosaic, the Internet Browser used to start Netscape.

As if that wasn't enough to **change the face of the World Wide Web**, Rob McCool is the original creator of the Apache HTTP Web server. The Apache server played a key role in

the initial growth of the World Wide Web and continues to be the most popular Web server in use – in fact, recent statistics show that the Apache server now runs approximately two-thirds of the Internet Web servers.

The IMSA Board of Trustees philosophy statement, adopted when IMSA began, states that we “would treat all our charges as if each was capable of significantly influencing life on the planet.”

The McCool twins are **well on their way...**



IMSA Grads

REVOLUTIONIZE E-COMMERCE

It is not a stretch of the imagination to say that Paypal, an eBay Company, has revolutionized the way people do business on the Internet.

It is also not a stretch of the imagination to say that **IMSA alumni Yu Pan '95 and Russ Simmons '95** were two of the six founding members of PayPal who greatly contributed to the company's worldwide success.

Founded in 1998, Paypal enables any individual or business with an email address to securely and easily send and receive payments online.

As the start-up's senior software engineers, Pan and Simmons led the development of the company's technical systems which now serve more than 100 million account members worldwide.

Pan implemented PayPal's first flagship product that allows secure storage and transmission of funds. He also developed Web technologies that enabled PayPal to dominate auction payments on eBay.

These days, Pan is pursuing new business ventures, most recently **working in engineering and product development at the hottest Web site**

on the Internet, YouTube (www.youtube.com). Dubbed “The YouTube Revolution” on ABC-TV's *Good Morning America*, YouTube receives 100 million hits every day with 65,000 new videos posted to the site daily.

“The current vision for YouTube is to build the next-generation platform for serving media worldwide,” Pan said. “I am currently developing products for improving the user experience and methods for getting to the different videos on our site,” he added.

At the same time YouTube was featured on *Good Morning America*, Simmons' company, Yelp.com, was featured in an edition of *Business Week* magazine. In the article, Yelp.com is described as a “go-to site for hip, twentysomething SFers that is now expanding in New York, Boston, Chicago and Los Angeles.”

Always on the search for next generation online tools, odds are the “go-to guys” Pan and Simmons will continue to revolutionize e-commerce and other online venues for years to come.

Pan and Simmons are graduates of the University of Illinois at Urbana-Champaign.



TUWANDA WILLIAMSON '91

Demonstrates "Boundless Compassion" Toward World Citizens



Although **Tuwanda Williamson '91** has won many prestigious awards and accolades, it does not begin to tell the real story of her worldwide reach to others who are less fortunate.

Following graduation from the University of Michigan Medical School in 1999, Williamson went to work for Direct Relief International as the **director of a medical team delivering care to indigenous people in the Amazon rainforest.** Although her original plans involved a six-month assignment, her passion for helping others help themselves led her to a two-year stay. In a tribute to Williamson in one of Direct Relief's news publications, it states:

Direct Relief thanks Dr. Tuwanda Williamson for her two years of service leading Direct Relief's Rio Beni Health Project in Bolivia. ...Dr. Williamson and the Rio Beni team she led provided health services for 40,000 isolated villagers and trained two dozen health

promoters...Under challenging conditions and through countless river and 4-wheel drive trips to conduct clinics, Dr. Williamson displayed an inspiring commitment, tremendous dedication and boundless compassion.

Although no longer traveling up the Rio Beni River to fight health issues such as parasites, malaria, tuberculosis and malnutrition, Williamson seeks out impoverished people in the United States.

Working as a physician in inner-city Chicago at a local health center, Williamson continues to provide medical attention and education to those less fortunate. She also is the director of a local center in her hometown that provides care through local churches to those most in need.

Although far away from the Amazon, it is easy to see that Williamson **continues to display an "inspiring commitment, tremendous dedication and boundless compassion."**

BIG DREAMS WITHOUT APOLOGY

Scholarly Service:

TERRI WILLARD '89

Works for Sustainable World



IMSA Charter Class graduate **Terri Willard** has an unabashed global mission.

Willard has worked as a project manager for the International Institute for Sustainable Development (IISD) in Canada since 1996. IISD's mission is "to champion innovation, enabling societies to live sustainably."

Not lacking for accolades, Willard was named a **Rhodes Scholar, Henry Luce Scholar, Hearst Senate Youth Program Scholar and Georgetown School of Foreign Service Scholar.** She also co-authored a book, *Managing International Knowledge Networks for Sustainable Development* based upon IISD's experiences with partnerships and strategic alliances.

At IISD, Willard has led numerous global initiatives including the Youth Creating Digital Opportunities Coalition, the Sustainable Development Communications Network, TakingITGlobal and the Global Teenager Programme.

Many of these initiatives build upon Willard's **passion for realizing the potential of young people** as leaders in using information and communications technologies to achieve more sustainable development in their communities and around the world.

Willard, along with other Rhodes Scholars, was selected for offering the "promise of effective service to the world in the decades ahead."

She is well on her way to fulfilling that promise.

IMSA's models of teaching and learning are recognized nationally and abroad. Delegations of educators and media representatives from countries including Australia, China, Israel, Japan, Jordan, Korea, Netherlands, Philippines, Singapore and Thailand come to IMSA to study curriculum and instruction models. IMSA has been profiled by *NBC-TV's Dateline*, *CNN's Science and Technology News*, *Worth Magazine*, *The New York Times* and *The Wall Street Journal*, to name a few.

THE ONLY GOOD FIGHT...

A Just and Sustainable World

How will we DEFINE GREATNESS in the 21st century?

Science, technology, engineering and mathematics (STEM) hold great promise for a future where citizens of the world can fulfill their dreams of healthy, productive and rewarding lives for their children and future generations. These are the disciplines that address infectious diseases, organ and tissue replacements, nutrition, world food supplies, renewable energy sources, the safe transformation of hazardous contaminants, affordable building structures and more efficient transportation, communications and computing systems.

A better life for all tomorrow means that we must learn about fields such as genomics, proteomics, bioinformatics, chemical informatics, green technology, nanotechnology, and data warehousing and mining. How do we best identify the fields that lead to "new basics" in K-12 education, higher education, research and job training? How do we work with "global" colleagues to exchange knowledge about new fields while, at the same time, produce competitive marketplaces?

Join us in creating a bold and exhilarating vision for IMSA in the 21st century. As partners, we will ensure that IMSA continues to thrive as a world-class powerhouse that produces compassionate and ethical leaders whose breakthrough discoveries, extraordinary innovations and bold policies contribute to a just and sustainable world.

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