



LAUNCHING A NEW STEM GENERATION

2012 ANNUAL REPORT





Dear Friends:

I am pleased to share with you the Ingenuity Project's 2012 annual report, *Launching a New STEM Generation*. Congratulations to the students who successfully completed Ingenuity's high school curriculum of accelerated STEM programming, and welcome to the Ingenuity ninth graders who will continue in Ingenuity at Baltimore Polytechnic Institute.

An anchor program of the Baltimore City public schools, Ingenuity is a community of educators and students who share a passion for academics. Ingenuity's collegiality is one of kinship and warm support that encourages students to master the challenges of its demanding curriculum.

We strive to reach as many students and parents as possible to introduce them to the opportunities that Ingenuity offers. In fall 2011, Ingenuity experienced a 20% growth in applications for 2012-2013. Although our resources are stretched, we are delighted to serve as many qualifying students as we can.

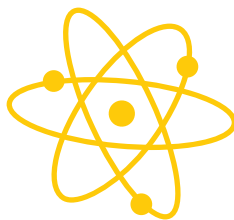
Beginning last spring, we embarked on an extensive strategic planning process. Input is invited from all of our stakeholders—funders, teachers, students, community members, parents, alums and beyond. A roadmap for Ingenuity's future will be posted early next year on its newly designed website—
www.ingenuityproject.org.

Once again, we express our gratitude to The Abell Foundation, Baltimore City Public School System, Lockhart Vaughan Foundation and all our foundation donors. Philanthropic and individual support helps us close the 20% annual funding gap, which must be raised from private sources.

We thank our Ingenuity parents who work with us and with their children to ensure their success in our program.

Sincerely,

Gary R. Pasternack, MD, PhD



“I believe powerfully in the mission of The Ingenuity Project. Every student, regardless of the accidents of birth that are race, location and parental affluence, ought to have an outstanding education. I would never have attended Johns Hopkins University, let alone gained admission to the University of Oxford, without the positive influence of Ingenuity. The Ingenuity Project is addressing educational injustice, and must continue to carry out their good work.”

—RYAN M. HARRISON, CLASS OF 2005,
NIH-OXFORD GRADUATE PARTNERSHIP PROGRAM,
DEPARTMENT OF PHYSICS

The Ingenuity Project is educating the next generation of STEM professionals. Whether starting in the sixth grade or entering in ninth grade, students are challenged to learn deeply, ask probing questions, research to determine what is known, analyze information and draw conclusions.

In 2011–2012, 485 students enrolled in the program, and for these highly motivated students with interests in mathematics, science and technology, Ingenuity creates a climate of learning that can test the limits of what they can achieve.

Supported by Ingenuity’s high-quality instruction and warm personal relationships with teachers, students progress through the fast-paced curriculum which begins with demanding classwork, and continues toward independent study, internships and research projects. As they advance, students develop a balance of scholarship, leadership, self-discipline and creativity that leads to self-confidence, skill and personal achievement.

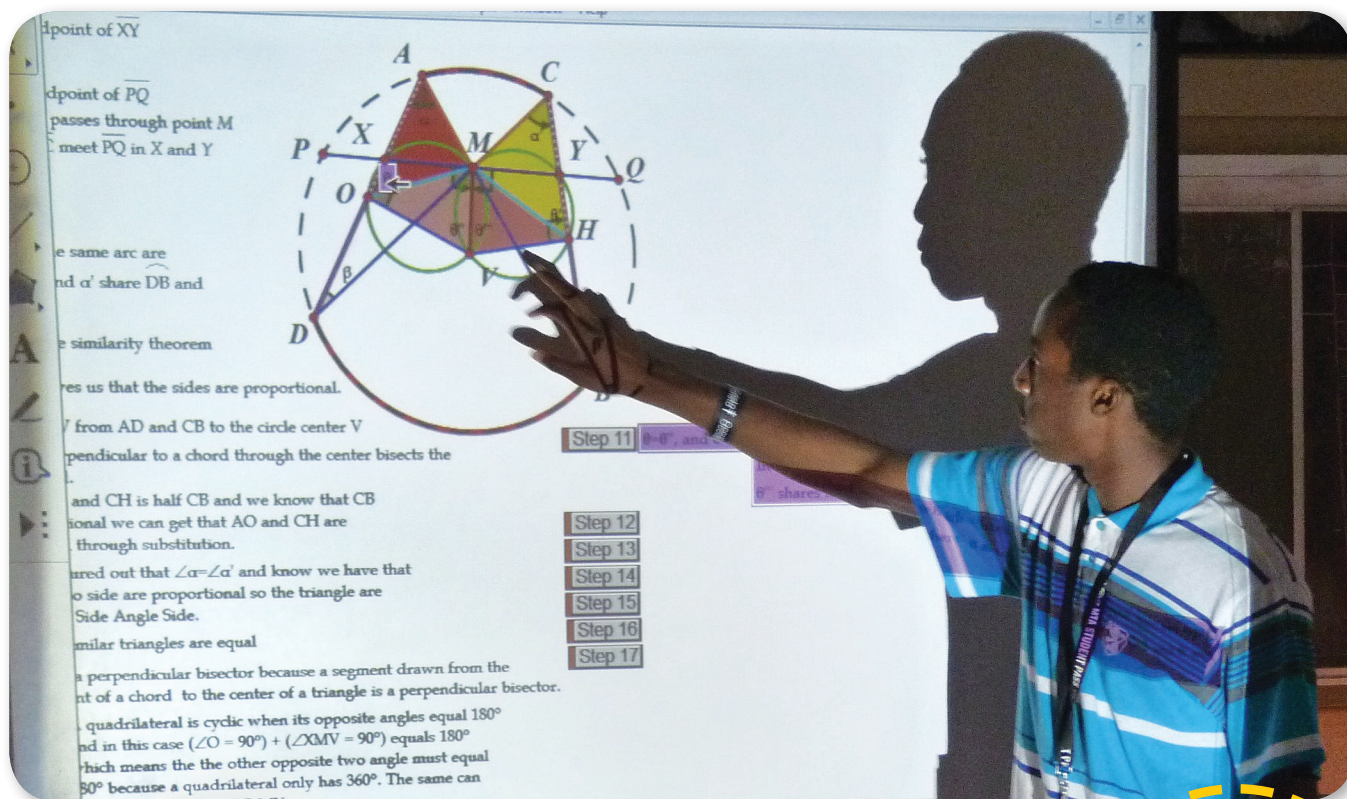
Ingenuity students are a widely diverse group: Some are homeless or foster children, some come from families who struggle to make ends meet, others are the children of professionals and scientists. Most significantly, Ingenuity is an educational oasis for families with bright children but few alternatives. They depend on programs like Ingenuity to prepare their children for STEM careers.

“I would not have been admitted to the college of my choice if it was not for this program. Not only has it impacted me intellectually, but also taught me how to work together in a tight community of students and mentors. Please keep the Ingenuity program as challenging and fun as it was for me so that other kids’ dreams can come true.”

—GERARDO “GERRY” CAMARENA GOMEZ,
CLASS OF 2012



Gerry Camarena Gomez (right) presents research to teacher Chris Guinoo.



Freshman Victor Ike-Amaechi presents his geometry project at Ingenuity's 2012 Mathematics and Science Symposium.

All Ingenuity students share a burning desire to learn. They are motivated and they are succeeding: in national competitions and admission to top-ranked universities, and in STEM careers here in Maryland. Middle school Ingenuity has a continuing impact, even on those students who choose a citywide high school other than Ingenuity at Baltimore Polytechnic Institute.

Grace Kearney, Class of 2012:

Grace studied long-term care and Alzheimer's patients. She worked with internationally acclaimed geriatric psychiatrist Peter Rabins, MD. All three colleges she applied to, Harvard, Yale and Stanford, noted the importance of her research in their acceptance letters. The Ingenuity research shaped her future in numerous ways. By allowing her to pursue a project that followed her passion, Ingenuity has helped Grace to enter college with clear goals and skills that rival many graduate students. Grace will attend Stanford University as a National Merit Scholar.



Grace Kearney

RESEARCH CURRICULUM



Ingenuity students visit ISEF in Pittsburgh, PA, on May 17, 2012.

Ingenuity's flagship Research Curriculum distinguishes Baltimore City public schools from other public and private high schools in the State of Maryland.

The three-year program culminating in original independent research under the direction of a mentor gives students a chance to combine the structure and methodology of research in the area of their interest.

Ingenuity juniors and seniors presented their research at the annual Mathematics and Science Symposium on May 24, 2012.

Elias Weston-Farber's research was recognized by the Siemens Competition as a National Semifinalist for his topic: "Effect of Codon Optimization on Yeast TY1 Transposition." Elias was also a 2012 Baltimore Science Fair Grand Prize Winner in Biological Sciences, qualifying him to take his project to the Intel International Science and Engineering Fair (ISEF). Elias will attend Brandeis University and major in biology.



Elias Weston-Farber



Michael Tontchev

Michael Tontchev was the 2012 Baltimore Science Fair Grand Prize Winner in Physical Sciences for his project, "Deep Learning for Unsupervised Grammar Induction," and also participated in ISEF. Michael will attend the University of Maryland, College Park, and major in computer engineering.

Ingenuity students have been Grand Prize winners seven times in the past ten years. In the 57-year history of the Baltimore Science Fair, a single school produced both Grand Prize winners only four times. Ingenuity students did it twice: in 2006 and 2012.



Cyber Discovery Camp. Pictured left to right: Chikaodi Nwanegwo, Victor Ike-Amaechi, Zachary Byrd, Jaelyn Moses, Omar Mahmoud, Alexander Lann with teachers James Todaro, Jessalyn Timson and Amanda Sakmar

National Consortium for Specialized Secondary Schools of Mathematics Science and Technology

The Ingenuity Project was welcomed into membership in the National Consortium for Specialized Secondary Schools of Mathematics Science and Technology (NCSSSMST). It joins the ranks of other dedicated STEM programs that prepare high school students for leadership positions in mathematics, science and technology professions.

Ingenuity Director Dolores Costello, math teacher David Hepburn and six students attended the June 2012 student summer conference at the Illinois Institute of Technology in Chicago. Morgan Greene, Billy Lu, Sih Oka-Zeh, Ned Pollard, Joshua Spokes and Nathan Greene presented their research, further polishing

their skills for college and the professional world beyond the walls of Poly.

Cyber Discovery Camp

In June 2012, students attended the University of Baltimore's inaugural high school Cyber Discovery Camp. Students learned the history of cyberspace, cryptography and security. They experienced cyber applications, built a boe-bot, explored cyber career fields and gained an appreciation for the need for cyber security.

Literacy in Science

Ninth-grade Ingenuity students read and discussed *The Immortal Life of Henrietta Lacks*, which launched a discussion of medical ethics. Students had the opportunity to attend a lecture by Rebecca Skloot, author of

the book. Doctors had taken Ms. Lacks' cells without asking, and the cells, which never died, launched a medical revolution and a multi-million dollar pharmaceutical industry.

College Kickoff

Ingenuity juniors benefited from the services of college guidance counselors from Boys Latin, Holton Arms, Park School and St. Timothy's School. The counselors offered information and interview practice sessions that helped students and their families assess their college options and prepare the applications.

CLASS OF 2012 SAT and SAT II TEST SCORES	AVERAGE
SAT Mathematics	698
SAT Critical Reading	648
SAT Writing	616
SAT II Biology (taken at end of 9th grade)	633
SAT II Physics (taken at end of 10th grade)	637
SAT II Math I	666
SAT II Math II	702
SAT II Chemistry	703

Perfect 800 SAT/SAT II Scores: 7

AVERAGE AP EXAM GRADES:

AP Calculus AB: 4.4

AP Chemistry: 4.1

AWARDS AND SCHOLARSHIPS

Quest Bridge Scholar: 1

National Merit Scholar: 1

Carson Scholars: 6

Johns Hopkins University Scholars: 4

Siemens Competition National Semifinalist: 1

U.S. Biology Olympiad National Semifinalist: 1

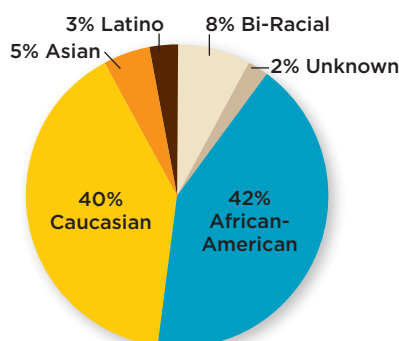
Intel International Science and Engineering Fair: 2 Participants

Baltimore Science Fair: Both Grand Prizes in Physical and Biological Sciences

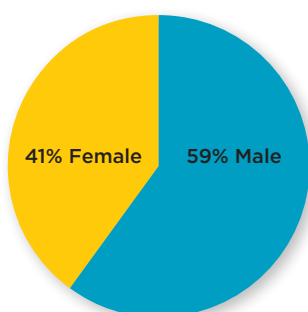
National Honor Society: 8 Students Inducted

National Hispanic Recognition Program: 2

**INGENUITY AT POLY
STUDENT DEMOGRAPHICS BY ETHNICITY**



**INGENUITY AT POLY
STUDENT DEMOGRAPHICS BY GENDER**





Trang Vu (Class of 2003) took a year off from medical school at Johns Hopkins School of Medicine to complete a “Dean’s Year of Research” at the JHMI Viral Hepatic Center. Trang is now a resident at Johns Hopkins. Her sister Diem (Class of 2008) has started medical school at the Mayo Clinic.

RECENT ALUMNI

“My decision to take a gap year instead of starting college immediately after graduating high school was probably one of the scariest decisions I have ever made. Living in Germany as an exchange student with the Congress-Bundestag Youth Exchange Program was, without a doubt, the best experience of my life. I got to travel, I got to learn a new language, I learned self-reliance and confidence, and I made lifelong friends all over Europe.” —ANNE BLONDER, CLASS OF 2011



CLASS OF 2012 COLLEGE ACCEPTANCES

Arizona State University
Brandeis University
California Institute of Technology
Capitol College
Case Western Reserve University
Columbia University
Converse College
Coppin State University
Cornell University
Drexel University
Florida Institute of Technology
George Mason University
Harvard University
Hofstra University
Howard University
Johns Hopkins University

Mary Baldwin College
Massachusetts Institute of Technology
Morgan State University
Northwestern University
NYU Polytechnic Institute
Old Dominion University
Pennsylvania State University
Rensselaer Polytechnic Institute
Rochester Institute of Technology
Rutgers University
St. John's University
St. Mary's College of Maryland
South Carolina State University
Stanford University
Stevenson University
Temple University

Towson University
Trevecca University
Washington University in St. Louis
Worcester Polytechnic Institute
University of Central Florida
University of Colorado, Boulder
University of Delaware
University of Florida
University of Maryland, Baltimore County
University of Maryland, College Park
University of Pittsburgh
University of Vermont
West Virginia University
Yale University

THE INGENUITY PROJECT IN MIDDLE SCHOOL



Hamilton, Mount Royal and Roland Park Middle Schools

The middle school enrollment is Ingenuity's largest component. In 2011-2012, 342 students enrolled in sixth, seventh and eighth grades.

Ingenuity staff promotes Ingenuity's 6-12 continuum to encourage middle schoolers to apply to the high school program. Whether or not students choose to continue in Ingenuity, they benefit from the curriculum and new study skills.

The Ingenuity staff plans a comprehensive recruitment effort to ensure that every fifth-grade parent is familiar with the opportunity. A booklet is mailed to each parent whose child scores at the advanced level on the MSA tests.

Sixth- and Seventh-Grade Challenges

The Sixth- and Seventh-Grade Challenges brought students together from all of the middle schools to develop ideas. Teams consisted of students in the same grade level who had never met before.

Rocket into Poly

This program gave the eighth graders a first-hand experience of Ingenuity at Poly to encourage them to apply.

The rocket launch began with the formation of work teams composed of students from each of the three Ingenuity middle schools. Their mission was to work as a team to design, construct and

fly a bottle rocket on a budget of \$500,000 of Monopoly money.

Students blogged to become acquainted and worked remotely searching the Internet to plan the construction of their bottle rockets. With their ideas posted on the blog, they brainstormed to create their team's mission patch.

On the day of the launch at the Baltimore Polytechnic football stadium, students purchased their rocket components and finished construction.

Finally—the launch! Students completed the project, discussing the rocket performance and filling in flight-day log sheets.

Ingenuity at Poly Preview Day

Eighth graders and their parents came to Poly on Saturday, November 12, 2011, to learn about freshman Ingenuity classes in geometry, biology and AP world history. A panel of alumni, current students and teachers shared their perspective of the Ingenuity high school experience and answered questions.



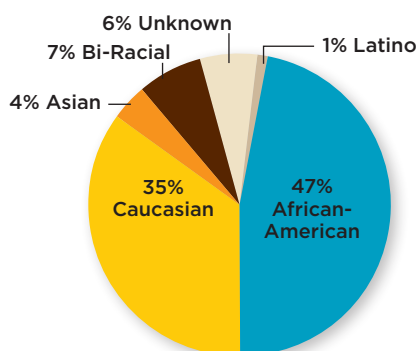
Prospective Ingenuity students apply in the fall of the preceding year. For the 2012-2013 school year, 405 students applied for the middle school program, a 12% increase over the previous year. 175 were offered placement and 152 enrolled. Ingenuity saw a 27% increase in applicants for the high school program. 203 applied, 64 were accepted and 54 enrolled. Of the 54 enrolled, 37 are from the Ingenuity middle school program (69%).



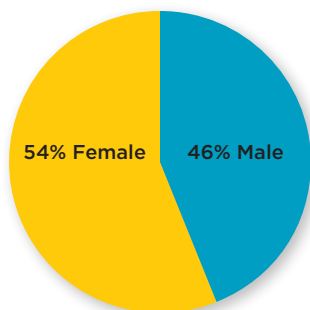
CELEBRATING ACHIEVEMENT IN SCIENCE, TECHNOLOGY, ENGINEERING & MATHEMATICS

On April 17, 2012, Flora Lichtman, co-author with Joe Palco of *Annoying: The Science of What Bugs Us*, spoke on her work as a science commentator at NPR.

INGENUITY AT MIDDLE SCHOOL
STUDENT DEMOGRAPHICS BY ETHNICITY



INGENUITY AT MIDDLE SCHOOL
STUDENT DEMOGRAPHICS BY GENDER



From left: Ingenuity Director Dolores Costello; Baltimore City School CEO Dr. Andre Alonzo; and President of the Ingenuity Board Dr. Gary R. Pasternack; and author Flora Lichtman

INGENUITY EDUCATORS

The **Society for Science & the Public (SSP)** selected Research Practicum Coordinator **David Nelson** for its 2012 SSP Fellows class to attend the Fellows Institute in Washington, DC. Each Fellow receives \$8,500 to design independent research programs, and to help their students develop a strong network of scientific mentors.

Two Ingenuity teachers received **City Schools Model Teacher Recognition**: **Kathy Bacon** (middle school science teacher) and **Yelena Schwartz** (middle school mathematics teacher).



Research Practicum Coordinator, David Nelson

The Ingenuity Project gratefully acknowledges the following contributions received in the 2011-2012 school year.

**The Abell Foundation
Baltimore City Public School System
The Associated: Jewish Community
Federation of Baltimore
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France-Merrick Foundation
Goldsmith Foundation
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Lockhart Vaughan Foundation
Lois & Philip Macht Family Foundation
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The Thomas Wilson Sanitarium for
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Matthew Hobson
Edyth Sanford and Craig Huntley
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Brandon McClain
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Lee Miller, Jr.
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Lynna Nguyen
Ellen Orner
Barbara Pralle
Melanie Preston
Darius and Monica Rastegar
The Honorable Stephanie Rawlings-Blake
Timothy and Joanne Regan
Roland Park 7th-Grade Parents
Lissa Rotundo
Bennett Samson
Anthony Sartori
Lois and John Saylor
Joshua Scharfstein
Regina Schmidt
Monika and Eugene Schnell
Alan Schwartz
Yelena Schwartz
Scott Shane
Claudia Sorenson
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David and Lois Sullivan
Sandy and Harry Summers
Mr. and Mrs. Paul Timmel
Nick Tomasino
David and Gordana Utzschneider
Catherine Vannetta
Peter and Caroline Wayner
Angela Natale and Ira Weinstein
David Whitcomb
Karen Whitcomb
W. Stephen Wilson
Peter Winch
Timothy and Patricia Wolf
Sergei Zverev

“The Ingenuity Project has exceeded our expectations, and its teachers and curriculum have motivated and challenged Josh, helping to make him a more serious, thoughtful, conscientious and inquisitive student of math and science.” —INGENUITY PARENT



**In memory of Rachel E. Green,
mother of Rachel Green, PhD**
The Green Lab, Johns Hopkins University,
School of Medicine
Douglas Barrick and Deborah Andrew
Duoja Pan and Elizabeth Chen
Daniel Eyler
Rachel Green
Carol Greider
Geraldine Seydoux
Cynthia Wolberger

STATEMENT OF FINANCIAL POSITION, JUNE 30, 2012 AND 2011*

	2012	2011
ASSETS		
Cash	\$108,471	\$174,896
Certificate of Deposit	10,593	10,550
Grant Receivable	76,348	8,951
Prepaid Expenses	1,302	—
Net Property and Equipment	51,376	54,821
Total Assets	\$248,090	\$249,218
LIABILITIES		
Accounts Payable	10,682	24,462
Accrued Salaries	37,423	—
Total Liabilities	\$48,105	\$24,462
NET ASSETS		
Unrestricted	\$199,985	\$224,756
Temporarily Restricted	0	0
Total Liabilities and Net Assets	\$248,090	\$249,218

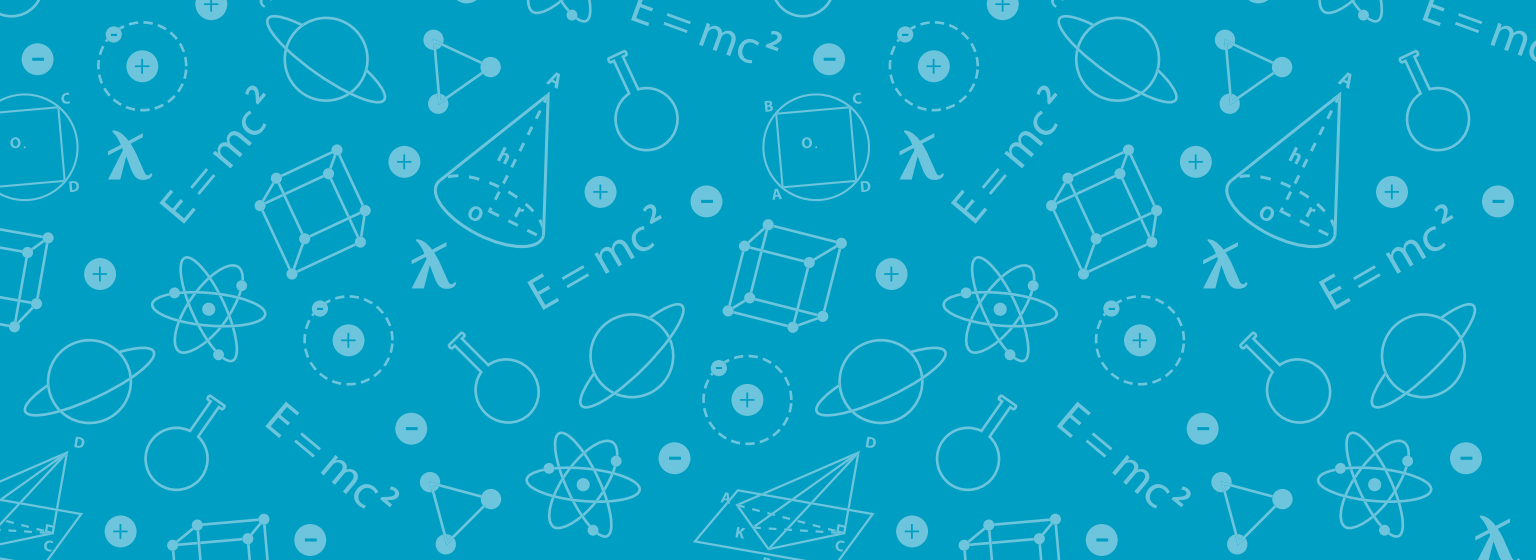
STATEMENT OF ACTIVITIES, JUNE 30, 2012 AND 2011

	2012	2011
Revenues and Other Support		
Baltimore City Public School System	\$391,000	\$420,224
The Abell Foundation	455,800	\$430,000
Foundation and Corporate Grants	106,000	76,500
Other Revenue	61,782	36,052
Total Revenues and Other Support	\$1,014,582	\$962,776
Expenses		
Program Services	829,943	\$823,496
Management and General	178,803	194,856
Fundraising	30,607	31,383
Total Expenses	\$1,039,353	\$1,049,735
Change in Net Assets	(24,771)	(86,959)
Net Assets at Beginning of Year	224,756	311,715
Net Assets at End of Year	\$199,985	\$224,756

*Above are selected components from the 2012 audited financial report.

Total student enrollment: 486

Cost per student: \$2,139



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