The Ingenuity Project

The Ingenuity Project's mission is to prepare and launch the next diverse generation of nationally competitive STEM leaders in Baltimore City Public Schools.
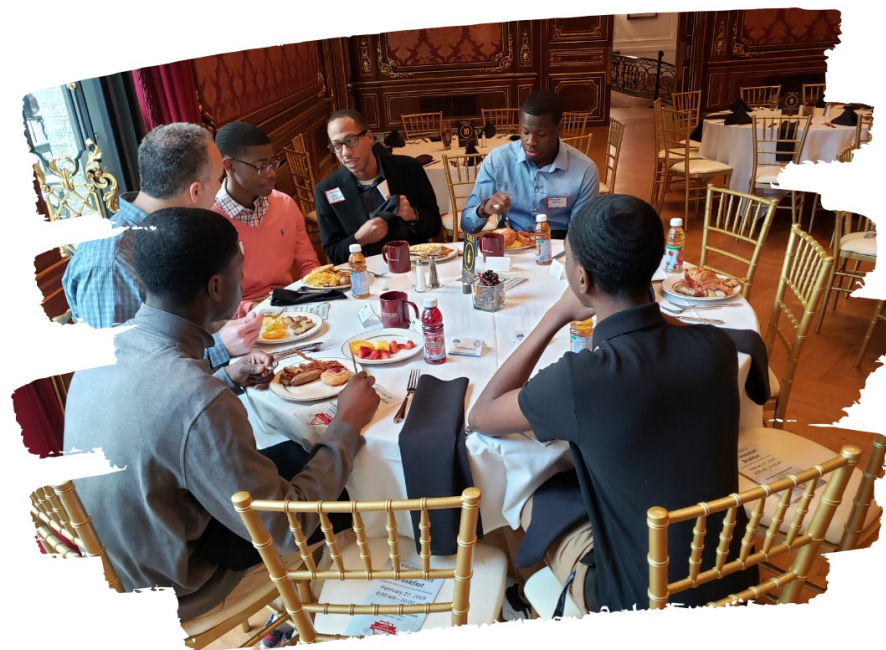

Baltimore Polytechnic Institute
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Baltimore, MD 21209
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The Ingenuity Project hosts

The Innovators' Breakfast

HONORING MEN OF COLOR IN STEM

February 5, 2020   1100 Wicomico

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Dear Guests,

Thank you for being a part of our Innovators' Breakfast. We are delighted to bring Baltimore's high school STEM talent together with our region's STEM professionals for a morning of education, inspiration, and networking.

The Ingenuity Project serves more than 700 students in grades 7-12 from throughout Baltimore City. This year, we opened a new program, James McHenry Elementary Middle, with a cohort of 50 6th grade students beginning their Ingenuity journey in Southwest Baltimore. We also launched Innovation Practicum, a new high school off-campus experience designed for students to solve real-world problems with professionals in the area of applied math, computer science, data science, and statistics.

Ingenuity students are Baltimore's next diverse generation of STEM leaders. Their persistence, creativity, and leadership amaze me everyday -- and the skills they develop now will help them solve the challenges of the future. Thank you for providing them with your wisdom, insight, and expertise. Together, we're shaping the STEM pipeline.

Sincerely,

Lisette S. Morris
Executive Director

Program

8:00 AM **Registration and Breakfast**

8:20 AM **Welcome**
Lisette Morris, Executive Director
The Ingenuity Project

8:30 AM **Panel and Q&A**
Honoring Men of Color in STEM
Emcee: Jason Newton
WBAL-TV 11 News

9:40 AM **Closing Remarks & Networking**

Innovation Practicum

In addition to our Research Practicum (which is conducted primarily within traditional research labs), we designed a new curricular pathway this year -- Innovation Practicum. This practicum allows students to complete research and solve real-world problems in high demand industries, such as applied mathematics, data science, and computer science. Our research director matched student interests with mentors in topics and organizations including:

Applied Mathematics and Neighborhood Poverty: University of Maryland, School of Social Work, The Institute for Innovation and Implementation

Applications of AI - How Machine Learning is Used to Master Strategy Based Games: Towson University Department of Mathematics

Using Mathematical Concepts to Research Sociological Issues Such as Behavior and Job Performance: Traitify

Statistics of Abandoned Homes in Baltimore: The Mathematical Institute for Data Science (M.I.N.D.S.), Johns Hopkins University

Improving Analysis Through Optimizing Network Flow: Dipole Materials, Inc.

Research Practicum

The Ingenuity Research Practicum is a three-year curriculum during which students implement their own scientific research projects. The program enables students to be creative, independent thinkers, refine their communication skills, produce high-quality written work, and achieve admission to top collegiate programs. It is open to Ingenuity students in good academic standing and meets individual needs and ability levels.

Ingenuity maintains strong partnerships with area universities and institutions to provide students with access to over 100 research mentors throughout Baltimore City. Students contribute to research and, in some cases, have their work acknowledged in peer-reviewed journals. As seniors, they submit their work to competitions, including the Regeneron Science Talent Search, the nation's most prestigious STEM competition.

We are committed to expanding research pathways for *all* students. With our expansion, our largest cohort of students (32 juniors and 18 seniors) is now participating in research, and 85 sophomores are in the pipeline being prepared for research.

Raekwon Williams, a senior completing his research on prostate cancer at the Department of Oncology at the Bloomberg Kimmel Institute for Cancer Immunotherapy at the Johns Hopkins University School of Medicine, reflects on the relationship he's developed with his mentor and lab colleagues:

"My mentor, Dr. Jelani Zarif, is really supportive. When I first asked him to be my mentor, he didn't have a lab, and since then, he's become an assistant professor. It's great to network with him at Hopkins, and all of the people I meet in the lab. This summer, I went to events with them – talks, birthday parties – it's a really good group to bond with outside of the lab. And my mentor is always sharing textbooks and articles about Biochemistry with me. I'm hoping to take an online Biochemistry class this spring with his help."

Emcee

Jason Newton

Jason Newton is an award-winning reporter whose news travels have taken him around the country covering stories of national interest. He joined WBAL-TV 11 News in 2013 as co-anchor of WBAL-TV 11 News Today. He is also host of the public affairs show "11 TV Hill."

Prior to WBAL, Jason was an anchor and reporter at sister-station WISN-TV, the ABC affiliate in Milwaukee, and WBOC-TV, the CBS affiliate in Salisbury. In 2017, Jason won an Emmy Award for his coverage of Maryland's opioid crisis as part of WBAL's "State of Addiction" coverage. In 2006, he earned an Associated Press award for "Outstanding In-Depth Reporting," covering the efforts of Maryland firefighters to help clean up and restore order to Slidell, Louisiana, one of the hardest hit communities by Hurricane Katrina.

Jason served on the teaching staff in the broadcast department at the University of Maryland Eastern Shore. While there, Jason played in integral role in launching Discover UMES, a university webcast highlighting achievements on campus.

Jason has a degree in broadcast journalism from the Philip Merrill School of Journalism at the University of Maryland College Park. He is a graduate of City College.

Panelists

Jeremy D. Brown Ph.D.

John C. Malone Assistant Professor
Johns Hopkins University
Dept. of Mechanical Engineering
HAMR Lab

Brown develops novel haptic interfaces for upper-limb prosthetics and minimally invasive surgical robotics. Applications of his research include giving amputees a sense of touch through their prostheses and helping surgeons use surgical robots to improve their accuracy and precision when performing delicate procedures.

Brown's team in his Haptics and Medical Robotics (HAMR) lab uses methods from human perception, motor control, neurophysiology, and biomechanics to study the human perception of touch, especially as it relates to applications of human-robot interaction and collaboration. Elements of HAMR's research could lead to breakthroughs in additional fields, including rehabilitation robotics.

In 2017, Brown received National Science Foundation funding for a project to develop better haptic interfaces by providing the robotic system with information regarding the physiological changes that occur in the human body when it is mechanically coupled to the robotic system. He is also the recipient of an NSF Graduate Research Fellowship, the Best Student Paper Award at the 2012 IEEE Haptics Symposium, and the Penn Postdoctoral Fellowship for Academic Diversity. Brown is a graduate of the Atlanta University Center's Dual Degree Engineering Program, earning bachelor's degrees in Applied Physics and Mechanical Engineering from Morehouse College and the University of Michigan, respectively. He received his MSE and PhD in Mechanical Engineering at the University of Michigan, where he worked on haptic feedback for upper-extremity prosthetic devices. Prior to joining Johns Hopkins in 2017, he was a postdoctoral research fellow at the University of Pennsylvania.

THE INGENUITY PROJECT

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Panelists

Willie Rockward, Ph.D.

Chair and Professor
Dept. of Physics & Engineering Physics
Morgan State University

Dr. Rockward has a unique combination of leadership from academic, professional, and community experiences. As a tenured professor at Morehouse College, he served the past seven years as the Chair of the Department of Physics & Dual Degree Engineering Program (Physics & DDEP) and the past 20 years as the Research Director of the Materials and Optics Research & Engineering (MORE) Laboratory. Among his professional leadership experiences, he is the President of the National Society of Black Physicists and the immediate Past President of Sigma Pi Sigma Physics Honor Society. Also, he has served a combination of 23 years as Pastor of the Divine Unity Missionary Baptist Church and Associate Minister of Antioch Baptist Church North in East Point and Atlanta, Georgia, respectively.

As Chair of Physics & DDEP at Morehouse, his vision and leadership resulted in the department being the US #1 producer for underrepresented minorities with Bachelor of Science degrees in Physics according to the American Institute of Physics in conjunction to boasting the nation's most productive Dual Degree Engineering Program. He is a strong proponent of STEM mentorship using methodologies of faculty-to-student, peer-to-peer, professional shadowing, life-skills coaching, and research apprenticeship. His current research interests include micro/nano optics lithography, extreme ultraviolet interferometry, metamaterials, terahertz imaging, nanostructure characterization, and crossed phase optics.

Education: Ph.D. Physics, Georgia Institute of Technology, 1997; M.S. Physics, Georgia Institute of Technology, 1994; M.S. Physics, State University of New York Albany, 1991; B.S. Physics, Grambling State University, 1988.

Panelists

Patrick A. Hill

Deputy Program Area Manager
Civil Space Program
Space Exploration Sector
Johns Hopkins University

Patrick Hill was recently appointed Deputy Project Area Manager for Civil Space Programs in the Space Exploration Sector of the Johns Hopkins University Applied Physics Laboratory (APL).

In this role, he is responsible for managing APL's multi-billion portfolio of NASA programs. Prior to this role, he served as Project Manager for NASA's Parker Solar Probe (PSP) Mission, where he successfully led his project team through the development, integration, testing, launch, and operation of the PSP flight observatory.

Hill joined APL after working in commercial space satellite development, integration, and testing.

He graduated magna cum laude from Tuskegee University with a B.S. in Aerospace Engineering and holds an M.S. in Aeronautics & Astronautics from Stanford University, and a M.S. in Technical Management from the Johns Hopkins University.

Panelists

Dr. Robert Holder

Data Scientist
Miner & Kasch

Dr. Robert Holder is a data scientist at Miner & Kasch where he has implemented machine learning and cloud solutions for a variety of clients. Prior to Miner & Kasch, Robert was a computer scientist at the Johns Hopkins University Applied Physics Laboratory (JHU/APL) in the Research and Development Department.

Robert has a strong interest in speaking to and mentoring youth. He has worked with high school students in both New Orleans and Baltimore, organizing activities related to science, engineering, and robotics.

Robert has served in leadership roles in various organizations such as the National Society of Black Engineers (NSBE) through which he exposes elementary, middle, and high school students to career opportunities in science, technology, engineering, and mathematics (STEM).

Robert is a member of the planning committee for the annual Minority Innovation Weekend, where he organizes conference tracks on topics including machine learning and health technology.

Robert holds a B.S. and M.S. in computer science from Tulane University, and a Ph.D. in computer science from the University of Maryland Baltimore County.

Raymond Perkins Ph.D.

Quantitative Investment Analyst
T. Rowe Price

Raymond Perkins is a Quantitative Investment Analyst in the Multi-Asset Division of T. Rowe Price, the asset management firm. As a quantitative analyst, Raymond uses mathematics, statistics, and other quantitative methods to conduct financial planning, retirement product design, and general investment research.

Raymond has roughly a decade of quantitative research experience at a variety of academic and corporate institutions including Princeton University, the Mathematical Science Research Institute, Michigan State University, the Hong Kong University of Science and Technology, and Air Liquide, the industrial gas company.

Raymond holds a Ph.D. in Operations Research and Financial Engineering from Princeton University and a Bachelors of Arts in Mathematics and Economics from Morehouse College.