

NEWSWORTHY

The Newsletter of the Thomas Jefferson High School for Science and Technology Partnership Fund, a non-profit foundation dedicated to supporting the unique learning opportunities available at TJ and maintaining the special relationship of alumni to the School

Team Wins \$10,000 Lemelson-MIT InvenTeam Award

On October 14th, a team of seven TJ seniors led by Computer Science teacher Ria Galanos (see page 2) received a \$10,000 Lemelson-MIT *InvenTeam* grant toward the development of the team's invention, an improved emergency tourniquet. The team's automatic tourniquet, which is more affordable, precise, and user-friendly than other leading emergency tourniquets, is meant to improve the quality and accessibility of emergency care, especially in developing countries. Its design is based on that of surgical tourniquets which, like blood-pressure cuffs, inflate automatically, and employs a unique algorithm to scan through a pressure range until a distal pulse is not present and blood flow has stopped.

From her experience as a volunteer member of an emergency response team, Bijal Rajput, TJ '16, knew that emergency tourniquets are difficult to use properly. In developing countries, where the injured are often far from a hospital, improper tourniquet use can cause permanent damage due to excessive or insufficient constriction. The team's inexpensive, automatic tourniquet could be used in the field by those with little or no training.

Dhriti Vij, TJ '16, heard about *InvenTeam* from her sister, a 2013 TJ grad who was impressed when Mr. Hannum's group won the award that year (below left). The group first discussed forming a team when they bonded while studying for Dr. Brian Kennedy's Organic Chemistry tests during their second semester of junior year (coincidentally, Dr. Kennedy has also coached a winning team, below right). They will spend the next few months — both inside and outside of school — preparing to demonstrate their prototype at the program's annual *EurekaFest* event held in June at MIT (follow their progress on *Twitter* @APTourniquet). The team also intends to apply for a patent.

Lemelson-MIT grants, funded by The Lemelson Foundation and administered by the School of Engineering at MIT, are given annually to about fifteen teams based on the proposed ideas' inventiveness and feasibility. TJ is the only school to have received the grant four times.



TJ InvenTeam 2016, from left to right, seniors Lavanya Shukla, Graphic Designer; Jonathan Zheng, Public Relations Manager; Junyoung Hwang, Electronics Expert; Bill Zhang, Computer Programmer; Gabriel Margolis, Financial Manager; Bijal Rajput, Medical Expert; and Dhriti Vij, Computer-Aided Design Expert



Emotive aid for combating autism, Neuroscience Lab Director Mark Hannum (2013)



Neural-directed wheelchair, Neuroscience Lab Director Dr. Paul Cammer (2006)



Engineering a microbial fuel cell, Chem. Analysis Lab Director Dr. Brian Kennedy (2005)



THE TJ TEACHER BEHIND THE WINNING TEAM: RIA GALANOS

The Lemelson-MIT program requires that an educator be responsible for filing the grant application, monitoring funds, and supporting student teams throughout the grant cycle. After submitting a first-round application, educators selected as finalists are invited, all expenses paid, to MIT in June to learn about the program from the current year's winning teams as they showcase their working prototypes. Only those educators who attend the June event are eligible to submit a final application. Winners are notified in mid-October.

Although the program contemplates that the educator, in addition to handling administrative duties, will also have conceived of the invention and recruited the students, that's not how it happened at TJ. Instead, the student team brought their idea to Ms. Galanos, who was impressed with their technical and organizational skills and agreed to serve as their designated faculty member.

This was not the first time that Ms. Galanos, who teaches three sections of AP Computer Science, two sections of Android Mobile App Development, and serves as the assistant division manager for the math and computer science division, has said yes to a student or student group. She sponsored the Technovation Challenge app development team that made it to World Finals in 2013 (see May/June 2013 issue) and currently sponsors the 8th period club Coding Lady Colonials, the club responsible for HackTJ (see June 2015 issue) and the new CSisterhood (connecting groups of freshman and sophomore TJ girls with one senior TJ girl who serves as their computer science mentor). Her *Twitter* handle — her license plate is an abbreviated version — is @cscheerleader.

In her “free” time, she is a table leader at the AP Computer Science Exam Reading each June, has conducted AP Computer Science student review sessions for both the National Math and Science Initiative and the Colorado Legacy Foundation, and serves on several computer science-related and education-related boards. Since 2010 she has devoted her summers to broadening participation in coding generally and among underrepresented groups as an instructor at the Institute for Computing Education at Georgia Tech, at a coding camp for rising 9th-graders at Google, and at Girls Who Code in Miami, Florida. She also teaches coding to adult women through Women Who Code DC.



TJ IS TOP HIGH SCHOOL FOR “HACKERS” . . .

Contrary to what you might assume, hackathons don't involve hacking into databases to steal private information. Instead, these popular events are about bringing teams of students together to find out how much they can accomplish when they code for 24-or-more hours straight. TJ hosts its own hackathon (see June 2015 issue); recent graduates run a non-profit that brings these events to high-school students in cities across the country (see May/June 2014 issue); and a student-run non-profit holds an annual hackathon to introduce coding to middle-schoolers (see March 2015 issue). So it should come as no surprise that TJ students are coding champions.

• **JR Cabansag, TJ '16** (pictured), won Best Overall Hack and a \$1,000 prize at October's HackDC 2015, a 36-hour healthcare hackathon for undergraduates, graduate students, and corporate teams that focused on building mobile apps for post-traumatic stress disorder (PTSD). JR's “Positivity” app allows people who suffer from PTSD to spread encouragement to others, inform their friends about how they're doing, or keep a personal diary of their symptoms. He was the only high-school competitor at the event.

• *Major League Hacking* (MLH) the group that oversees the country's premier student-run college hackathons, informally crowned TJ its “Top High School” in recognition of TJ students having earned the most points during its 2015 spring season. Accepting the award on behalf of the school at Hack the Planet in Mountain View, CA, MLH's invitation-only season finale held this August, were **Timothy Cyrus, TJ '16** (a SysAdmin, see facing page) and **Rohan Pandit, TJ '16**. At the Penn State MLH event, Tim's project - an app that helps people automatically donate change from everyday purchases toward programs that make micro-loans — finished in the top ten, but he emphasized that TJ's award recognized overall participation rather than any one success: “The award is for all the TJ students who found time outside their busy schedules to go to a hackathon and build something,” Tim said.

• At January's University of Michigan MHacks, an MLH spring season event that is the largest student-run hackathon in the country, **Matt Kaufer, TJ '16**, **Peter Rohrer, TJ '16**, and **Tarun Punnoose, TJ '16**, teamed with older brothers **Sam Rohrer, TJ '14**, and **Rohan Punnoose, TJ '14**, to win “Best Virtual Reality” for “Metadrone,” their augmented-reality system that allows the user to control the *Parrot AR* drone using nothing more than hand gestures.

• In 2014, **Matt Kaufer, TJ '16**, and **Pierce Stegman, TJ '16**, were a top-ten winning team at Hack the North, the University of Waterloo's 36-hour event that, with 667 participants selected from thousands, is Canada's largest international hackathon. Their “Spacebowl” game uses muscle contraction data gathered by *Myo* armbands combined with *Oculus Rift* goggles to create a virtual reality bowling experience.

... AND TOPS FOR CYBER SLEUTHS

Two of the students who keep TJ's systems humming by day spend much of their time outside of school as cyber warriors, capturing flags and defeating black-hat hackers. **Fox Wilson, TJ '16**, and **Samuel Damashek, TJ '17**, are two of TJ's four lead Student Systems Administrators (SysAdmins). As Infrastructure Co-Leads they maintain the servers that back the school website, student intranet, and student email, fixing problems that arise, upgrading programs and services to keep them secure and functioning optimally, and implementing new services in response to student needs.

When not using their expertise to keep school systems running smoothly, they are busy honing skills that could help protect the country against the next cyber attack. The pair are among an elite group of high school students who consistently outscore both high school and college teams at major computer security competitions.



Samuel Damashek, TJ '17 (left) and Fox Wilson, TJ '16, at the MITRE STEM CTF award ceremony.



From left to right, Samuel Damashek, TJ '17, Peter Foley, TJ '13, Fox Wilson, TJ '16, Eric Wang, TJ '17, and Samuel Kim, TJ '16.

Many are Capture the Flag (CTF) competitions, following either a "Jeopardy" (given an answer, come up with the question) format or an "attack-defense" format, in which teams must find and fix vulnerabilities in their own systems while exploiting those of other teams. Traditionally, CTFs have been targeted at college students or industry professionals. Several competitions are now open to high school students as a way of attracting the best minds to a field that is critical to our nation's security.

Working individually and as a team, Fox and Samuel have compiled an impressive record in national and international CTF competition (including an online competition hosted by Russian universities and another that led to a trip to South Korea):

- This September, they defeated 64 other teams to claim their third consecutive title in the highly competitive MITRE "STEM CTF" college division, co-sponsored the International Information System Security Certification Consortium, Inc., (ISC)², the global, non-profit leader in educating and certifying cyber, information, software and infrastructure security professionals. Joining the pair on the winning team were former SysAdmins **Robert O'Connell, TJ '15**, **James Forcier, TJ '14**, and **Peter Foley, TJ '13**. In addition, the team of **Eric Wang, TJ '17**, and **Samuel Kim, TJ '16**, defeated 30 other teams to win first place in the competition's high school division.

- In March, Samuel's team placed first out of 40 high school and college teams at the University of Maryland's "Metropolis Cyber Skyline." Working alone, Fox placed second.

- Last November, Samuel's team placed 6th out of 3,000 middle and high school teams in Carnegie Mellon University's "picoCTF," a prestigious nationwide online competition.

The boys also compete successfully at college hackathons (see facing page) and at other coding-related competitions such as *Booz Allen Hamilton's* "Data Science Bowl," which poses data analysis challenges based on a different real-life scenario each year.

Both home-schooled prior to TJ, they spent so much of their time teaching themselves about computers that as freshmen they already had years of coding experience and several computer languages under their respective belts. They've completed (or will complete this year) all the Computer Science classes TJ offers, and they intend to continue with CS in college. This summer, they interned at different computer security companies. Fox hopes eventually to work in information security or network/systems

administration, Samuel in computer defense research and computer/network infrastructure.

And in Breaking News:

Three of the fifteen teams who bested a pool of over 2,000 to make the finals of the world's biggest student cybersecurity competition, the NYU Cyber Security Awareness Week CTF, have TJ members (see the online edition for updates):

- A team from Rensselaer Polytechnic that includes **Austin Ralls, TJ '13**;
- A team that includes **Samuel Kim, TJ '16**; and
- A team made up entirely of TJ '15 grads now at Carnegie Mellon — **Matthew Savage, Zachary Wade, Corwin de Boor, and Eric Sun**.

The TJ Administration views participation in CTFs and related competitions as time well spent: "[Cyber] competitions encourage systemic thinking, situation problem-solving, social responsibility, a commitment to service, and support of protecting other people. A mission, computers and puzzles—what could be better?" Dr. Glazer said (courtesy Dan Waddell, managing director, North America Region and director of U.S. Government Affairs for (ISC)², writing for *InfoSecurity Magazine*).

TJ REACHES OUT TO LIFT SCHOLARS



TJ recently received a \$100,000 grant from the **Jack Kent Cooke Foundation** as part of \$500,000 that the Foundation is donating to six selective public high schools across the country in an effort to provide high-achieving students from diverse backgrounds a better chance at success. TJ's "Learning through Inquiry, Fellowship, and Tutoring" (LIFT) grant supports "a regional academic enrichment program, mentorship, and test prep as a vehicle to propel talented, economically disadvantaged 7th and 8th grade students to pursue TJHSST as a viable option for their high school education. The LIFT program intends to at least triple the proportion of low-income students at TJHSST over two years."

This summer, the grant enabled nearly 100 8th-grade LIFT Scholars to attend TJ's long-running Middle School Tech Institute (MSTI), where they sampled a variety of accessible and fun summer STEM courses. Scholars, chosen based on their performance on a cognitive assessment as well as demonstrated need, were invited to take part in MSTI and encouraged to strongly consider applying to TJ. In conjunction with MSTI, Assistant Principal Shawn Frank, who is spearheading TJ's grant-funded outreach effort, led LIFT Scholars in after-school sessions on such subjects as team building, having the right mindset to pursue their goals, and applying to TJ. Principal Evan Glazer made a guest appearance each week, as did a panel made up of TJ students who had volunteered to serve as mentors for the middle school students. Over two thirds of the 93 LIFT Scholars submitted applications to TJ's Class of 2020.

Mentorship is an important element of the LIFT grant program, and TJ students have responded enthusiastically to the opportunity. In fact, Senior Class President James Park recruited 40 volunteers within days of first learning of the program! German language teacher Szilvia Oszko (pictured above with mentors during an 8th period meeting) is supervising the TJ mentors, who are expected to maintain electronic and in-person contact with their assigned LIFT Scholar at least through the end of the school year.

TJ math and English teachers are conducting TJ test-prep sessions on four Saturdays leading up to the December admission test (below center, math teacher Nicole Kim works with the Scholars). Based on the results of a math diagnostic given to all LIFT students prior to the first session, the prep sessions have been customized to address students' needs. JCIRN, TJ's unique, secure online collaboration platform, has proven critical to the LIFT program's successful implementation by allowing LIFT scholars to take the math diagnostic remotely and to ensure that their initial contact with their TJ mentors could take place in a secure environment.

After the first three-hour academic prep session, Assistant Principal Frank treated the LIFT Scholars to an early peek at the school's just-finished gym (below left, bottom photos courtesy Szilvia Oszko) and the still-unfinished dome entrance before mentors escorted them on Research Lab tours. The day ended with a fun, group activity. At the second prep session, Dr. Glazer met with both students and parents. In recognition of the role of parents in encouraging student achievement, the LIFT program includes a parent outreach component. During the November academic prep sessions, volunteer parents will speak with the parents of LIFT Scholars about the TJ application process and available resources.

This is not the only initiative the Cooke Foundation is counting on to help close what they call the "Excellence Gap," namely "the disparity between the number of lower and higher income students who reach advanced levels of academic performance." The Foundation awarded another recent \$100,000 grant to the Society for Science & the Public to provide stipends to adults willing to coach promising students from diverse backgrounds so that they can be successful in science research competitions. Over its fifteen-year history, the Foundation has awarded \$130 million in scholarships to 1,900 students and over \$80 million in grants to schools and organizations. Next year, another group of 8th grade LIFT Scholars will participate in the TJ program.



"We want to give low-income students who are really smart an equal opportunity to succeed. Helping high-ability students with financial need fulfill their potential has significant implications for the social mobility among America's lower-income families and for the strength of our economy.

Harold Levy,
Cooke Foundation Executive Director

TJ STUDENT, ALUM RECOGNIZED FOR GIVING BACK



United States Air Force Band. He has also been a featured soloist on the National Public Radio program, “From the Top” and has performed at the Kennedy Center Concert Hall. In 2012, Joe became a National Symphony Orchestra Youth Fellow, the only euphonium player in the Fellowship’s 35-year history. In 2013, he became the first ever two-time consecutive winner of the International Euphonium Institute Festival, winning the student division in 2012 and the artist’s division the following year (hear him play at this link: <https://www.youtube.com/watch?v=cFPRovszy6o>).

While a junior at TJ, Joe founded Chamber Unique (ChU)[™], a network of young musicians dedicated to using their skills to improve the lives of others. Unlike a standard chamber group, ChU uses varying instrumentation and incorporates a wide variety of guest artists as a means of harnessing the power of performing arts for education and service. Joe created two projects for ChU during his junior and senior years: A performance series for an arts and wellness program in DC serving senior adults with neurological conditions; and a six-session Saturday workshop at Kent Gardens ES, “Full STEAM Ahead: Adding the Arts to STEM” (pictured above). Other current and former TJ students active in ChU include cellist **Didi Chang-Park, TJ ’15**, double bassist **Zola Bridges, TJ ’13**, and bass trombonist **Aaron Geldert, TJ ’16**.

The STEAM workshop, which illustrates the interplay between music, science and math by teaching about, for example, the math of rhythm and the physics of sound, received a One Question grant (funded by the Partnership Fund) for the 2013-2014 school year. Aaron, now serving as the group’s local director, is running the STEAM workshop at Kent Gardens this fall. Not only is ChU continuing its DC-area outreach work, but Joe is also collaborating with the director of a community organization known as Crescendo Detroit, which promotes artistic excellence and academic achievement in urban youth, to bring his STEAM workshop to Detroit next semester.

One can only wonder at the hours of hard work and sophisticated time management skills that made possible Joe’s accomplishments, but one thing is clear — he enjoyed the TJ challenge. “I am grateful for an incredible high school education where I was surrounded by profoundly gifted and dedicated peers who served as inspiration to reach my goals,” he said. “TJ has a well-deserved reputation for academic rigor, but is also an environment that supports the ability and commitment of its unique students. Parent volunteers and the TJ Partnership Fund provide resources unlike any high school in the country. Teachers and administrators trust, encourage, and enable us to exceed their expectations and often even our own.”



Junior Christopher Cao was selected to represent Virginia as part of the National Child Awareness Month Youth Ambassador Program, which gives students a \$1,000 grant and brings them to Washington, DC, for training and a visit to Capitol Hill in preparation for their “ambassadorship” during April’s Global Youth Service Day. The program is designed to create a “powerful national network of young people who raise their collective voice in service to other youth.”

In his freshman year while volunteering for GIVE, a non-profit founded by TJ students that organizes tutoring sessions for disadvantaged youth, Christopher met a student who did not have access to a computer at home. This was all the inspiration he needed to found Project Reboot, a non-profit that refreshes donated computers and provides them to those without. Working with Christopher on Project Reboot’s leadership team are fellow TJ juniors **Griffith Heller, Arun Bhattasali, and Peter Zhao**.

Through the organization’s local program, “Reboot for Youth,” the group collects donated computers, erases the hard drives and installs *Windows* and *Microsoft Office*, repairing systems when necessary, and then donates the refurbished computers — 139 of them to date — to low-income families. Through its global program, the team has shipped computers to students living in poor areas in several countries, including Kenya, Cambodia, and Vietnam. In combination with *Keepods*, USB sticks that hold the computer’s operating system and make using a computer as simple as using a smartphone, the group is able to give each student access to his or her own computer, something that previously was prohibitively expensive. Christopher hopes to use his \$1,000 grant to expand that program to Liberia. “I also look forward to accelerating both Reboot for Youth and PC(re)Builders, the 8th period club our team founded to teach more TJ students how to repair computers,” Christopher said.

YOUR DONATIONS AT WORK: COMPUTER SYSTEMS LAB

Dr. Shane Torbert, Computer Systems Lab Director, describes the Lab's work:

"The Computer Systems Lab supports studies in theoretical and applied computational science, computer modeling, computer architecture, artificial intelligence, machine learning, natural language processing and supercomputing. Working in a UNIX environment, students are able to investigate a wide range of pure and applied research topics utilizing a variety of computer languages and styles. Projects fall within a broad spectrum of computer science areas spanning computer graphics, artificial intelligence, computer vision, high performance computing, collaborative open-source development, and grid/distributed computing.

"Lab electives include two-semester, college-level courses in Artificial Intelligence and Parallel Computing. Computational science applications address areas such as computational linguistics; agent-based modeling of complex systems, including social complexity; software design; and theoretical algorithmic development of ideas, from tree data structures to ant colony search optimization. The Lab emphasizes a multilingual computer language community, featuring C/C++, Java, Python, Ruby, XML, PHP, Perl, MySQL, JavaScript, Tk, OpenGL, and MASON (Multi-Agent Simulator of Neighborhoods).

"Notable projects include "Engineering Xylanase," "Video Compression with a Tailored Optical Response," "Personalizing Voice Computer Authentication," "Monte Carlo Tree Search Heuristics," and "A Novel Computational Agent-Based Model for the Outbreak, Spread, and Containment of Tuberculosis."

"Over the last few years, Partnership Fund donations have made possible the acquisition of wide-screen monitors, graphics cards, video cards, Kinect sensors, and large-screen wall-mounted LED displays. The size and quality of the monitors are well beyond what we could obtain from the standard FCPS contract for IT equipment, and the graphics cards support hundreds of parallel threads so they can also be used as individualized parallel computing platforms.

"Thanks to the Campaign for TJ, in the fall of 2015, we obtained our most exciting recent acquisition, a computing cluster with 150 cores and 750 gigabytes of memory, plus 10,000 graphics cores and 48 gigabytes of graphics memory. The cluster, a major upgrade to our capacity for running code in parallel, fulfilled a need we identified years ago but that had become more critical as enrollment in our Parallel Computing classes increased.

"In the future, we hope to obtain a carbon flywheel inertial uninterruptable power supply (UPS) to replace the current source of emergency standby power, environmentally-unfriendly lead acid batteries, which can leak or even explode. The UPS would maintain power from the moment an outage hits until the backup generator turns on, a critical interlude for systems that crash almost immediately and then require rebooting. The UPS would cover not only our Lab's equipment, but also sensitive systems located throughout the research wing and the school."



The Computer Systems Lab Directors, from left to right: Dr. Peter Gabor, Dr. Shane Torbert, and Dr. John Zacharias. Dr. Zacharias joined the Lab this year, replacing Mr. Michael Stueben, who retired last June.



Senior Fox Wilson works in the Systems Administrator's "office" in the Computer Systems Lab (see page 3).



The Lab functions as a home base for some students, who can be found at the computers whenever they have free time.

YOUR DONATIONS AT WORK: CHEMICAL ANALYSIS & NANOCHEMISTRY LAB

Chemical Analysis Lab Director Dr. Brian Kennedy has overseen a laboratory transformation that began well before the renovation.

“When I became Lab Director in 2002, the classroom had about ten one-piece Mac computers and a finicky, old scanning infrared spectrometer that provided data to a plotter printer. I was essentially starting from scratch but was determined to pursue advanced instrumentation and opportunities for all students interested in chemical analysis research. Not only do students benefit tremendously from early exposure to equipment that they will use in their professional careers, but having professional-grade instrumentation also enables them to conduct more meaningful work.

“In 2005, the Partnership Fund made possible the purchase of a Fourier Transform infrared spectrometer (FTIR), and in 2010 funded a gas chromatograph/mass spectrometer (GC/MS), marking the beginning of the Lab’s emergence as a college-level laboratory.

“Recently the Lab obtained several new spectrometers that will extend our students’ analytical capabilities:

- Raman spectrometer: This high-power spectrometer uses interchangeable lasers to detect molecular vibrations, which provide information on the sample’s molecular structure.
- Ten visible spectrophotometers: These instruments can be used for a variety of quantitative analyses, including determining the functional groups within a molecule.
- Replacement FTIR: Infrared spectrometers can be used to identify a sample or determine the amount of a certain material in that sample.
- Nuclear magnetic resonance spectrometer (pico NMR): The last type of spectrometer to be reduced to a bench-top model, it is particularly useful in organic chemistry.

“Current project areas include:

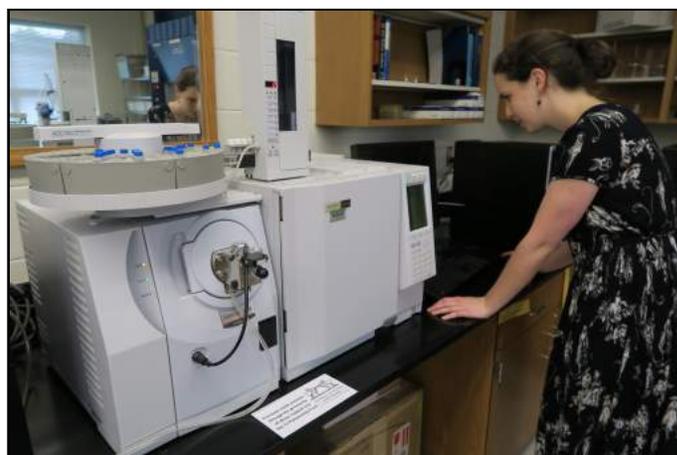
- ‘Green’ chemistry
- Permeable reactive barriers (PRBs) for water remediation
- Quantum dots and photoactive polymers
- Nanotechnology
- Inorganic coordination complexes
- Organic compound synthesis
- Kinetics and thermodynamics
- Environmental analysis methods
- Integrated instrumental analysis development

“Analytical equipment and techniques can be used for virtually any type of investigation, even in the social science fields. One 2015 senior used the GC/MS to analyze absorbed organic residues in archaeological ceramic samples excavated from Jamestown for her Chem Lab research project (at right).”



Above, 2015 US Chemistry Olympiad Team member Janice Ong, TJ '15, finishes up a project.

Below, a team of 2016 Senior Research Lab students checks on the *Sargassum* seaweed currently drying in the Lab’s oven. They are studying its ability to remove heavy metals from the environment.



CLASS OF '95 REUNITES OVER COLUMBUS DAY WEEKEND

Reunion organizers **Sonal Goda, Tirzah (Fitzkee) Lollar, Barbara (Opal) McCluer, and Sara Towner** gave the members of TJ's Class of 1995 a weekend to remember, with the following highlights:



- Friday Night social at Crios Modern Mexican (above). **Owner Joanne Liu, TJ '94**, graciously provided appetizers on the house.
- Saturday afternoon family-friendly picnic and renovation tours at TJ.



Ajay Batra hugs retired attendance manager Pat Groves (above). Principal Glazer (with son Luke) shows the alums the new dome (below).



- Saturday night Main Event at the new 10th floor Crystal City office space of classmate Evan Burfield's incubator, 1776.



Reunion organizer Sonal Goda and classmate Rafael Arancibia (above). Classmates Damon Lewis and Grace Cho (below).



Evan Burfield: Burfield is the cofounder and co-CEO of 1776, a global incubator and venture fund focused on startups addressing global challenges in

education, health, energy, the environment, transportation, cities, and other highly regulated industries and sectors. By specializing in entrenched industries, 1776 has become a global leader in "problem-solving" start-ups. Every year 1776 and its partners host a world-wide entrepreneurial talent search where competitors advance through local, regional, and global finals to compete for

over \$1 million in prizes. The incubator now has over 270 start-up members.

Burfield is also a founding member of *K Street Capital*, a network of serial entrepreneurs, angel investors, and community leaders dedicated to supporting DC-based start-ups.

His entrepreneurial career began at TJ, when he made the decision to put off college in favor of cofounding his first company, wealth management firm *netDecide*. After obtaining an undergraduate and Master's degree from Oxford and working in finance in London, he founded *Syneractive*, a consulting firm (see also Nov 2011 and May 2012 issues).

Politico named Burfield an "Emerging Tech Leader" in 2013, and *Washington Business Journal* called him a "newsmaker to watch" in 2014. This past August, he appeared with a start-up CEO on the White House Facebook page in connection with President Obama's entrepreneurship initiative, Start-up Day 2015 (below).

1776 now occupies two campuses, a downtown space which hosts classes and events as well as offering workspace, and a new Crystal City location, former home of tech hub *Disruption Corporation*, acquired in April. Burfield graciously offered to host the '95 reunion's Main Event at the organization's new 10th floor office. With its rustic ambience and panoramic views of DC monuments, it was the perfect venue.



CLASS OF 1995: MEET SOME ACCOMPLISHED ALUMS



Anthony Myint: Founder of numerous successful San Francisco restaurants including *Mission Chinese Food*, which, together with its New York City outpost, was in 2013 named the ninth-most

important restaurant in the US by *Bon Appetit Magazine*, he is widely recognized as a pioneer in harnessing the restaurant experience for good causes, including raising funds for charity and supporting sustainable businesses. In 2010, *Food & Wine Magazine* listed him among the "Top 40 under 40" big thinkers in the food world.

Perennial, Myint's upcoming venture, is as much an ecosystem as it is a restaurant: A 3,400 square-foot facility in nearby Oakland will stock fish that feed on restaurant leftovers; a bakery partner will make bread from perennial wheatgrass, which is grown more sustainably than wheat; and beef will be sourced from a ranch that sequesters atmospheric carbon.

Jaren (Casazza) Janghorbani: A former clerk for Supreme Court Justice Stephen Breyer, Janghorbani is a Partner in the Litigation Department of the New York City law firm of *Paul, Weiss*, where



she has tried multiple multi-billion dollar cases.

Recently, she was a key member of the *pro bono* team that successfully challenged the federal Defense of Marriage Act (DOMA), resulting in the Supreme Court's decision in *United States v. Windsor* to strike down the law as unconstitutional.



Adriane (Davis) Randolph: As Executive Director of the BrainLab at Kennesaw State University in suburban Atlanta, Dr. Randolph focuses on the design and evaluation of brain-computer

interface systems with the goal of improving the quality of life for severely motor-impaired individuals. She is also an Associate Professor in the business school, where she teaches Information Systems Management.



Barry Steinglass: As Program Manager at *Microsoft*, Steinglass was on the team that built the first version of *Xbox Live* and was responsible for creating the digital entertainment features of *Xbox 360*. As founder and VP for Product Development of *Chef Software*, he grew the company behind the software platform that automates the largest enterprise infrastructures in the world, including *Google*, *Facebook*, and *Yahoo*.

Currently, Steinglass is VP of Engineering for the popular media streaming company *Hulu*, where he is responsible for all client software.



John Harding: After six years as a Software Design Engineer at *Microsoft*, Harding has spent the last decade at *Google*. Since the company's 2006 acquisition of *YouTube*, he has managed teams of engineers for the video-sharing website. He is currently a VP of Engineering for *YouTube*.

He is currently a VP of Engineering for *YouTube*.



Chris Love: Dr. Love's Lab at the Koch Institute for Integrative Cancer Research at MIT develops methods to determine the qualities that define the identity, function, and genetic content of individual cells in

order to construct detailed profiles of a multicellular population. This research has applications in immunological monitoring and immunotherapy for diseases such as HIV/AIDS, multiple sclerosis, Type 1 diabetes, food allergies, and cancer. The lab is also developing new strategies for manufacturing biologic drugs to improve global access (see also March 2015 issue).

A Professor of Chemical Engineering at MIT, Dr. Love is also associated with the Broad Institute and the Ragon Institute of Massachusetts General Hospital, MIT, and Harvard.



Melissa (Breglio) Hajj: With numerous patents to her name, Hajj spent seven years as a lead designer at *Apple*, where she worked on *iBooks*, *iTunes* and *Final Cut Studio*. Following that, she

managed the design team for start-up *FiveStars*, which grew to be the most widely used customer loyalty network for small and medium businesses in North America. Hajj is currently Product Design Manager at *Facebook*, where, as she puts it, "she leads the design team responsible for connecting the next billion people."



Justin Werfel: A Senior Research Scientist at Harvard's Wyss Institute for Biologically Inspired Engineering, Dr. Werfel works on topics in complex and emergent systems, with a focus on swarm robotics. His lab's paper on designing swarm

robots that could mimic the collective behavior exhibited by termites was featured on the cover of *Science* magazine and included in their "top 10 scientific achievements of 2014" (see also March 2014 issue).

His research runs the gamut from behavioral studies of the insects that his robot work is based on to predicting areas where ethnic violence will occur. He is also involved in early robotics education.



Jonathan Betz: Currently an Engineering Manager at *Google*, Betz leads teams that focus on using the power and reach of *Google* products to enable social good. His current work focuses on Crisis

Response, providing life-saving information to those who need it most, and Civic Innovation, helping people understand how to effectively engage in their democracies.

He is also a principal at *Hudson River Angels*, a group made up of current and former *Google* engineers and product managers who invest in consumer-focused technology startups based in New York City.

For more alums, see the online edition.

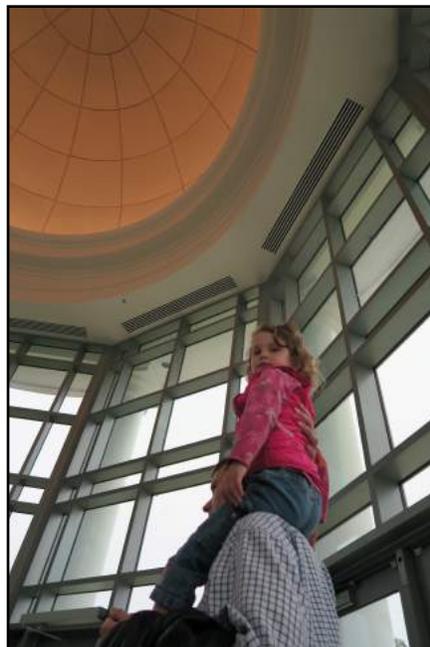
CLASS OF 1990 COMES HOME AFTER 20 YEARS



Dale Rumberger, who was Director of Student Activities at TJ when the Class of '90 graduated and went on to serve as Principal of Chantilly HS, Westfield HS, and South County HS, signs the class poster. He and his wife stopped by during dinner to reminisce with students.

Using the conveniently located four-star Hilton Alexandria Mark Center as their base, reunion organizers **Larry Roadcap, Jocelyn Oba, and Liz Fong**, put together a weekend full of activities that still left room for alumni to enjoy the Homecoming football game, floats, and festivities:

- Friday afternoon pre-game Happy Hour in the Hilton's Capital View Room
- Gathering in the stands to watch the Homecoming Game at TJ
- Saturday renovation tours at TJ, courtesy Principal Glazer and Jefferson Society student guides
- Lunch in the Hilton's Great Hall of the Retreat
- Evening cocktail reception, banquet dinner, and dancing to '80s hits in the Hilton's Terrace Room



Steve Floyd is inspired by the dome's nearly 45-foot ceiling to put his daughter on his shoulders during Principal Glazer's remarks. Dr. Glazer told alums all about the renovation and chatted with them about TJ traditions such as J-Day and no-bell passing periods that date from the school's early days.



From left to right, Lisa (Hossaini) Cohen, Eve Steigerwalt, and Owen Thomas.



From left to right, Larry Roadcap, Audrey Wright Jones, and Maria (Vargas) Kim.

Below, Forest Rawls-Blodgett chats with Michele Fair, wife of retired Physics teacher Jim Rose, who also attended.

Below, Teri Reaves and Kassandra Dove McMahon, with her son, show their spirit at the Homecoming game.

Below right at the game, from left to right, Michael Verhoef, husband of Larry Roadcap; Nick DiFiore; and Britt Argow.



CLASS OF 1990: SOME ALUMS OF NOTE



George Little: Currently a Partner at Brunswick Group, where he advises clients on crisis communications, cybersecurity, and public affairs matters, Dr. Little served as Assistant to the U.S. Secretary of

Defense for Public Affairs and Pentagon Press Secretary, and as Director of Public Affairs and Chief of Media Relations for the U.S. Central Intelligence Agency. In these roles, he worked with our leaders and allies to address our most important security challenges.

He also spent five years at IBM, and most recently was head of Marketing & Communications at Booz Allen Hamilton. He regularly teaches at Georgetown University, where he received his Ph.D. in International Relations.



Laura Collins: In June, Captain Collins took over as Commanding Officer of US Coast Guard Cutter BERTHOLF, becoming the first woman to command one of the Coast Guard's new 419-foot National Security Cutters.

Collins previously served on five cutters, three as Executive Officer (second in command). Her shore assignments included serving as an advisor to two Department of Homeland Security Deputy Secretaries and working as a Strategic Analyst in the Office of the Coast Guard's Commandant, where she helped the Service plan for the next 10-25 years. In addition to an Electrical Engineering degree from the Coast Guard Academy, she holds a Master's in Chemical Engineering from Johns Hopkins. She recently spent a year as a fellow at the RAND Corporation.



Owen Thomas: Thomas has been a leading online journalist for almost two decades. Currently Editorial Director and Editor-in-Chief of tech magazine ReadWrite, he first achieved notoriety as

Managing Editor of Silicon Valley gossip must-read *Valleywag*. Along the way he was West Coast Editor of *Business Insider*, founding editor of *Daily Dot* and Executive Editor of *VentureBeat*.



Andrew Kirmse: After obtaining his Master's from MIT, where he triple-majored in Physics, Theoretical Math, and Computer Science, Kirmse and his brother, Chris Kirmse, TJ '92, developed *Meridian 59*, the first 3-D massively multiplayer online game.

For the past eleven years, he has held the title of Distinguished Engineer at Google, where he created *Google Now* and led the development of *Google Maps for Mobile*, both of which were Google's highest-rated apps while he led the teams. He also led the team that developed the image processing system for *Google Earth* and *Google Maps*, contributed to early versions of *Google Desktop*, and led the development of *Google Earth*. Kirmse has won two Founders' Awards for his work and has over 25 patents in the areas of image-processing, location services, and contextual computing.

"I got super lucky for high school because the year before I was going to start, the Thomas Jefferson High School for Science and Technology opened. That turned into the best high school in the country. I wonder if I hadn't gotten so lucky there how things would have turned out" (courtesy Noah Davis, "What Makes You So Smart, Computer Programmer?" *Pacific Standard*, Nov. 2014).



Rob Williams: Dr. Williams is a Professor in the Department of Agricultural and Resource Economics, and an Affiliate Professor in the Department of Economics, at the University of Maryland, College Park, a Senior Fellow and Director of Academic Programs at Resources for the Future, an independent, nonpartisan think tank, and a research associate of the National Bureau of Economic Research. He studies both environmental policy and tax policy, with a particular focus on interactions between the two. He has served as a co-editor of both the *Journal of Public Economics* and the *Journal of Environmental Economics and Management*.

Professor Williams received his PhD from Stanford in 1999 and was a 2002 Mellon Fellow at the Brookings Institution. Prior to joining the Maryland faculty in 2014, he was a tenured Associate Professor of Economics at the University of Texas at Austin.

For the past eleven years, he has held the title of Distinguished Engineer at Google, where he created *Google Now* and led the development of *Google Maps for Mobile*, both of which were Google's highest-rated apps while he led the teams. He also led the team that developed the image processing system for *Google Earth* and *Google Maps*, contributed to early versions of *Google Desktop*, and led the development of *Google Earth*. Kirmse has won two Founders' Awards for his work and has over 25 patents in the areas of image-processing, location services, and contextual computing.



Angela Thrasher: An assistant professor of Health Behavior at the School of Public Health at the University of North Carolina at Chapel Hill, Dr. Thrasher studies the effects of discrimination and other race-related stressors on African American health, with a special focus on individuals living with HIV. She has expertise in measurement development and adaptation for diverse populations, latent variable modeling, and conducting research that integrates quantitative and qualitative methods. She also teaches the department's introductory class for master's degree students.

2015 the EB-5 West Penn regional center received its designation letter. Prior to that, he worked as a consultant for the International Finance Corporation, Calvert Funds, and Draper Triangle Ventures. He is still engaged with start-up companies and non-profits.



Jean-Luc Park: In 2012, Park pushed Pittsburgh's *Ferrum Capital Partners*, which focuses on the EB-5 green card investor program that encourages job creation and capital investment by foreign investors, and in

2015 the EB-5 West Penn regional center received its designation letter. Prior to that, he worked as a consultant for the International Finance Corporation, Calvert Funds, and Draper Triangle Ventures. He is still engaged with start-up companies and non-profits.

Having received his BS, BA, and MBA from Carnegie Mellon University, he is active on the school's Alumni Association Board. He also serves on MIT's Enterprise Forum Global Advisory Board.



Haru Okuda, MD: Featured in *Crain's New York Business* "40 Under 40" in 2010, Dr. Okuda has been teaching and preaching the benefits of using simulation to improve medical training since

2006. In 2011, he was named National Medical Director for the Department of Veterans Affairs Simulation Learning Education and Research Network (SimLEARN) program, where he leads a staff of clinicians and educators in conducting research and developing curricula and best practices.

For more alums, see the online edition.

Freshman Parent Reception

Freshman parents enjoyed a special opportunity to meet each other, chat with experienced parents, and speak one-on-one with Dr. Glazer and faculty at the Partnership Fund's seventh annual Freshman Parent Reception, held this year in McLean.

Several experienced parents, including Nancy Kao, Parent '16, '19; Rebecca Goldin, Parent '18, '19; Carleen Wood-Thomas, Parent '14, '17, '19, and PF Board Chair Srikant Sastry, Parent '17, explained why their families support TJ, all of them emphasizing that it's not just our unique STEM program that makes TJ great — it's also our athletic program, music program, 8th period clubs, and more.

Our host for the mid-September event was Vivek Puri, TJ '92, the Owner/President of Classic Homes. In addition to welcoming us to one of his beautiful model homes, he told parents how proud he is to have attended TJ and how amazed he is to see how far it has come since its early years. He mentioned how impressed he was with the TJ-student summer intern he hired after meeting her at the 2014 Alumni Career Fair, and how all the TJ students he met at the Fair were not only intelligent, but also exceptionally knowledgeable. Finally, he stressed the importance of supporting the school and urged parents to join him in contributing to the Campaign.

Photos:

- 1) Dr. Glazer, at left, chats informally with Vivek Puri, TJ '92, and freshman parents.
- 2) Prof. Rebecca Goldin, Parent '18, '19, shares her insights with first-time freshman parents.
- 3) The crowd enjoys networking over refreshments.
- 4) Dr. Glazer visits with Partnership Fund volunteer Jo Koeniger, Parent '16, at the Campaign for TJ table.

Board Chair Is Business Leader

At a reception at the historic George Washington Masonic Memorial, the Alexandria Chamber of Commerce honored Partnership Fund Board Chair Srikant Sastry, National Managing Principal of Advisory Services at Grant Thornton LLP, as 2015 Business Leader of the Year in recognition of his contributions to a "vibrant and thriving Alexandria." (Ad for October 21st event at right.) Kudos!



Alexandria Chamber of Commerce
2015 Business Awards
 Presented by **EAGLEBANK**

Business Awards Presentation and Reception
 Presented by EagleBank
 Honoring Alexandria Businesses and
2015 Business Leader of the Year
Srikant K. Sastry
 National Managing Principal of
 Advisory Services at Grant Thornton LLP

October 21, 2015 - 6PM - 9PM
 George Washington Masonic National
 Memorial
 Catering by Chef Cathal Armstrong,
 Dessert by Alexandria Cupcake.

Sponsorships still available, please contact
 Shari Simmons at shosaur@alexchamber.com.
 To register and view a list of nominees, visit
 www.AlexChamber.com.

Supporting Sponsor: **Grant Thornton**

Sponsored by: **Alexandria Chamber of Commerce**

Upcoming Events

ALUMNI DAY WARM-UP

Friday, Nov. 27th

3:00-4:30pm: Alumni flag football game
 4:30-6:00pm: Homecoming BBQ

ALUMNI DAY

Saturday, Nov. 28th

12:30-3:30pm: Alumni Day Activities
 Networking Lunch
 Alumni Ass'n. Annual Meeting
 Teacher Hall of Fame & TJ STARS
 Speakers & Panels
 Renovation Tours

CLASS OF 2000 15TH REUNION

Saturday, Nov. 28th

Alumni Day activities; Dessert
 7:00-11:00pm: A-Town Bar & Grille

CLASS OF 2005 10TH REUNION

Friday, Nov. 27th

6:00-9:00pm: Spider Kelly's, Arlington
Saturday, Nov. 28th
 Alumni Day activities; Picnic
 7:30-11:30pm: Jos. Butler Parks Ctr., DC

CLASS OF 2010 5TH REUNION

Saturday, Nov. 28th

8:00pm: Blackfinn Ameripub, DC

GIVING TUESDAY

Tuesday, Dec. 1st

2015 FALL OPEN HOUSE

Thursday, Dec. 3rd

5:00-7:00pm

Register online at:

www.tinyurl.com/2015TJOpenHouse

TJ could not fulfill its mission without the voluntary contributions of parents, grandparents, friends, alumni, and corporate partners. To learn how you can support TJ through the Partnership Fund, please visit us at tjpartnershipfund.org, or contact Development Director Aristia (Tia) Kinis at akinis@fcps.edu or 703-750-8317.

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