

The Hertz Foundation builds America's capacity for innovation by nurturing remarkable applied scientists and engineers who show the most promise to change the world.

Hertz on the Move

By Jay Davis



After twenty years in office space at an industrial park in Livermore, the Hertz Foundation has moved into smaller but more

modern offices in the heart of our city. The move was driven by three objectives. The first was to provide more attractive and encouraging working conditions for staff and volunteers who work very hard at important tasks, furthering a mission that supports the Nation's strengths. The second was to have higher visibility in a community that is developing as a satellite technology hub on the periphery of the Silicon Valley and San Francisco Bay electronics, computation, and biotech communities. The third, obviously connected to the previous two, was to have greater curb appeal in a community in which we intend to fund raise. We now have offices to which one might bring a potential large donor without apology. Of course, the trick is to look professional and stable without looking rich. You must visit us and judge if we have accomplished those goals. We are next to the Bankhead Theater and a planned boutique hotel, across the street from the site of a planned 2000 seat theater and in the midst of a revitalized downtown that has a cluster of excellent restaurants. If you come see us, you will not lack for things to do. We would welcome a visit.

Last Flight of Discovery

By COL Eric Boe, Hertz Fellow, 1987, Georgia Institute of Technology, Electrical Engineering



February 24, 2011 at 4:53 PM EST, Discovery lifted off from the launch pad at Kennedy Space Center for the final time. STS-133 was my second flight—my first was on board Endeavour two years earlier—so I vowed I would absorb every detail of the launch experience. This would be my last spaceflight opportunity aboard a space shuttle, and I was determined to make the most of it.

Our launch attempts had already been fairly dramatic. The crew had spent more than a week the previous November waiting to strap-in to Discovery for our mission. But each successive day a new and different technical imperfection appeared to scrub our efforts. Our week-long wait paled in comparison to the weeks and months that would follow as a major defect in our external fuel tank was discovered. The exhaustive analysis, repair, and re-certification of this critical element took another 3 months. But that sunny day in February, we confidently started up our systems in anticipation of a glorious launch day. The hours-long countdown proceeded "nominally," or without deviation, until just prior to launch. A radar display at an off-site monitoring station hiccupped, stopping the countdown progress with only 3 minutes of time to spare. We, along with hundreds of NASA ground team members and thousands of spectators, held our collective breath until Launch Control transmitted the blessed words "OTC-PLT. You are go for APU start." That was my cue, with just exactly 2 seconds before our window closed, to crank up the power units that would supplement and regulate the hydraulic power generation throughout the ascent phase of flight—a step we didn't take unless we were actually, really, no-kidding going to launch!

"8-7-6-..." As the three liquid fueled main engines ignited, the shuttle swayed forward from the off-axis thrust. The engines stabilized at 1.2 million pounds of thrust generated, and the vehicle returned to the vertical. "3-2-1..." With computer monitored systems "go," the automated ignition command was sent to the solid rocket boosters. Instantly an additional 5.6 million pounds of thrust (~2.8 million lbs of thrust per booster) was added, for a total of 6.8 million pounds, as we cleared the launch tower. "Liftoff!" 2 Gs of acceleration pressed us insistently into our seats as the journey began. Eight seconds later, as expected, the "roll program" initiated, and the shuttle altered its trajectory to attain the 51.6 degree inclination plane of the orbit to join the International Space Station (ISS), our eventual target. Inside, the shuttle shook and rumbled, a consequence of the burning solid rocket propellant. As the vehicle accelerated through the



Maj Gen W. Neil McCasland, Lt Gen Ellen Pawlikowski and Maj Gen (Retired) Paul D. Nielsen

Hertz Fellows Take Command

Lt Gen Ellen Pawlikowski, Hertz Fellow 1979, pinned on her third star May 19, 2011. General Pawlikowski received her PhD in chemical engineering from UC Berkeley in 1981. On June 3, 2011, she officially took command of the Air Force Space and Missile Systems Center (SMC). The Center has 5,000 employees and a \$10 billion annual budget to acquire and sustain such space systems as the Global Positioning System satellites. General Pawlikowski is the fifth woman to achieve the rank of lieutenant general in the Air Force and the first female commander to lead the SMC.

Maj Gen William Neil McCasland, Hertz Fellow 1979, took command of the Air Force Research Laboratory (AFRL) from then Maj. Gen Pawlikowski on May 13, 2011. General McCasland received his PhD in Engineering from MIT. At AFRL, he is responsible for managing the Air Force's \$2.2 billion science and technology program, as well as funded research and development of \$2.2 billion. General McCasland oversees a global workforce of approximately 10,800 people in the Laboratory's component technology directories.

Attending both change of command ceremonies was **Maj Gen Paul Nielsen (retired)**, Hertz Fellow 1972. General Nielsen is currently a Board Member and Secretary for the Hertz Foundation. He completed his PhD in Applied Physics from UC Davis. His last AF command was as the Commander of the AFRL retiring in 2004. Currently, he is the Director and CEO at the Software Engineering Institute (SEI), a federally funded research and development center operated by Carnegie Mellon University.

atmosphere, approaching the speed of sound, the liquid hydrogen and oxygen-fed main engines throttled back to mitigate the maximum dynamic pressure forces on our ship, which we'd like to keep intact through re-entry and landing. Approaching 100,000 feet the engines returned to maximum, as the call from Houston came: "Discovery, you are go at throttle up"—reassuring words from the Control Center team that all systems were functioning as expected and that the flight was proceeding as predicted. At the two minute mark, the shuttle moves at five times the speed of sound, and the vehicle is above 200,000 feet. I take a peek out the window and am rewarded with an incomparable view of the coastline up along the Eastern seaboard. My first launch was at night, so it was impossible to make out the feeble city lights competing with the glow from our own engines—like when your kids turn the light on in the back of the car while you drive at night. The view out the window on this beautiful February day was a bonus, and soon after the fiery bang of solid rocket booster separation, the ride smoothed out. We accelerated now with only the thrust from the voracious liquid-fueled engines, which swallow a swimming pool of fuel every 25 seconds. The G force slowly began to build again as the vehicle continued to accelerate. At 13 times the speed of sound, the orbiter rotates to a "heads up" position with the orange external tank underneath supplying the necessary fuel to get us to orbit. At about a minute to MECO (Main Engine Cut-Off), the main engines throttled back to maintain 3 Gs, which feels like a small elephant sitting on your chest. At 8 1/2 minutes, MECO occurred and we transitioned instantly from 3 Gs to weightlessness, reminding us why everything on the ship was either tethered or attached with velcro because everything was floating. Discovery was now moving at over 17,500 mph (or 5 miles a second). At this speed, we circumnavigate the globe once every 90 minutes, which means we get to view 16 sunrises and sunsets every day. The show was over and it was time to get to work, as the crew must convert Discovery from a rocket ship to an orbiting spacecraft. We had to dismantle and stow flight deck seats that are only used for ascent and entry, doff and store our orange pressure suits, and deploy the antenna and sensors we would need for a full day of post-launch inspections the next day. Although launch and ascent are some of the most exciting minutes of the flight, that phase only positions us to do our real job.

Our primary mission was to deliver the final pressurized module to the International Space Station, completing over 12 years of assembly efforts. This new module, stowed in our payload bay, is called the Permanent Multipurpose Module (PMM). This module will serve as the "walk in" (or more appropriately "float in") closet for the station, a place to store technical equipment, spares, and sundries. Like a lot of equipment in the space program, it has been re-purposed from earlier flights. This same tin-can closet was formerly known as the MPLM Leonardo. An MPLM, as opposed to a PMM, is a Multi-Purpose Logistics Module (same number of words, but more letters in the acronym—go figure). Coincidentally, this module was in my payload bay on my last trip uphill on STS-126, when it was full of sleeping quarters, new cooling units, and the ever-popular water processing unit that recycles condensation and—you guessed it—urine into potable water.

The ISS has been manned continuously for more than 10 years now. I often ask when I talk to different groups, "Is someone up in space today?" and sadly, usually over half the group will say "no." The reality of the operating space station is even more amazing than the statistics. It is not only the single largest structure ever built in space, but it is also the most successful product of effective cooperation among humans. Fifteen partner nations contribute equipment, expertise, or funding—and thousands of individuals help sustain operations and habitability. Day in, day out—through earthquakes in Japan or hurricanes in Houston, the space station operates. The astronauts breathe air, consume food, conduct experiments, and exhale carbon dioxide. And all of this has to be monitored, managed and catalogued, so they can find that specific toolkit again in five years when a particular piece of equipment needs maintenance. Just watch NASA TV for a few minutes as the various ground stations hand-off control responsibility around the world. You'll never hear more precise and consistent professionalism, all despite multiple languages, and political and cultural differences.

The space station is a proud legacy of the American space shuttle program. The brightest “star” in the sky, more than 70% of the structure was lifted into orbit by the space shuttle fleet. No other existing vehicle can launch and deliver the payloads like the shuttle can. Our fleet is named for great ships of exploration: Discovery, Endeavour, and Atlantis. When Atlantis lifts off this summer for the final time, it will be, undeniably, the end of an era. However, the start of a new era will further our journey to the stars! With the ISS construction complete, the shuttle’s ultimate goal will be complete, and a new vehicle is needed for us to journey out of low Earth orbit. As our travels take us farther from our home planet, just like the sailing ships of old, we will need to be much more self sufficient. We can’t possibly stow and propel all the consumables we need with our existing engine technology. We’ll need to recycle the payload and squeeze more power out of less fuel weight too. These technological challenges are just as daunting as those that the Apollo program overcame. And I am confident that with diligence and innovation, we’ll engineer, analyze, and test our way past those hurdles as well.



Glen Whitney

“You’re opening a what...?”

by Glen Whitney, Hertz Fellow 1990, UCLA, Mathematics

At different times, there have been different “mes,” and sometimes I hesitate to ponder what the me of 2001 would have thought of the me of 2011. I used to be very skeptical of folks who felt they had found their “true calling,” the one thing they were ideally suited for. Please, 2001 me, don’t judge me too harshly—at least hear my story, which is to say your story, of how you’re going to end up that way yourself...

My career began nearly traditionally: Bachelor’s and PhD in mathematics, postdoc in the math department at the University of Michigan. The only detour from standard was a master’s in linguistics tucked between the math degrees. The linguistics interest also led to summer internships with the speech recognition research group at IBM, which actually continued even after I began math grad school.

The first left turn came at the end of my postdoc. My wife and I were looking for positions at the same university in a tough job market. None of the combinations we had come up with seemed ideal, and time was wearing on toward the response deadlines for the positions we had found. With about two weeks left until decision day, I received an email out of the blue asking if I might want to join a technical trading firm—from my former boss at IBM, now at Renaissance Technologies. Given the fact that I would be doing research alongside a dynamic group of bright, talented individuals and that it also happened to solve the problem of joint positions, it was not hard to make the jump from academia.

There were lots of positives in the Renaissance environment. I enjoyed the intense learning curve—the first few years were like earning another degree in probability and

Peter Strauss Award

The Fannie and John Hertz Foundation announces the creation of the Peter Strauss Award that will be given annually to a Hertz Fellow who has demonstrated exceptional leadership as an entrepreneur. This \$5,000 award, which was endowed by a gift from Harold Newman, is named in honor of Peter Strauss, who died in 2010 at the age of 89. Peter was a member of the Fannie and John Hertz Foundation Board for many decades and Harold is a Board Director. Both Peter and Harold were financial advisors to the Foundation while partners at Neuberger Berman.

The Prize Committee of the Hertz Foundation is now soliciting nominees for this Award. The nomination package should include a clear description of the entrepreneurial accomplishments of the nominee, along with three (3) testimonials by industrial, academic, or other leaders who can attest to the importance of the nominee’s work.

The nominated individual must meet two or more of the following criteria:

- Either in-school Fellow or recently graduated (< 5 years)
- Major patents awarded
- Significant licensing agreements established
- Engineered a new start-up company
- Won major national recognition for his/her inventions

Nominations for the Peter Strauss Award are due at the Hertz Foundation office by September 1, 2011. If you would like to nominate a Hertz Fellow for this Award, please send your nomination package to the Hertz Foundation, Attention: Linda Kubiak, 2300 First Street, Suite 250, Livermore, CA 94550, or by email to: linda@hertzfoundation.org.



European meeting

The first Hertz Fellows European meeting was held at the Møller Centre at Cambridge University, May 20-22, 2011. Program organizers were Dan Roberts (2009, Applied Physics), currently at Oxford, attending MIT in the Fall of 2011; and Kyle Gustafson (2005, University of Maryland, Physics), currently an NSF Post Doc at Ecole Polytechnique, Lausanne, Switzerland.

Alumni Fellows Davor Sutija, Kirk Haselton, and Paul Young provided intriguing perspectives on career paths outside the academic track.

- **Davor** (1987, UCB, Chemical Engineering) is the CEO of ThinFilm in Oslo, Norway which has a long-term vision for providing RFID tags at a tiny price.
- **Kirk** (1984, Cornell, Applied Science) is a project manager at ipal GmbH in Berlin, a commercializer of inventions from a consortium of universities and research institutions; and
- **Paul** (1986, Harvard, Applied Physics) in London is the head of the Equity and Fixed Income, Currency and Commodities Strategies Group at Goldman Sachs in Europe.

Guest speakers Dr. David Tong, Fellow of Trinity College in Physics at Cambridge and Professor Daniel Wolpert, Engineering, Cambridge, were inspiring in very different ways, describing practical application of string theory to condensed matter theory and experiments in the cognition of human motion and perception of motion.

There was interest in the pursuit of the \$3M Heritage Prize for predicting patient hospitalization rates. Kyle will organize a Hertz team and will bring a developed idea to the August Summer Workshop.

statistics and in the workings of the world's financial markets. We grappled with intellectually demanding, interesting problems in a collaborative atmosphere. I appreciated the drive to get things done, to get our ideas operating in the real world as quickly as possible. And I had a good time interacting with bright, interesting colleagues—one of whom, at one point, invited me to join him in making up a group of ten people needed to visit a very small math museum on Long Island, the Goudreau Museum, that was only open by appointment. (Needless to say, our families had a blast despite the much-loved condition of the exhibits there.)

Along the way, the spouse of a colleague asked if I would coach a math club and team at our kids' elementary school. I was hesitant at first—after all, finance kept me very busy—but ultimately I decided that I liked interacting with kids, and that I had a love of mathematics that hopefully I could convey to the students. It ended up being a very enjoyable, rewarding experience, especially when I heard from the teacher I was working with that she had to hold the kids back to keep them from running through the halls to get to the club room in their eagerness.

Eventually, although the problems at Renaissance remained as interesting and challenging as ever, I began to feel the need to be involved on a daily basis with an activity that I felt had greater direct social impact. Not that there was anything wrong with quantitative trading, just that it felt socially neutral. So I began to cast about for other possibilities—I did a stint at the Simons Foundation Autism Research Institute; I ran for my local school board.

But a turning point came when I heard, at a county math tournament in which my math club competed, that the Goudreau Museum had closed. At first I was disappointed, wishing that they had reached out for help. But after a while, I began to see this as an opportunity. The United States clearly has a cultural problem with mathematics. No other field is so closely associated with “geekiness”; for no other field is it quite so acceptable, or even positive, for someone to declare “Well, I was never very good at math!” And public perception of math is riddled with so many myths: that math is boring, that math was all done thousands of years ago by dead white guys, that math is only for boys, and so on.

To fight a cultural problem, the country needed a cultural institution. I discovered that there was no other museum dedicated to mathematics in the country, and so I set about to create a National Museum of Mathematics. I quickly came to feel that this was a project which brought together numerous strands of my experience, interests, and skills: a lifetime love of mathematics, professional involvement in both pure and applied mathematics, and interaction with kids and math.

Of course, I had no idea in the world of how to go about opening a museum. So I began by sending out a brief plea for help and ideas both through my friends and acquaintances and through the mailing list of a local museum association on Long Island. Fortunately, I received a few valuable responses, and thus began yet another intense learning curve in my life. I discovered that I had never loved doing anything so much before, and threw myself into the project with great intensity. Now the Museum of Mathematics is chartered by the New York State Education Department, has raised over \$22 million dollars (hopefully and counting...), has a staff of a dozen people, is touring a successful traveling exhibit (see mathmidway.org), has just signed a lease for space at 11 E. 26th Street in Manhattan, NY, and is slated to open in 2012. I hope that you'll check the museum out at momath.org, visit when we open, and support the project...

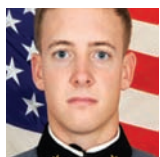
So what conclusions or moral should the many “mes” over the years draw from this story? Well, I am often asked how one can get a job at Renaissance or how one can start a museum or how one can find one's true calling. And my answer is always the same: Try lots of things. Keep doing the things that are exciting to you and that you love doing and are passionate about. And let there be room for serendipity to affect the course of your life, as you can see that it has affected mine.

2011 Hertz New Fellows

The following is a brief bio of the fifteen new Hertz Fellows selected for 2011-2012. These men and women show extraordinary promise to carry forward the mission of this Foundation. They are chosen for their intellect, ingenuity and their potential to bring meaningful improvement to society. To view their full bios, please go to the following link www.hertzfoundation.org/dx/newsevents/pressrelease.aspx?d=138.



Megan Blewett is receiving her BS from Harvard in Chemistry. She has long-standing interests in the etiology of central nervous system conditions, in particular autoimmune diseases. She is currently studying the mechanism of sulfide oxidation. She will continue her graduate studies at Harvard. Megan enjoys marathons, developing websites for managing medical data, and studying Mandarin Chinese.



Thomas Dean is graduating from the US Military Academy at West Point with a BS in Electrical Engineering. His research experience has involved extending the theory of the complex variable boundary element method that provides analytic solutions to boundary value problems. He will begin his graduate studies at Stanford where he will focus within the field of information theory. Tom has been involved in amateur radio since in middle school.



Robin Deits is graduating from MIT with an BS in Physics. He has worked on applying genetic algorithm optimizations to engineering problems from robotic clams to house-sized motors. He will continue his graduate studies in Fall 2012 at MIT focusing on Robotics. Robin enjoys working in the machine shop, writing software, or wiring a circuit for a new project. In addition, he played classical piano and has recently been developing his skills as a photographer.



Jesse Engreitz graduated from Stanford with a joint BS/MS receiving degrees in Biomedical Computation and Bioengineering, graduating with honors and distinction. He researched techniques to identify fundamental modules of human gene expression. He is currently a PhD student in the Harvard-MIT Division of Health Sciences and Technology in bioinformatics and genomics. Jesse is an avid pianist and singer.



Grant Gillary graduated from the US Naval Academy with a BS in Physics in June 2005. His research sparked an interest in computational mathematics leading to a Fulbright Scholarship to Oxford to study Mathematical Modeling and Scientific Computing. Grant is currently a captain in the US Marines. He completed a combat tour to Afghanistan in December of 2010 for which he received a Navy and Marine Corps Commendation Medal. Grant will continue his graduate studies at Johns Hopkins University where he will merge his strong leadership experiences and his technical background in the pursuit of new breakthroughs in the biotechnology industry.



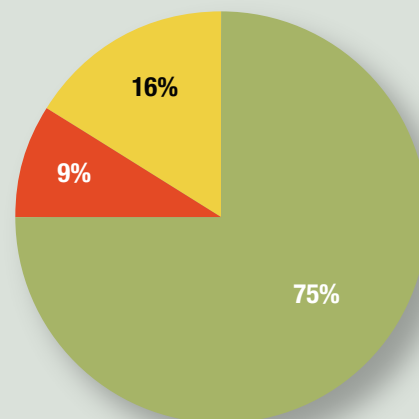
Max Kleiman-Weiner graduated from Stanford University with a BS in Biological Sciences, Phi Beta Kappa and with honors in Neurobiology. He investigated neural circuits and dynamics that underlie the synchronized oscillations of sleep and epilepsy. As a Marshall Scholar, Max completed his MS in Applied Statistics and developed new tools for analyzing neurons at Oxford University, England. Max will continue his studies in computational and systems neuroscience at MIT. Max enjoys being an amateur sushi chef, turning data into music and learning the Chinese language.

Hertz Foundation Expenditures FY10

In 2005 when the Hertz Foundation initiated the conversion from a private foundation to a public charity, it began fundraising in earnest. We have completed the specified five-year conversion process. During that period, more than \$15M has been given to the Foundation. In FY10, one hundred and thirty-four donors made contributions totaling a record \$4.2M.

The Foundation's office in Livermore houses a staff of five, supporting the application and recruitment process, in-school support, out-of-school programs, communications, fundraising, and operations. As a public charity and 501(c)(3) organization, the Foundation must meet well-defined audit and reporting requirements for all of its activities. Both the audit report and IRS 990 are posted on the Foundation website, www.hertzfoundation.org.

The following pie chart is taken from the Foundation's 2010 audit report. Programmatic activities include Fellowship support, mentoring and entrepreneurial education (Retreats, Workshops, Symposia and Gatherings).



- Programmatic Activities
- Fundraising
- Operations

Upcoming Events

August 4–8, 2011

Summer Workshop

University of California at Santa Cruz

The program will start with a barbecue dinner on Thursday evening followed by an ice-breaker engineering challenge. Speakers will include Bob Borchers, a General Partner at Opus Capital on “Innovation and Invention”; Eric Berlow, currently the Director, Sierra Nevada Research Institute, Yosemite Field Station, on “How Complexity Leads to Simplicity”; and David Galas, Vice President of the Institute for Systems Biology and Chairman of the Hertz Board, on “Where Genomics is Going.” In addition on Sunday afternoon we will have a Tribute to Lowell Wood for his years of service and support as a Hertz Senior interviewer and Board Member.

October 21–23, 2011

West Coast Retreat

Lodge at Tiburon, Tiburon, CA

Highlights include a keynote talk by Dr. Lisa Poyneer (Hertz Fellow 1999, MIT, Computer Science) from Lawrence Livermore National Laboratory, research talks by in-school Fellows, and bonding time on Angel Island. Program coordinators—Po-Ling Loh (UCB), Amit Lakhanpal (Caltech), and Brandon DeKosky (UT)

October 28–30, 2011

East Coast Retreat

Sheraton Colonial Boston North Hotel & Conference Center, Wakefield, MA

The East Coast Retreat will convene at the Sheraton with a kickoff dinner on Friday for participants, local Fellows and Board Members. Stephen Fantone, Hertz Fellow 1975-78 and Hertz Board Director/Treasurer, will provide a tour and presentation on his company, Optikos Corp. Optikos is a precision optical metrology company and is also a prolific designer of optical products ranging from photographic systems to medical instruments and toys. Over half of American households have a product that Optikos helped design, as do many laboratories and factories worldwide. In addition there will be several speakers and research talks by in-school Fellows. Program coordinators—Bill Kaminsky (MIT), Zach Wissner-Gross (Harvard), and Beth Kochin (Emory).



Kyle Loh graduated from Rutgers at age 16 and was accepted by Stanford for graduate studies the same year. Nurtured by inspiring and dedicated mentors, he conducted four years of research on embryonic stem cells at Harvard, Singapore, and New Jersey. The research freedom granted to him by his principal investigator enabled Kyle to publish in *Cell Stem Cell* a model challenging the prevailing paradigm of embryonic stem cell biology that has been maintained for the past decade. This freedom will be extended for five years by the Hertz Fellowship. Kyle is currently enjoying the equatorial climate in Singapore and leading a team of students to pursue stem cell research.



Katie Maass is graduating from the University of Texas, Austin, with a BS in Chemical Engineering where she has actively pursued research on polymeric drug delivery systems. At UT, Katie had leadership roles in numerous student organizations including Tau Beta Pi Engineering Honor Society, Omega Chi Epsilon Chemical Engineering Honor Society, and the Society for Women Engineers. She enjoys serving as a teaching assistant and has been involved with outreach and mentoring activities for other college students and for high and middle schoolers. She will attend graduate school at MIT in the fall to pursue research on improved cancer treatment and diagnostic methods.



Stephen Miller is completing his BS in Electrical Engineering and Computer Science at University of California, Berkeley, where he was working on autonomous robotic laundry folding. In the fall, he will begin his PhD work in Artificial Intelligence at Stanford University. Stephen has had his work published in the *Proceedings of the International Conference on Robotics and Automation and the Workshop on Algorithmic Foundations of Robotics*. Also footage of his work has been featured on the Discovery Science Channel and CBS SmartPlanet.



Cameron Myhrvold will be graduating from Princeton University with a BS in Molecular Biology and a certificate in Quantitative and Computational Biology. He has been researching evolution of quorum sensing in the marine bacterium *Vibrio harveyi*, and working on a computational model of the evolution of cross-resistance to genetically modified crops in insect pests. Cameron will start his PhD Program in Systems Biology at Harvard University in the fall. He enjoys wildlife photography, wakeboarding, and inventing.



Kay Ousterhout is completing her BS in Computer Science from Princeton. Her research focus is working at the intersection of distributed computational systems and computer networking. She has been involved in mentoring and tutoring other students in the complexity of computer programming; working as a web Programmer for the *Daily Princetonian*; and starting up a Princeton Women in Computer Science group. Kay will continue her studies at the University of California, Berkeley. Kay is an avid runner and skier.



Nevada Sanchez earned BS degrees in Electrical Engineering and Computer Science (EECS) and a second BS in Mathematics (with a minor in Physics) from Massachusetts Institute of Technology in 2010. He continued his education at MIT pursuing a Masters in EECS. His undergraduate research on the MIT Glove Mouse has won numerous awards and has appeared in numerous technical websites including Engadget and *Popular Science*. He will activate his Hertz Fellowship in the fall of 2012 at Stanford Department of Computer Science. Nevada enjoys piano, guitar, hobby electronics and indoor rock climbing.



Mollie Schwartz graduated from Columbia University in 2009 as the salutatorian of her class, with a BA in Chemical Physics. Her research focused on the properties of chemical reaction fronts propagating through vortex-dominated fluid flows, and on energy levels of electrons in graphene in the presence of strong magnetic fields. She currently works at the Science and Technology Policy Institute. In her capacity as a science policy analyst, she studies policy options and scientific issues related to energy efficiency, renewable energy, and nanotechnology in support of the White House Office of Science and Technology Policy. Mollie will pursue her graduate work at University of California, Berkeley, where she will study condensed matter physics.



Thomas Segall-Shapiro graduated from Rice University in 2010 with BS's in Bioengineering and Biochemistry. His research included leading the Rice team in the iGEM synthetic biology research competition, as well as projects focused on engineering and characterizing split proteins for use as biosensors. In addition, he interned for two summers at the J. Craig Venter Institute, working on projects related to bioenergy and synthetic genome engineering. Currently a PhD student in the joint UC Berkeley & UCSF program in bioengineering, Thomas will move to MIT in the fall to complete his PhD.



Max Shulaker will be receiving his BS degree in Electrical Engineering from Stanford in June 2011. His research has been heavily involved in nanotechnology, focusing on developing new, energy efficient technologies, concentrating on carbon nanotube-based transistors. He will continue his research to current silicon transistors in anticipation of ushering in the next era of lower power consumption, higher performance devices. Max is an accomplished jazz trumpeter, enthusiastic amateur kayaker, and enjoys playing racquetball and basketball.

News and Announcements

To read more on these and other news and announcements, visit our website at www.hertzfoundation.org/dx/newsevents/pressreleases.aspx



6/23/2011

Erez Lieberman-Aiden, Hertz Fellow 2008, *Nature* article

By mining a database of the world's books, Erez is attempting to automate much of humanities research. But is the field ready to be digitized?



6/8/2011

Turning Off Cancer's Growth Signals

Luis Alvarez, Hertz Fellow 1997, earned his PhD from MIT during a three-year leave from the Army. He was interested in regenerative medicine because he knew many soldiers who had been wounded in Iraq and Afghanistan. While looking for ways to promote bone regrowth, Alvarez developed a series of paired proteins that might promote interactions between growth receptors such as HER3 and EGFE to control growth and differentiation.

4/10/2011

Kevin Esvelt, Hertz Fellow 2004, *Nature* and *Harvard Gazette* articles

Scientists at Harvard have harnessed the prowess of fast-replicating bacterial viruses, also known as phages, to accelerate the evolution of biomolecules in the laboratory. The work could ultimately allow the tailoring of custom pharmaceuticals and research tools from lab-grown proteins, nucleic acids, and other such compounds.



2011 Summer Workshop Engineering Challenge Winners



At the March 17, 2011 Board Dinner at the Marriott in Burlingame, CA, Hertz Fellow Mike Montemerlo discussed not just the technical, but also the social and economic aspects of the autonomous vehicle project at Google. Before joining Google, Mike was part of the winning team at Stanford for the DARPA autonomous vehicle challenge.



Hertz Fellows get creative in the "Toxic Waste" Engineering Challenge at the West Coast Retreat.



Feb. 2, 2011 – Bay Area Hertz alums and in-school Fellows from the Stanford, Berkeley and UCSF met for lunch at Regalito Rosticeria in San Francisco. They shared a break from research, trading anecdotes about the exact worth of a penny and the toxicity of alpha particles.

News and Announcements *continued*

2/3/2011

Former Under Secretary, Department of Energy, Cathy Zoi, visits two Hertz Fellow Companies

Former Under Secretary of Energy, Cathy Zoi visited Boston on February 3, 2011 and in particular visited two energy startup companies: 1366, co-founded by Professor Emanuel Sachs (Hertz Fellow 1979, MIT) and KGS Buildings, co-founded by Stephen Samouhos (Hertz Fellow 2005, MIT). The companies represent both the new and seasoned Hertz generations working across the energy world: 1366 focuses on innovative solar technology, and KGS creates innovative software for building energy efficiency.

KGS Buildings continues to grow and will have nearly 4 million square feet of property on their software by October 2011. If you are interested in building energy efficiency for your facilities, please contact Stephen (ssamouhos@kgsbuildings.com) for the Hertz Fellow discount. KGS is growing and would love to grow with the Hertz Community.

News to share?

Please contact Linda Souza at lsouza@hertzfoundation.org or at **925-373-1642**.



Nick Gayeski, Sian Kleindienst, Cathy Zoi, Stephen Samouhos, and John Anastasio

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