

Advancing Science in America®

ARCS Foundation advances science and technology in the United States by providing financial awards to academically outstanding U.S. citizens studying to complete degrees in science, engineering and medical research. The Pittsburgh Chapter has the additional focus of increasing the number of doctoral scholars pursuing advanced scientific study and research in the Western Pennsylvania region.

The Pittsburgh Chapter

Chartered in 2003, the Pittsburgh Chapter is one of the newest of 17 nationwide ARCS chapters. In a short time, the Chapter has already pledged more than a million dollars to its three partner universities, Carnegie Mellon University, the University of Pittsburgh, and Penn State University.

Penn State Shines in Acoustic Display



ARCS scholar Molly Hanlon, and ARCS members Mary Lou Bennett and Barbara Palmer, don headphones to muffle the sounds of an acoustic demonstration.

"It was obvious that Penn State's Acoustics Department spent much time and effort planning this program," said Sue Breedlove, ARCS member and liaison to Penn State,

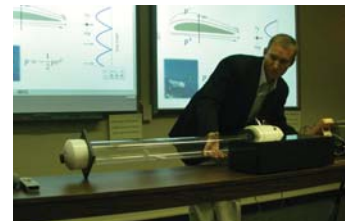
of their program last October 8.

After light refreshments, Dr. Vic Sparrow oversaw the acoustics and audio demonstrations highlighting Penn State's research, from quieting the noise of aircraft to the world of underwater sound to the design of concert halls.

The program drew four of the five Penn State ARCS scholars, three local donors, two prospective members, and various PSU graduate students and

professors.

For spring, 2013, Dr. David Eisenstat is planning another ARCS event, this time by the Ecology Department.



Eric Mitchell, Masters Candidate in Acoustics, demonstrates an Acoustic Levitator.

Members Tour State-of-the-Art McGowan Institute

On October 6, the University of Pittsburgh hosted enthusiastic ARCS members and guests for a tour of the McGowan Institute for Regenerative Medicine, a glowing symbol of Pittsburgh's transformation from steel town into a world-class medical center.

After light refreshments, Dr. William Wagner,



Marti Beard and Annie Rivers socialize before the tour.



Chris Brockmeyer and Linda Burke smile during the reception for ARCS members and guests.

Director of the Institute, gave an overview of the research being conducted at the institute, where cell biologists and engineers with a background in biomechanics and polymer chemistry closely collaborate.

Pitt's Julie Chandler and Dr. Fabrisia Ambrosio

then led tours of the labs themselves, where scientists create scaffolding on which living cells for humans (tissue engineering) can grow. Scientists also conduct fascinating research into artificial organs, which may one day take the place of donor organs in sustaining life.



ARCS student Megan Jamiolkowski demonstrates the potential in artificial tissue.

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*Special thanks to
Kellie Anderson and the
University of Pittsburgh
for the layout, printing and
mailing of this newsletter.*

Letter from the President

Since taking office on July 1, I have been tremendously impressed with how well our members have worked together to carry out the ARCS Pittsburgh mission. My heartfelt thanks goes to everyone who has given of her time and talents: our financial team, those who raise our funds, our computer gurus and communications specialists, the gracious hosts of lunches and receptions, all of those who help to administer the chapter and board, those who welcomed and oriented our first year students, everyone who helped welcome 19 new members, and those who organize our programs and special events. As we approach our tenth anniversary in 2013, we can absolutely say that ARCS Pittsburgh is in very good hands. I hope you've all enjoyed the work you've done to support ARCS.

My thanks goes also to each and every one of our members and donors. Even if you don't have the time to host a lunch, attend a lecture or work on a committee, your support is ever so much appreciated. Without you, we simply wouldn't exist. There would be no scholar awards. I hope that you have gotten pleasure from knowing that you are providing those awards.

But most of all I hope that you realize how important your gifts of time, talent and treasure are. All of our scholars - all 32 of them - are United States citizens studying at the graduate level in science, technology, engineering and mathematics fields. All of them are among the brightest students in the country and are enrolled in some of the best departments at three of our country's finest universities. It is their future work which will provide breakthroughs in the sciences, technology and medicine: breakthroughs that will save lives, prevent hunger, reduce crime, create new technical systems and generally improve life for billions of people worldwide. It is simply not possible to overstate the importance of the support of graduate level science education for our region, our country and even for the world.

As we begin to celebrate our tenth anniversary and our first million dollars in commitments to science education, we can feel very proud of ARCS Pittsburgh and of our scholars. The Chapter is working well and providing a vital service. Each of our outstanding scholars has already achieved a great deal and has so much more to offer in the future.

Missy Unkovic
President
ARCS Foundation Pittsburgh Chapter

Do You Recognize Our First Year Scholars?

CARNEGIE MELLON UNIVERSITY



PETER CHAPMAN
Pittsburgh Chapter Award 2012-2013
B.S., Computer Science, University of Virginia, 2012
Carnegie Mellon University, School of Computer Science, Computer Science Department
Research Interest: Security and privacy



PETER LUND
The BNY Mellon Award 2012-2013
B.S., Applied Mathematics and Neuroscience, University of Pittsburgh, 2012
Carnegie Mellon University, Carnegie Institute of Technology, Department of Biomedical Engineering
Research Interest: Motor control and brain-machine interfaces



THOMAS JACKSON
Pittsburgh Chapter Award 2012-2013
B.S., Electrical and Computer Engineering, Cornell University, 2012
Carnegie Mellon University, School of Engineering, Electrical and Computer Engineering Department
Research Interest: Novel analog circuit design



MATTHEW EDWARDS
The Fromm-Kirwin-Leckey Award 2012-2013
B.S.E., Mechanical and Aerospace Engineering, Princeton University, 2012
Carnegie Mellon University, Carnegie Institute of Technology, Department of Mechanical Engineering
Research Interest: Microrobotics



LAUREN EVE STRAHS
The Heppner-Testoni-Young Award 2012-2013
B.S.E., Civil Engineering, University of Michigan, 2012
Carnegie Mellon University, Department of Civil and Environmental Engineering (CEE)
Research Interest: Drinking water treatment

UNIVERSITY OF PITTSBURGH



WHITNEY LANE
The Jeanne Berdik Founder Award 2012-2013
B.S., Biology, Purdue University – Fort Wayne, 2012
The University of Pittsburgh, School of Medicine, Interdisciplinary Biomedical Graduate Program, Molecular Virology and Microbiology
Research Interest: Virology



BROOKE SULLIVAN
The Fine Foundation Award 2012-2013
B.S., Biotechnology, University of Nebraska, 2012
University of Pittsburgh, School of Medicine, Interdisciplinary Biomedical Graduate Program (IBGP)
Research Interest: Genetics and viral-mediated gene therapy.



COURTNEY ANDERSEN
The Woodard-Ryan Award 2012-2013
B.S., Biological Sciences, University of Massachusetts Lowell, 2011
A.A. Liberal Arts & Sciences, Middlesex Community College, 2008
University of Pittsburgh, School of Medicine, Molecular Pharmacology (Interdisciplinary Biomedical Graduate Program)
Research Interest: Cancer pharmacology, nuclear receptor signaling

NICK PAVLOVSKY (*no photo available*)
The Abraham-Martin-Ragni Award 2012-2013
B.S., Biological Engineering, University of Florida, 2012
University of Pittsburgh, Department of Bioengineering
Research Interest: Neuroprosthetics and brain-computer interfaces.

PENN STATE UNIVERSITY

LAURA RADVILLE (*no photo available*)
Pittsburgh Chapter Award 2012-13
B. S., Biology and Studio Art, College of the Holy Cross, 2009
Masters Degree, University of Rhode Island
Penn State University, Ecology Program
Research Interest: Climate change and plant root ecology

ARCS Foundation Pittsburgh Donors

CORPORATION and FOUNDATION DONORS OF FULL SCHOLAR AWARDS

The BNY Mellon Charitable Foundation (II)
Thomas W. and Carol K. Henderson Family
Fund of the
Pittsburgh Foundation
PPG Industries Foundation (II)
Westinghouse Electric Foundation (II)

NAMED SCHOLAR AWARDS INDIVIDUAL DONORS OF FULL SCHOLAR AWARDS

Roy and Susie Dorrance
Leslie and Hans Fleischer (IV)
John T. Ryan III and Catharine M. Ryan in
honor of their daughter, Maureen Emily Ryan

DONORS OF HALF AWARDS

Jeanne and Dick Berdik (III)
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Burke, Jr.
Bev and Steve Elliott (III)
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Deborah W. Linhart
Mary Anne and John Paul
Carol and Paul Stockman (II)
Kathleen M. and Louis Testoni (II)
Lise Woodard and John Reilly, MD

DONORS OF THIRD AWARDS

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Mary Lou Bennett
Charlotte and Henry Beukema(II)
Cynthia Carrow and James Kyper
Mimi Barash Coppersmith
Ann Fromm
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Erika Kirwin
Janice Leckey
Jennifer and James Martin
Barbara R. Palmer
Margaret V. Ragni, MD and Frederick L.
Porkolab, MD (II)
Millie and Gary Ryan (II)
Elizabeth T. Wainwright (II)
Maureen Young

Roman numerals indicate multiple awards.

The ARCS Foundation appreciates the generosity of those
who have contributed to support our Scholars!

Words Have Domino Effect on Scholar's Life

Andrew DeYoung, 26, who is able to sit upright in his wheelchair for only five hours a day, appreciates his ARCS scholarship and words of encouragement that have touched his life.

"I'd like to tell ARCS members, 'So many people have helped me, probably thousands. You're part of that, too.'"

A third year ARCS scholar at CMU, Andrew studies computational chemistry and works mostly from his home in Export, PA. He is sitting there now in his bedroom/study lined with pictures of his favorite movie stars from old films.

Andrew wears khakis and a blue oxford cloth shirt, smiling warmly despite the encumbrance of a Bipap, a sort of portable ventilator utilizing pressurized air flow, which helps him breathe. Andrew's computer sits on the desk before him. He can use a computer mouse and his wheelchair joystick -- but they are the only two things he can do on his own.

"When I eat, someone else has to hold the spoon and fork. They have really nice hors d'oeuvres at the ARCS events. But I can't eat and talk, so I pass on the food."

While Andrew grants an interview, his mother Joan, with creamy skin and Andrew's warm smile, drifts across their living room. All the floors in the house are made of hardwood. Joan and her husband David built the house years ago to accommodate their two sons with Spinal Muscular Atrophy (SMA), a neuromuscular disease. Andrew's

brother, Henry, 27, also has SMA and is also a PhD student at CMU.

Andrew continues, "When I was first diagnosed with SMA, at 9 months, a doctor told my parents: 'Most of these kids die before they're two -- but save for college.'"

"That kind of comment has a domino effect," Andrew says. "Words like that can make a huge difference in people's lives."

Once enrolled at CMU, Andrew took a course in organic chemistry from Professor Stuart Staley, since retired. "Professor Staley was so open-minded. He didn't say, 'Organic chemistry is hands on.' He said, 'You can take organic chemistry if you want to.'"

Maybe I would have gone in a different direction had I had another teacher."

Andrew was also helped by a new videotaping program, begun by a CMU professor and now a spin-off company called Panopto.

"This was in 2003, before the days of YouTube," said Andrew. "Because of the research project, CMU was able to videotape classes. That's why Henry and I could get our degrees in five years. Another professor calculated that without a videotaping program, it would take 14 years for an undergraduate degree, one course at a time."

"Let's try this videotaping thing," said Professor Mark Stehlik, then undergraduate advisor in computer science and currently Associate Education Dean at CMU's Middle East campus in Qatar. His words



Andrew, in red sash, and brother Henry, with parents Joan and David, after Andrew's undergraduate CMU graduation.



Andrew works, flanked by photos from old movies.

encouraged both Henry and Andrew to go on.

These days, Andrew works toward his PhD with Chemistry Department head Professor Hyung Kim, studying computer-simulated liquids in capacitors, which can store a charge like a battery. Such capacitors might eventually replace batteries and make electric cars even more feasible.

In another area of computational chemistry, such as at a pharmaceutical company like Merck, chemists research new drugs by literally mixing chemicals in a lab. But a small but growing number of chemists specialize in theory, attempting to simulate on a computer which chemicals can be used to make new drugs. "The computer people are at one end of the stream," Andrew says. "If the computational chemists think a compound might be interesting, the lab chemists might make them and test them. That can be cheaper than paying for many laborious experiments."

Andrew's mother does as many chores as possible with Andrew early in the day, so he is freed for other work. Twice a day, Andrew and his brother get breathing treatments.

For bathing and toileting and every transfer, the chains of a hydraulic lift attach to a sling, on which Andrew sits, and hoist him onto a special table; from there he can be lifted again into a wheelchair. For transfers to a special van, they use a forklift inherited from Andrew's grandfather with ALS.

When you first meet Andrew at an ARCS function, wheeled by his father, David, you think two things: Andrew must be smart, and he must have wonderful parents. Among other furniture made by his father, David, stands a special table. A monitor sits in the center, flanked on each side by desks, one carved for David's right-handed son, the other for his left-handed son. David built another table on which Andrew painted as a child, when he could still use a paintbrush.

"I keep that table, where their paint splashes are," Andrew's mother said, "from before this disease took away their ability to paint."

But Andrew seems to marvel at what he can do. He used his ARCS award to buy a new laptop. "Before that, I printed things out with my desktop computer. Now, when I go to CMU to see Professor Kim, I take my laptop, and we zoom in on this or that. Professor Kim is so experienced that he can look at something and know it's important enough to enlarge. He's a blessing to me, very patient."

This phase of Andrew's work began with an undergraduate professor's words: "You can take organic chemistry...." It continues with his own words, to his family and professors, to ARCS women, to innumerable volunteers and aides who help and transcribe his work. Thank you, he says.

We look forward to his words and his work in the future.

How Do I Pay My Dues?

Many thanks to our basic dues-paying members, who donate \$400/year to ARCS. If you have not already done so, please make your check payable to ARCS/Pittsburgh and mail it by December 31 to ARCS/Pittsburgh at P.O. Box 9117 / Pittsburgh, PA 15224. If you would like to make an additional donation, or have any other questions at all, please feel free to contact:

Lise Woodard at
reilypittsburgh@comcast.net

Your promptness will enable us to know how successful our fundraising efforts have been, so we can let the universities know how many scholars we will support next year. THEY appreciate it too!

New Members Flock to ARCS!

A warm welcome to our 19 new ARCS members: we are now 147 members strong. Special thanks to Doris Calian for facilitating this unusually high number of new members. If you see someone on the list from your neighborhood, consider encouraging her to join you at ARCS events. Let's make them all feel at home!

Susan Moreland
Pittsburgh, PA 15213
Judith Evans Thomas
Sewickley, PA 15143
Mary Margaret Stamy
Pittsburgh, PA 15215
Sandra Williamson
Pittsburgh, PA 15217
Diane Holder
Pittsburgh, PA 15213
Karen S Auclair
Pittsburgh, PA 15218
Dr. Nancy E. Davidson
Pittsburgh, PA 15213
Linda M. Their
Pittsburgh, PA 15215
Debbie Beck
Pittsburgh, PA 15228
Suzanne L. Grant
Edgewood, PA 15218
Carol L. Moyer
Pittsburgh, PA 15215
Jeanette Wholey
Pittsburgh, PA 15237
Karen Sartin Slevin
Pittsburgh, PA 15215
Jeannie Desmone
Pittsburgh, PA 15218
Helene Finegold MD
Pittsburgh, 15208
Leslie Oden Dunn, MPH
Allison Park, 15101
Gez Ebbert
Pittsburgh, PA 15217
Camille DeClementi
Glenshaw, PA 15216
Linda Ban
Pittsburgh, PA 15215

Carnegie Mellon's Alumni Concert Hall Impressive Venue for Donor Appreciation Event

ARCS scholars streamed into the Alumni Concert hall for the September 11 reception in honor of those who make the awards possible. Members and spouses socialized with the students while munching hors d'oeuvres catered by Carnegie Mellon University. In an adjacent room, Maureen Cohon, ARCS member at large and wife of Carnegie Mellon's president, addressed the audience, as did Dr. Jared Cohon himself. ARCS president Missy Unkovic next said a few words, and introduced the next two speakers.

Highlighting the reception, ARCS third-year scholars Stephen Spagnol (Carnegie Mellon) and Katherine Harris (Pitt) each spoke about what the ARCS award

had meant to him or her. Because of the distance, Penn State scholars were unable to attend.



Dr. Jared Cohon, Carnegie Mellon's president, addresses the Donor Appreciation audience.

Most ARCS scholars have expressed great appreciation for the unmarked nature of their awards. This award supplements a meager academic income on which they may live for years as students. In general, they have used the money to attend conferences, pay for a treadmill, buy computer or laboratory equipment, travel to academic conferences, help with childcare, make a down payment on a Pittsburgh home. In one memorable example, a student was able to purchase an engagement ring for his fiancée!

The Donor Appreciation Event concluded promptly at 8:30 p.m.

Al Fresco Luncheons

The weather cooperated for the Al Fresco luncheon Peggy Mooney hosted last July 9 in Fox Chapel, where members and guests brought sandwiches and sampled her buffet and ate at tables set up outside on the patio. At least three guests decided to become members after that luncheon. Conversation was also lively at Lili Avery's Al Fresco July 9 luncheon in Oakland, held during last summer's heat wave. The weather demanded

that Lili hold the luncheon inside their air conditioned apartment. About 15 members brought their own sandwiches and drank Lili's iced tea or lemonade, selecting fruit salad with slices of pound cake and whipped cream afterwards. Since no guests attended, talk revolved around ARCS events and perks, such as the upcoming Tech Tea tour at the UPMC Tissue Engineering Institute.

Tour of UPMC Concussion Center a Welcome Perk for ARCS Members

An enthusiastic group of ARCS members and guests were treated to a tour of the UPMC Concussion Center on the south side, the only such center in the world explicitly focused on sports-related concussions.

After a welcome and introduction by UPMC's Dr. R.J. Elbin, members toured the world class gym, watching a live demonstration of physical therapy movements designed to aid in concussion recovery. We also viewed the renowned IMPACT tests

in action, and the vision assessment equipment that helps retrain the injured brain.

Kudos to ARCS' Lourdes Castellanos and UPMC's Kellie Anderson for a well-organized, well-attended evening.

Pittsburghers Participate in National ARCS Board Meeting

Carol Stockman and Beth Wainwright represented Pittsburgh at the national ARCS Foundation Board Meeting this past October 3 – 6 in Minneapolis.

As part of opening remarks at the meeting, Jeanne Berdik, national president of ARCS Foundation and former president of our Pittsburgh chapter, announced that since ARCS' founding in 1958, we have advanced science in America through support to 8,343 scholars.



Carol Stockman and Beth Wainwright at Zola's Restaurant in Minneapolis.

In 2011-12 we collectively distributed 528 scholar awards totaling more than \$4 million.

Since ARCS' founding in 1958, we have made 14,188 awards to deserving scholars, totaling more than \$82 million.

These are impressive numbers. Continuing the proud tradition, all ARCS members are invited to attend next year's annual meeting in Honolulu, Hawaii.

Scholars A-Buzz at First Year Orientation Dinner

Scholars networked with each other at the September 16 orientation for first year scholars, graciously hosted by ARCS member Linda Burke and husband Tim in their home.

More than 25 people had gathered. According to Linda, the students "compared data about professors, each other's research, restaurant recommendations, dogs, football, hockey, wine and cooking." Almost

everyone kept an eye on the Steeler game.

Along with Linda, ARCS members Barbara Andrews, chapter president Missy Unkovic, and national ARCS president Jeanne Berdik walked the students through our expectations of them and our responsibilities to them:

- when dues would be paid
- a calendar of events
- the ticket donation process

- our need for informational data from them

For dinner, Linda made a tossed green salad and shrimp and orzo casserole, followed by numerous homemade cookies for dessert. Tim Burke, helped by Jeanne Berdik's husband Dick, served as bartender for the event.

Dynamic Events Top List of Dates to Save

Headlining the list of upcoming signature events are the National ARCS meeting to be held in Hawaii May 29 to June 1, 2013, and ARCS/Pittsburgh's TENTH anniversary celebration on June 6.

For the tenth anniversary celebration Thursday June 6, Kathy Testoni, Bev Elliott and Millie Ryan plan a festive cocktail reception at the Frick Museum. Proceeds will be used to fund a three year scholar award in the name of Carnegie-Mellon president Dr. Jared Cohon and his wife, Maureen, herself a member of ARCS.

It's a "can't miss" affair!

All members are also invited to attend the National Arcs Meeting in Hawaii at the end of May. Beth Wainwright and Carol Stockman promise warm sun and numerous perks, such as a visit to the Waikiki Aquarium Pacific Tsunami Warning Center or the Central Pacific Hurricane Center, not to mention the chance to learn more about ARCS and to socialize with like-minded ARCS members across the country.

SAVE THE DATES

January 30:	Tour of Google
February 19:	Planning meeting, 20th CC, 4:00 – 6:30 p.m.
March 12:	Tour of Phipp's Living Building
April 3:	Scholar Showcase
May 14:	Annual meeting, Kathy Testoni's home, 2 p.m.
June 6:	10th Year Anniversary Celebration
May 29 – June 1:	National ARCS Meeting in Honolulu, Hawaii

Scholars LOVE Free Tickets

Please donate any tickets you cannot use – for a hockey, football, baseball or basketball game, symphony, opera or play – to our ARCS scholars, who find such "free" tickets to be a boon. They also help students see what Pittsburgh has to offer and encourage them to live in our wonderful city.

As far ahead as you can, email Kathy Dee with the name and date of the event. Kathy will then send an email blast to scholars that the tickets are available. A scholar will then contact you directly to arrange to get them. Once a scholar has claimed a ticket(s), please email Kathy Dee at KathyDee28@aol.com or call her at 412-243-5333 so she can let the others know the ticket(s) has been promised.

Our scholars will thank you!