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ARCS® Foundation Atlanta Chapter

Volume No. XVII Issue 3

Spring 2016

Achievement Rewards for College Scientists

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.

Upcoming Events

- May 11
Annual Meeting and Luncheon
- June 8
Old Board/New Board Meeting
- September 25
Fall Cocktail Party
- November 17
Scholar Awards Luncheon
- January 18, 2017
General Meeting and Luncheon
- May 10, 2017
Annual Meeting and Luncheon

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University of Georgia Helps Atlanta Chapter Kick Off Silver Anniversary Celebration

On March 2, 2016, the University of Georgia helped ARCS Foundation Atlanta Chapter kick off its yearlong 25th anniversary celebration in style by hosting Chapter members at its Athens, Georgia campus. The day started with visits to the Special Collections Libraries in the Richard B. Russell Building. Docents were available to enhance members' appreciation of the Hargrett Rare Book & Manuscript Library, the Richard B. Russell Library for Political Research and Studies, and the Walter J. Brown Media Archives and Peabody Awards Collection.

Next, Provost Pamela Whitten welcomed the group and expressed UGA's appreciation of the support provided by ARCS Foundation over the years. Although the Atlanta Chapter was chartered in 1992, UGA received its first scholar awards in 2000. Since then, almost \$850,000 has been awarded to 83 graduate students pursuing their studies at the Paul D. Coverdell Biomedical and Health Sciences Institute of UGA.

Three ARCS Scholar presentations followed: *Anastasia Bobilev*, a Franklin Foundation Neuroimaging Fellow and Ph.D. candidate in Neuroscience, discussed the PAX6 gene, a transcription factor in brain and eye development, and its role in human brain structure and auditory processing function.

Kerri Coon, a Ph.D. candidate in the Department of Entomology, presented her research on how gut bacteria contribute to the development and reproduction of disease-transmitting mosquitoes. Comments related to the Zika virus were especially timely. *Jeremy Yatvin*, a Ph.D. candidate in Chemistry, introduced his work on antimicrobial surfaces and their mechanism of action, as well as the grafting of fire retardant materials.

Another highlight of the day occurred when President Jere Morehead hosted everyone at an elegant luncheon that included remarks from ARCS Atlanta Chapter President Jane Dolinger and Dr. Toby Graham, University Librarian and Associate Provost. Following lunch, Dr. Graham led interested attendees down to the Potter Vault, a 30,000 square foot high density storage facility maintained at 50 degrees and 30 percent humidity for optimal preservation of archival materials.

Celebration events are being planned on the campuses of Atlanta Chapter's other academic partners over the coming year. Attendees to this event all agree, however, that UGA has set the bar quite high for future events and wish to thank all involved for their time and generosity, and the wildflower honey from the UGA Honey Bee Farm!

- Ronnie Martin



Front row: Babette Tipping, Susan Higley, Jane Dolinger, Gracia Conn, Elaine Davis, Regina Olchowski, Lisa Bankoff
Back row: Frances Swensson, Lee Doyle, Jeanne Berry, Susan Bledsoe, Anne Sterchi, Ronnie Martin, Margaret Turk (guest)

**ARCS® Foundation Atlanta Chapter
Annual Meeting and Luncheon
Wednesday, May 11, 2016, 10:00 AM – 1:30 PM
Piedmont Driving Club, 1215 Piedmont Avenue**

At our annual meeting and luncheon, the speakers will be a panel of current ARCS Foundation Atlanta Scholars. These will be Jason Frieman, Georgia Tech, who is designing ground test facilities for the next generation of rockets; Anastasia Bobilev, University of Georgia, who is researching the genetic neurodevelopmental disorder, aniridia, a congenital disorder characterized by the underdevelopment of certain aspects of brain structure; Kerri Coon, University of Georgia, who is identifying gut bacteria in mosquitoes as a potential target for mosquito and disease control; and Jessica Petree, Emory, who is building a nanomachine to edit RNA and designing an asthma drug that reduces inflammatory molecules in the lungs.

The cost is \$40 per person. Please RSVP by May 5 by registering at www.arcsfoundation.org. If you need help registering, contact Pat Leake at pleake@bellsouth.net.



President Jane Dolinger

A Letter from our President

Dear ARCS Foundation Atlanta Chapter Members,

As I write this letter on a beautiful spring day in Atlanta, I am in a reflective mood as I near the end of my term as your Chapter President. I have been fortunate and I am so appreciative to have had such fantastic support from all of you through our work on committees, task forces, and special events. I particularly want to thank my Board of Directors for their countless hours, tireless efforts and unwavering commitment. I hope you are as proud of your work and accomplishments as I am of you.

Over the past 24 years, we have been a vibrant and dynamic Chapter who has been committed to advancing our national mission of funding “the best and the brightest” scholars in science and technology. Since our founding in 1992, we have provided a cumulative total of almost 4.2 million dollars in scholar awards through the contributions of our members, corporate donors, foundations, and friends. Through the hard work of our Funds Development Team, I am pleased to announce that this year we will award 48 Scholars a total of \$355,000 in scholar awards.

Not only do we benefit from the generosity in dollars, but we benefit from the generosity in time, teamwork, vision, and dedication of all of our members. Your generosity in dollars AND time is a collective investment in our future. Supporting our Scholars enables them to focus on their work and their research, and that is what ARCS Foundation is all about.

As you can see, our Chapter has so much of which to be proud and we have so much to celebrate. And we will celebrate as we approach the year of our 25th Anniversary! The Celebration 2017 Committee has been hard at work planning to make this a memorable year. We already had our first event at the University of Georgia in early March. What a wonderful educational and celebratory event for all of us - our members, our Scholars, and the officials at the University of Georgia! The Celebration 2017 Committee will continue to collaborate with the University Relations and Education Teams to offer three more events at our other universities in the year ahead to commemorate our history and to celebrate our partnership with them over the years.

The annual Fall Cocktail Party will be our official kickoff for our anniversary year and it promises to be a special event. In addition, at our 25th Annual Scholar Awards Luncheon in November, I think our membership will be pleased to know that we will give one ARCS Anniversary Award of \$10,000 to each of our academic partners with Ph.D. Scholars and an ARCS Anniversary Award of \$7,500 to one undergraduate at Morehouse. I hope to see many of you as we come together for these events to honor our 25th Anniversary.

It has been a privilege to have served as your President for the past two years. I am pleased to pass the gavel and I extend my best wishes to incoming President, Sara Jean Burke. With her clear vision, organization, and leadership skills, Sara Jean will be a wonderful President and our Chapter is in good hands as we continue to advance and to fulfill our mission!

With great appreciation, Jane

ARCS Spotlight: Scholar Alumni

Dr. Rebecca Brown, Georgia Tech 2001-2003



After graduating from Georgia Tech in 2003 with a Ph.D. in Mechanical Engineering, Dr. Rebecca Brown began working for a startup company focused on commercializing a hydrogel technology licensed from Georgia Tech. Eventually the technology was spun-off into a second startup company which later merged into MiMedx Group, Inc. where Dr. Brown is currently the Vice President of Product Development and Regulatory Affairs. MiMedx processes, markets, and distributes human amniotic tissue and has achieved profound clinical outcomes in multiple therapeutic areas including ophthalmology, spine, chronic wounds, dental, orthopedic surgery, sports medicine, and urology. Dr. Brown's work involves leading teams to produce innovative and impactful products while complying with all applicable national and international regulations.

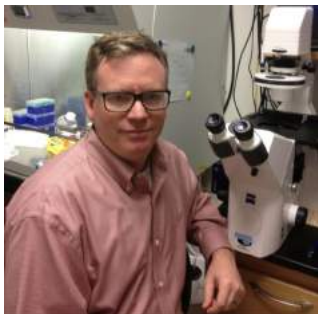
Dr. Krista Yorita Christensen, Emory University 2008-2009

After completing her MPH and Ph.D. at Emory University, Dr. Krista Yorita Christensen moved just across the border for her post-doctoral research in Montreal, looking at occupational chemical exposures associated with cancer. She continued this theme of environmental exposures and subsequent health effects, when she joined the US Environmental Protection Agency in 2010, performing human health risk assessments for various substances including asbestos. In 2014, a new addition to the Christensen family (Karl Gunnar, born 5/17/2014) prompted them to move to the Midwest to be closer to family. Currently, Dr. Christensen is an epidemiologist with the University of Wisconsin-Madison, housed at the Wisconsin Department of Health Services. She works with two separate programs - first, she is the epidemiologist and data manager for the Wisconsin Childhood Lead Poisoning Prevention Program, which involves tracking and evaluating blood lead testing and levels among children all across the state. Her second role is as an epidemiologist for Wisconsin's fish consumption advisory program, which involves not only evaluation of adherence to and knowledge of guidelines, but also biomonitoring to track human exposure to harmful chemicals and beneficial nutrients found in Wisconsin fish. Dr. Christensen writes that she is extremely grateful to ARCS Foundation for the support she received as a doctoral student, which paved the way for her current career opportunities.



ARCS Spotlight: Scholar Alumni

Dr. Martin Moore, University of Georgia 2001-2003



Dr. Martin Moore was a graduate student in the Department of Genetics at the University of Georgia. He received his Ph.D. in 2003, then undertook a postdoctoral fellowship at Vanderbilt University Medical Center. Dr. Moore joined the faculty in the Department of Pediatrics at Emory University in 2008. He is currently an Assistant Professor at Emory University, Director of the Center for Childhood Infections and Vaccines (CCIV) within the Pediatric Research Alliance, and he is a Children's Healthcare of Atlanta Research Scholar. Dr. Moore's research team studies respiratory syncytial virus (RSV) biology and vaccines. His work on RSV vaccines was recognized as Emory University's Innovation of the year in 2013. Dr. Moore is co-inventor of numerous RSV-related technologies and is a frequent national/international lecturer on RSV. In 2014, Dr. Moore founded Meissa Vaccines, a biotech startup.

Dr. Mary Chlebowski, Emory 2005-2006

Mary Chlebowski received her Ph.D. in chemistry from Emory University and subsequently, a J.D. from Georgetown University. Mary works as a patent attorney, helping inventors protect their ideas in a range of technologies from solar cells to new pharmaceuticals. For example, Mary drafts patent applications based on research by inventors. She then represents the inventors before the U.S. Patent Office in order to secure a patent. Mary's ARCS-supported research gives her a unique ability to understand and communicate with inventors about all aspects of their inventions including, synthesis and testing of new drug products and carriers.



Dr. Annica Wayman, Georgia Tech 2005



Annica Wayman is currently the Division Chief of Research Partnerships for Development in the U.S. Global Development Lab at the U.S. Agency for International Development (USAID). This team is responsible for the Partnerships for Enhanced Engagement in Research (PEER) program and other activities which catalyze and leverage collaborative research that addresses global development challenges. Immediately before this role, she was an AAAS Science and Technology Policy Fellow in the Office of Science and Technology at USAID where she helped initiate PEER and enhanced USAID's partnerships with other federal science agencies. Prior to coming to USAID, Dr. Wayman worked at Becton, Dickinson & Co. (BD), a leading global medical technology company that manufactures and sells medical devices, instrument systems and reagents. At BD, she served in various R&D engineering roles ranging from advanced technology development to new product development for anesthesia-related procedures. In addition to her primary engineering role, Dr. Wayman was part of BD's Global Health team where she explored ways to improve biosafety in tuberculosis (TB) laboratories in developing countries in collaboration with the Foundation for Innovative New Diagnostics, the Centers for Disease Control and Prevention and Alliance Biosciences. Dr. Wayman holds a BS degree in Mechanical Engineering

from the University of Maryland Baltimore County as well as MS and Ph.D. degrees in Mechanical Engineering from the Georgia Institute of Technology where her doctoral work focused on selectin-mediated adhesion of leukocytes to vascular surfaces.

Dr. Katherine Gass, Emory University 2010-2012

After completing her Ph.D. in Epidemiology at Emory University, Katie took a full-time position with the Neglected Tropical Disease Support Center at the Task Force for Global Health in 2014. Since joining the Task Force Katie has been immersed in designing, conducting, and supporting operational research studies to help eliminate diseases such as lymphatic filariasis and onchocerciasis. Katie now works very closely with the World Health Organization to develop policies and tools that help developing countries to achieve their goals of control and elimination of neglected tropical diseases.



ARCS Spotlight: Scholar Alumni

Dr. Joshua Schultz, Georgia Tech 2011



After finishing his Ph.D. in Mechanical Engineering at Georgia Tech, Dr. Joshua Schultz joined the University of Tulsa as an Assistant Professor who specializes in robotics. He has two primary research projects which he hopes to combine sometime in the future. His primary research at the University of Tulsa involves creating an alternative to traditional motors. Instead of using a motor to power movement, his system uses coils controlled by a computer. These coils are grouped into modules of 6 coils each, and the modules are designed to be used in concert with one another. This type of movement has a number of advantages over traditional motors: it is energy efficient, creates a smoother motion than traditional motors do, and can better tolerate a failure than a motor. Each module can pull hard – using all six coils – or lightly, using only one coil. If a coil fails, the module is weakened but is not inoperable, unlike a traditional motor. This type of system would be useful in many applications, but particularly in situations that require either ultra-high reliability, for example, a system in space that is difficult to fix in the event of failure; or a great deal of precision, as in a humanoid robot

where the cylindrical form of a motor is not the most effective design.

In a project he hopes will eventually intersect with his work at the University of Tulsa, Dr. Schultz was awarded a NSF grant called “Catalyzing New International Collaborations” for his work with partners in Belgium and Italy on under actuated anthropomorphic motion. Along with his team, Dr. Schultz is working on robotic hands powered by artificial muscle fibers that will more accurately mimic human movement. Ideally, these methods would allow robots to exhibit more precise motion and be more tolerant of minor damage.

Dr. Deborah Kilpatrick, Georgia Tech 1992-1995

Dr. Deborah Kilpatrick, CEO of Evidation, was named one of the 23 most powerful engineers in the world by *Business Insider Magazine*. Evidation Health is a startup from GE Ventures and Stanford Healthcare launched in March, 2016 that will clinically prove if a health tech product is helpful for patients. Kilpatrick is also co-founder of MedtechWomen, a peer group for women in the biotech field. She serves on the Georgia Tech Advisory Board and is a fellow of the American Institute of Medical and Biological Engineering. Kilpatrick, who has a Ph.D. in biotech mechanical engineering from Georgia Tech, was one of ARCS Foundation Atlanta’s first scholars. She started her career in aerospace, working as an engineer on the 22 Raptor fighter jet at Pratt & Whitney.

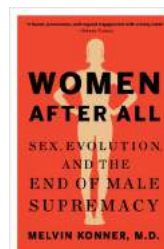


ARCS Foundation Atlanta Scientific Book Discussion

Wednesday, May 4, 2016

1:00 p.m.

Clare Whitfield’s home



Please join us for what promises to be a lively discussion as noted author, physician, anthropologist, and distinguished Emory professor, Melvin Konner, will come speak to us about his controversial new book, *Women After All: Sex, Evolution and the End of Male Supremacy*. Prepare to be amused, enlightened, and surprised by all the astonishing permutations of sexual equipment and behavior in the animal kingdom.

Women After All is available at Amazon and at Barnes & Noble. The book is also available electronically for e-readers. Both the Atlanta-Fulton County and the Decatur/Dekalb Library systems have copies.

Register online at www.arcsfoundation.org. After signing in with your user name (your email address) and password, be sure to check “Atlanta” in the drop down menu. This will take you to the “Welcome” page with a list of chapter events. Select the one labelled “Atlanta ARCS Foundation Book Club” and click on the “Register Now” button in blue print. *There is no charge for this event.*

Donor Appreciation Event at Emory



Current ARCS Foundation Atlanta Scholars at Emory University

On March 30, Emory University President James Wagner hosted more than 75 guests, composed of ARCS scholars, donors and members, at the wonderful Miller-Ward Alumni House. Dr. Wagner thanked ARCS Foundation members and donors, and told of the tremendous growth in the science programs at Emory. Eleven of our twelve ARCS Scholars and many of the Emory faculty joined the ARCS family for a celebration of our partnership. ARCS Foundation Atlanta president, Jane Dolinger, shared that we have been academic partners since our Chapter's founding in

1992, when we awarded three scholars, one from Emory University, one from Georgia Institute of Technology, and one from Morehouse College, for a total of \$15,000 in scholar awards. She continued to say that this year we distributed \$345,000 in awards, and will have provided a cumulative gift of over \$4.2 million to our ARCS Foundation scholars, including \$1.1 million specifically to Emory students.

The featured speaker was Dr. Michael Zwick, himself an ARCS scholar and Assistant Dean of Research at Emory's School of Medicine. He shared that when he entered his Ph.D. program at UC Davis, his \$10,000 award was what fed him and his family. Currently, Dr. Zwick's work is concentrated on pediatric genetics; disorders which are included in his research are autism, congenital heart defects in children with Down Syndrome, schizophrenia, and Fragile X. He leads a workforce of 135 scientists and technical staff with research funding in excess of \$159 million.

Co-VP for Funds Development, Lee Doyle, thanked Anne Easterly for organizing the terrific event along with Katie Busch of the Laney Graduate School. Lee noted that our goal this year is over \$360,000. She encouraged donations and closed the program by thanking donors and inviting them to continue dialogue with the scholars while they enjoyed the phenomenal buffet provided by our hosts.



VP for Funds Development, Lee Doyle, with speaker Dr. Michael Zwick, an ARCS scholar and Assistant Dean of Research at Emory's School of Medicine.

Nominations for New Members!

Now is the time to prepare your nominations for new members to ARCS Foundation Atlanta. Several of our active members have moved out of town or shifted to associate status, so we have vacancies for active membership. We encourage you to invite prospective members to join us. We are particularly interested in acquiring members with the following skills: accounting and finance, website function management, and funds development.

The 2016 application is on our chapter website. Go to www.arcsfoundation.org/atlanta/becoming-member and click on the link at the bottom of the page under The Membership Process. The new application is four pages: two to be completed by the candidate and one each for the sponsor and co-sponsor. Please answer all of the questions completely. The four page completed application should be sent to Sally Hinkle, Vice-President Membership, either by email at Atlanta.membership@arcsfoundation.org or post to 5315 North Powers Ferry Road, NW, Atlanta, GA 30327. The application deadline is **May 31, 2016**.

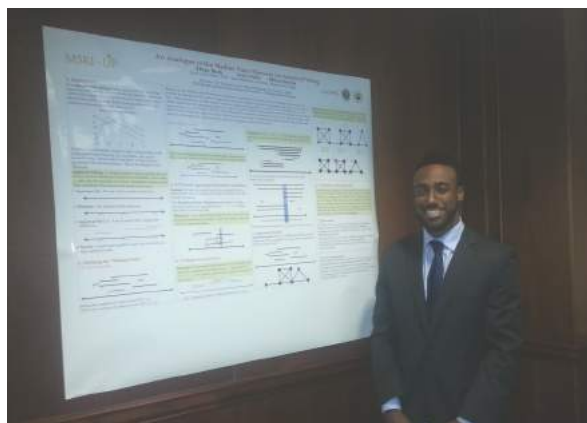
2016 Inspiring Site Visits



From left to right, Susan McGonigle, Elaine Davis, Elizabeth Martin, Dr. Juana Mendenhall, Dr. Jann Adams, Dr. Duane Jackson, Dr. Lance Young, Lee Doyle, Sara Jean Burke.

In April, ARCS Foundation Atlanta conducted annual site visits to our academic partners, Emory University, Georgia Institute of Technology, Morehouse College, and University of Georgia, and one word sums up our experience, “Wow!” We knew that our scholars were exceptional students before our visit, but when the site visit committee left the final meeting, we were more proud than ever of their extraordinary accomplishments in the fields of science, technology, engineering, and mathematics (STEM).

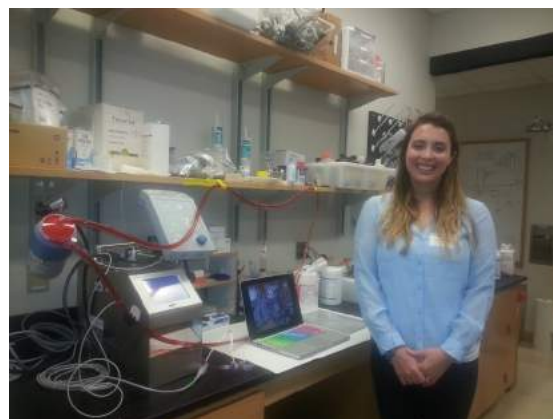
Each visit consisted of a meeting with staff and faculty to share the scholar award funding for 2016 – 2017 and to review ARCS Foundation guidelines. We are fortunate to have such strong partnerships with our schools. Without their commitment and passion for their students and ARCS, we would not be successful in accomplishing our mission.



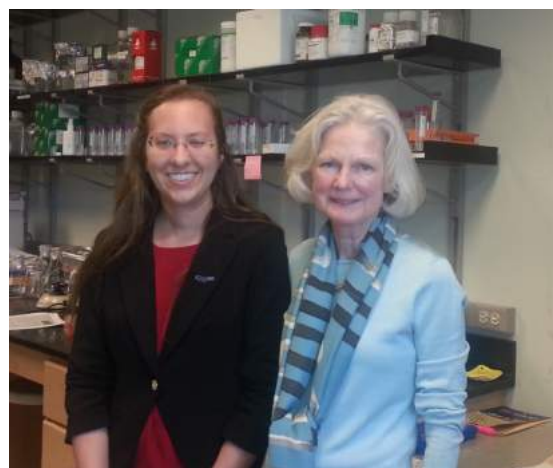
Ritz-Carlton Scholar, Amir Hobson is a chemistry major at Morehouse College

The highlight of each visit was the ARCS scholars’ inspiring scientific presentations. Their work ranged from discovering novel approaches for treating disease to creating software, in conjunction with NASA, which might operate a robot on Mars one day. Needless to say, we ended our site visits with enormous pride for our scholars and our ARCS mission.

Thanks to our donors, volunteer members, and our academic partners, we believe that our combined efforts are positively impacting our country’s future in STEM.



Roche/ARCS Scholar Susan Hastings is a Ph.D. Candidate in Bioengineering at Georgia Tech



Jessica Petree is a Ph.D. Candidate in Chemistry at Emory University, next to Sara Jean Burke, President-Elect ARCS Foundation Atlanta Chapter, her sponsor.



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Newsletter

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Letter from ARCS Foundation Atlanta Scholar John Avery to his Donors

Mr. and Mrs. Looney, parents of ARCS Foundation Atlanta member Sylvia Dick, received this hand-written letter from John Avery, University of Georgia, prior to their meeting at the Scholar Awards Luncheon in November, 2015:



10/31/15

Dear Mr. and Mrs. Looney,

I am writing to thank you for your generous support through the ARCS Foundation Award. I am honored to have been selected as one of this year's recipients. Furthermore, I wanted to express my appreciation for your individual support, as your contributions are what make opportunities such as the ARCS Foundation Award possible.

I also wanted to take this opportunity to let you know how your funding is directly contributing to the advancement of science. I am currently pursuing my Ph.D. in the lab of Dr. Stephen Dalton. Dr. Dalton's lab uses pluripotent cells, cells that have the potential to form virtually all tissues of the body, to study human development, diseases that arise from abnormal development and potential therapeutics that can be derived from regenerating injured or malfunctioning tissue. It is on this last category of tissue engineering that my research is centered.

For nearly 3 years, I have been developing a system to engineer brown fat tissue from human pluripotent cells. Brown fat is different from white fat, the type of fat that we associate with being overweight. Instead of storing fats for emergency energy resources like white fat, brown fat burns fat stores for emergency heat production. Infant humans and small animals have very active brown fat because it is more difficult to keep small things warm, and they need a ready source of emergency heat to be able to stay alive. Until recently it was thought that brown fat was inactive in adult humans; however, this has been shown to be inaccurate. In fact, individuals with higher degrees of active brown fat are much less likely to be overweight or obese. Additionally, these individuals are also less likely to suffer from metabolic disorders such as type-2-diabetes. As you are probably aware, obesity has become a global epidemic, and currently, type-2 diabetes affects 1 out of every 10 people on the planet. Both the incidences of obesity and metabolic disorders is expected to drastically increase as global populations develop and adopt a more western lifestyle and diet. Importantly, brown fat has been shown in mouse models to ameliorate the effects of obesity-associated metabolic disorders such as type-2 diabetes, among others. As an added benefit, obese mice lose significant amounts of white fat when their brown fat is made to become more active. In some instances, they are no longer obese. Scientists studying human brown fat are asking the question – can the same be true for human patients? To answer this question, investigators have turned to in vitro methods to better understand human brown fat by growing brown fat "in the dish". In contrast to many other groups, which study adult fat, our lab focuses on how human brown fat develops in utero. We are the only group so far who derives brown fat from a developmental appropriate pathway – that is, as the tissue would develop normally during gestation. We think this will give us a more complete picture of the nature and functional capacity of human brown fat.

Because the brown fat field is relatively new, it is also small. Small fields have their advantages: there is more flexibility in questions to investigate and almost all new advancements are major. However, the pace at which information is garnered is slower, as is the exchange of that information. Good collaborations between groups is critical in order to exchange and translate the necessary skills and disciplines most lab groups specialize in. We travel to scientific meetings to exchange data and facilitate these collaborations, we must also travel to other labs for on-site training in new techniques. Attending these meetings and traveling to new labs is incredibly expensive and can be cost-prohibitive, but these expenses are absolutely required. My ability to partake in meetings and travel to our collaborators in Lausanne, Switzerland this year is possible because of your contribution to the ARCS Foundation Award.

Thank you so much for your generosity. I hope to be a great steward for your investment, and I will do my very best to represent you well. I look forward to meeting you at the ARCS luncheon.

Sincerely,
John Avery