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Capital Edition



ARCS/Metro Washington Chapter (MWC) Spring 2016 Newsletter

Message from ARCS/MWC 2015-17 Co-President Jane Riddle



Dear MWC Members,

What a winter this has been! In spite of all the bad weather, our all-volunteer organization has been active and committed to the ARCS goal of raising funds to support our STEM scholars. We have welcomed several new enthusiastic members. Our current class of 32 scholars is as impressive as ever and doing outstanding work that will maintain America's leading position in technology. Thanks go out to all of you and our donors for your continued generous support and dedication to our ARCS mission.

Our most recent event was the Winter Speaker Meeting hosted by Lorraine and Gary Nordlinger at the beautiful and historic Cosmos Club. Dr. Jordan Green, associate professor at the Johns Hopkins University School of Medicine, was our guest speaker. He spoke about the amazing work his lab is currently doing in the fight against cancer and degenerative diseases. We are lucky he is currently advising one of our scholars.

In December, our Holiday Party was hosted by Marie Carr at the Chevy Chase Country Club. The lovely event was well attended. Special thanks to Marie and her wonderful committee for planning such a festive and enjoyable evening.

Our next big event is the Spring Celebration and Eagle Award Presentation which will be held on Tuesday, April 19, at The Hamilton in Washington D.C. The Honorable Barbara Comstock will be presented with our 2016 Eagle award and we will once again have a STEM panel discussion. A sincere thanks goes out to MWC member Ginger Laytham for her generous sponsorship of this event. More information about this event is in this newsletter.

In addition to these great happenings, our Development committee chaired by Carol Lane has also been busy. The team is working hard to identify new potential donors, as well as fostering the relationships we have with our existing donors. They are also working on enhancing our social media presence which we hope will increase our exposure to a new generation.

Thanks are also due to Danielle Robinson for chairing the Nominations Committee. Please consider accepting one of our leadership positions for the coming year should you get that phone call!

More information about the events listed below appears in this newsletter, as well as scholar profiles, pictures from the Holiday Party, 2015 tax information, and much more! We look forward to seeing you at our Spring Celebration!

March-April 2016: University Visits
March 31--Georgetown
April 7--University of Virginia
April 14--George Washington University
April 20--University of Maryland
April 28--Johns Hopkins
April 19, 2016: Spring Fundraiser at The Hamilton in Washington, D.C.
May 19, 2016: Spring General Meeting--Washington Golf and Country Club

MWC 2016 Spring Celebration

The ARCS/MWC Spring Celebration and Eagle Award Presentation will be held on Tuesday, April 19, 2016, at The Hamilton Live! (600 14th Street, N.W., Washington, D.C.). We are grateful to new chapter member Ginger Laytham for her generous support. For those yearning for the good old days of the gala but who also enjoy a lively discussion about STEM, this year's event represents the best of both worlds. We will begin the festivities with a panel discussion, "Exciting STEM Developments: Current and Future Workforce Needs," moderated by CNN Correspondent Ms. Kathleen Koch. All ticket holders are welcome to attend the panel this year and then join us for cocktails, a silent auction, and a sit-down dinner. During dinner, we will present The Honorable Barbara Comstock, United States House of Representatives - Virginia, 10th District, with our chapter's 2016 Eagle Award. The event will be held on a weeknight, so business or cocktail attire is appropriate. To keep our costs down, members should have received an emailed invitation with a link to RSVP and payment instructions. Members who have indicated a preference for postal mail notices will receive an invitation in the mail.

Please join us for an enjoyable evening in April! Promoting the mission of advancing science and technology for all ages, ARCS members with students under the age of 18 who would like to attend the STEM panel discussion or the panel and dinner should contact Lorraine Nordlinger to RSVP.

Spring Celebration and Eagle Award Presentation Volunteer Opportunities

As we make final preparations for the ARCS/MWC Spring Celebration, we have some staffing needs. We would like to first try to fill them from our membership so we can contribute the maximum amount of the proceeds to our scholars. If we find that we require more assistance than our members can handle, we will look into other ways to staff the event so our members and their guests can enjoy the evening.

Please let us know if you would be willing to help with:

Before the event:

- * Serving as an auction item drop-off point

- * P icking up auction items
- * Purchasing items with collected funds for gift baskets
- * Pre-auction organization (finalization of bid sheets, displays, check-out procedures, etc.)
- * Auction item preparation and/or set-up before event

At the event:

- * Registration and welcome table staffing
- * Greeters/directional assistants
- * Fund a scholar volunteer (payment processing, etc.)
- * Auction winner processing
- * P ayment collection and processing
- * Assistance as needed

All-Member Silent Auction Donation Reminder and Details

If you haven ' t done so already, please contribute at least one experience, item, or service to the All-Member Silent Auction. Items that have been donated thus far include:

Tiffany candlesticks; a rustic cabin for a week; gift certificates to Chez Francois and other fine restaurants; a tour of the National Air and Space Museum by Mary Cleave- ARCS/MWC Member and Retired NASA Astronaut; Nationals and theater tickets; and a baseball signed by former Atlanta Brave Chipper Jones! Several have also donated funds to buy items for gift baskets! If you are donating a gift certificate, please include something to display other than the gift certificate itself.

We would appreciate it if you would:

- Fill in the description and value sections of the bid sheet electronically and e-mail it to LBNordlinger@aol.com prior to March 31, 2016.
- For each item, service, or experience, please provide: a) an 8 1/2 x 11 inch paper for the display AND b) a signed voucher with specifics of your offer; give both to a member of the Events Committee AND e-mail your bid sheet(s) to LBNordlinger@aol.com by March 31, 2016.

The bid sheets and examples were sent previously from ARCS/MWC. If you need the information again or further details or assistance, please contact Lorraine at LBNordlinger@aol.com or 202-285-3935.

We understand that most of our members would probably prefer to enjoy the evening at this fun event. Therefore, we are willing to recruit a few of our members' children or grandchildren to help with age appropriate tasks at the event. If your child or grandchild would like to help out, please contact Lorraine for more information.

Thank you,
Karen Finkbiner and Lorraine Nordlinger
Activities Committee Co-Chairman

Highlights of the January 2016 ARCS National Board Meeting

The National Board (NB) meeting was held in Phoenix, Arizona, on Friday, January 29, 2016. Constructive steps are being taken to improve the NB's efficiency and to help the Chapters access NB information more easily:

- The Communications Committee is highlighting National and Chapter achievements and expanding external relations through the use of multiple forms of social media. Also the results of a Membership Survey sent to all ARCS members will help the NB enhance member engagement and sustainability.

- Information technology updates will let members easily access the National Website and use it more efficiently. The new PATS Learning Portal is especially useful for Chapters in areas such as finance, membership, and development.
- A consultant specializing in not-for-profit organizations will help the new 2020 Committee evaluate where the organization wants to be by 2020. ARCS National and Chapter members need to operate with one mission and as one organization to achieve one collective result.

There will not be an All-Members' Conference (AMC) in 2016 or in 2017. However, everyone is excited about the 2018 AMC, which will be held in Washington D.C. That will be the 50th anniversary of the MWC!!



2016 MWC Winter Speakers Series

The 2016 meeting was held on February 11 at The Cosmos Club in Washington, D.C. Our speaker was Dr. Jordan Green, Associate Professor of Biomedical Engineering, Ophthalmology, Oncology, Neurosurgery, and Materials Science & Engineering at the Johns Hopkins University School of Medicine. He leverages his multi-disciplinary background by applying chemical engineering principles to develop biomaterials and nanobiotechnology to meet challenges in human health. Two MWC scholars, Reid Messersmith and Erin Sutton, both from Johns Hopkins, also attended the dinner meeting.

Dr. Green spoke about recent advances in bio-engineering and research in targeted gene therapies to treat cancer. His ARCS scholar, Kristen Kozielski, is performing experiments to test technologies to target cancer cells and changing cell DNA to make cancer cells more susceptible to chemotherapy. Dr. Green also discussed his work designing special plastics to deliver gene therapy to cells. He concluded by highlighting advances that help the immune system battle mutating (cancer) cells and new types of drugs that affect the ability of cancer cells to get the resources they need to grow.

A special thanks goes out to the Activities Council, led by Karen Finkbiner and Lorraine Nordlinger, for setting up this wonderful evening for our members and guests.

Endowment Fund Report

These are challenging times in the investment world. It is no surprise that the performance of the ARCS/MWC Endowment Fund has decreased by approximately 3.4 percent from the beginning of the fiscal year July 1, 2015, to January 31, 2016. The good news is that the decline is low in comparison to overall market performance because of our conservative allocation. Another high point is that donations

during this period were \$9,020, with the majority invested at a market low.

In order to exercise our fiduciary responsibility in accordance with the "Determination of Scholar Fund Availability" of our current *Endowment Policy*, the ARCS/MWC Finance Committee and our auditor advised against funding an Endowment Fellow for the ARCS/MWC academic year 2016-2017. Therefore, to avoid this problem in the future, the Endowment Committee revised our policy to allow for a more realistic time period. Please let me know if you have questions.

The endowment brochure has been revised and reprinted with a colorful array of scientific images and is available for distribution at your request. Contact Toni Schierling if you would like one.

Thank you for your donations. They are a pillar of future funding of outstanding scholars in our quest for STEM advancement.

2016 University Visits

All members are invited to attend our annual university visits, where we get a close-up view of our scholars' research and tour their labs. The visits usually occur mid-morning and are followed by a hosted lunch at the university. To RSVP that you will be attending any or all of the visits and to receive directions, parking, or carpool information, please contact Alice Laning at 703-827-0822 or laning@verizon.net

Membership News and Notes

The MWC General Meeting in May will represent the kick-off of the 2016-17 membership renewal cycle. Continuing with the "paperless" initiative started last year, membership renewals will again be available online. Members will be able to access their renewal form, update roster information, and select committees on which they would like to serve all through their ARCS online account. Dues payments may also be made directly and securely using the Paypal link within the renewal form. Danielle Robinson and Amy Mykityshyn will be on hand at the Annual Meeting to assist members who wish to complete their renewal process at that time. Detailed instructions, including information for those wishing to pay by check, will be distributed once the renewal window opens. Over the next several weeks, please take the opportunity to access the website to ensure you are able to login. If you need help obtaining your username or password, please contact Danielle Robinson, or stop by during the General Meeting for in-person assistance.

As was announced at last year's General Meeting, after careful consideration, a resolution for a dues increase was passed; slated to take effect starting in the 2016-17 membership year. Active members' dues will increase from \$300 to \$500 annually. Those with 30 or more years of membership will be recognized as "Emeritus" members and will maintain their contributions at the current level. The MWC dues fall in the bottom third of all active chapters and have not been raised in over ten years. The increase reaffirms our commitment to our scholars and ensures our ability to fulfill the ARCS mission. 100 percent of the additional contributions will be applied to the scholar fund, with no increase to the amount allocated to operating expenses. National dues for each member, which increased from \$25 to \$35 in 2015, are paid out of the operating budget and are being offset by cost saving efforts such as using electronic invitations and other communications in place of hard copy invitations.

Welcome New Members!

It is with great pleasure that MWC welcomes our new members who bring a wealth of experience and enthusiasm vital to our organization!

New Member

Patty Sparrell
Ginger Laytham
Barbara Lewis
Skyler Heimark

Sponsor

Doris Pierson
Lorraine Nordlinger
Lorraine Nordlinger
Patty Sparrell



The 2015 Holiday Party

On Sunday evening, December 13, a great group of our ARCS members and their guests gathered to celebrate the holidays at the beautiful Chevy Chase Club. Marie Carr, hostess and chair of the event, and her committee planned a lovely evening for us that started with a cocktail hour, followed by an exquisite dinner and dancing to the music of "Cheek to Cheek." Each table's centerpiece was a grouping of beautifully wrapped gifts, one for each guest to take home as a remembrance of a festive evening spent with good friends! Thanks to Marie for hosting and chairing this event and to her committee for all their work!



Scholar Spotlights!!!

We are pleased to present five scholar profiles in this issue!

Wesley T. Fuhrman, ARCS/MWC and Lockheed Martin Corp Scholar, Johns Hopkins University

Wesley is a fourth year Physics Ph.D. student. His research in novel quantum phenomena and materials combines experimental techniques such as neutron scattering with theoretical methods to unveil the underlying structure responsible for surface quantum states with the goal of discovering and controlling their unique properties. With a publication record that includes multiple articles in the high-impact journal *Physical Review Letters* along with invited talks at the American Physical Society and Vienna Institute of Technology, Wesley is already in a class of his own among his contemporaries. The ARCS Award has allowed him to expand his use of the spallation neutron source at the Oak Ridge National Laboratory, thereby aggressively moving science forward and helping position the United States as the global leader in the development and understanding of new quantum materials. Wesley states: "Over the past half-year as an ARCS scholar, my research has been more productive than ever before, allowing international collaboration and research that would otherwise not be possible."

Danny Kim, 2016 ARCS/MWC and Lockheed Martin Graduate Scholar, University of Maryland

Danny's research focuses on effectively and efficiently detecting malicious computer applications (i.e., "malware"). Deliberate obfuscation can allow malware to 'slip through the cracks' of detection schemes and remain resilient against malware defenses. Danny's fully functional prototype not only detects malware but can also generate a version of the malware that other analysis tools can use to uncover more information than what was previously possible. In preliminary testing, his tool increased the detection rates of well-known analysis tools (such as Microsoft Security Essentials, Kaspersky, Symantec, and ClamAV) by up to 35 percent. He presented this research twice at Leidos as well as the Laboratory for Telecommunication Sciences at the University of Maryland. A paper is in preparation for a top-tier computer security conference and a patent application has been submitted. Within the next year, he plans to submit my PhD proposal for candidacy.

Danny says: "I wish to thank ARCS/MWC for the ARCS Award. ARCS/MWC is a big financial component aiding my research, as well as providing peer and professional support at ARCS events such as the Scholar Awards Reception. The ARCS/MWC community is a great addition to my graduate school experience and I hope to continue to be part of the ARCS community."

Colin Parker, ARCS/MWC and McNichols Foundation Scholar, The George Washington University

Colin's research examines fluid interactions around vertical wind axis turbines. Vertical turbines are smaller and almost noiseless compared to large horizontal wind turbines, making them useful in and around urban centers. Their use would potentially reduce the need for additional expensive power and energy distribution lines from wind farms in remote areas. Colin used wind tunnel tests and partial imaging velocimetry to understand the fluid dynamics of vertical axis wind turbines in much greater detail. In addition to expanding the field of view, he looked at different operating conditions, including three tip speed ratios, four Reynolds numbers, and three different turbines of varied diameter. He is currently evaluating the results.

Colin says: "With the support from ARCS/MWC we were able to further our understanding of the fluid interaction with a greatly increased field of view and expanded the scope of this research to explore the effects of different operating conditions. Thank you again for the ARCS/MWC and McNichols Foundation Award. It helped significantly by allowing me to further my research goals and move forward towards completing my degree."

Sarah Pinkus, 2016 ARCS/MWC Graduate Scholar, George Washington University

Sarah's research assesses the effects of Cold Atmospheric Plasma (CAP) therapy on oral cavity, oropharynx, and larynx squamous cell carcinoma, conditions which cause 9,570 deaths annually in the United States. Current treatment protocols for these conditions require a combination of surgery, radiation therapy, and/or chemotherapy. Her goal is to develop a less invasive and more selective approach to cancer treatment by using improved computer-aided diagnosis. She is currently developing a more robust advanced image analysis algorithm that will be used in feature extraction across statistical, structural, and spectral domains for minimum error-rate classification between treated and non-treated oral cancer samples.

Sarah says: "As a PhD student in the Department of Biomedical Engineering at The George Washington University, I would like to thank ARCS/MWC for providing me with the funds to continue my research in the areas of optical imaging and computer aided diagnosis. ARCS sponsorship was integral in advancing my research involving the investigation of the effects of Cold Atmospheric Plasma therapy on oral cavity, oropharynx, and larynx squamous cell carcinoma."

Ahsen Jamshed Uppal, 2016 ARCS/MWC Graduate Scholar, George Washington University

Ahsen's research focuses on the development of high-performance computer memory systems. Working in H. Howie Huang's research group, he investigates a diverse set of computer engineering topics, including: GPU processing, energy efficiency, heterogeneous architectures, and memory systems. Together, these technologies will be critical for the development of the next generation of large-scale computing systems, especially for U.S. national interests. The Department of Energy (DOE) recently observed that, "DOE's compelling science, energy assurance, and national security needs will require a thousand-fold increase in usable computing power, delivered as quickly and energy efficiently as possible." ("Co-Design at Lawrence Livermore National Lab", accessed March 13, 2016, <https://codesign.llnl.gov/>) The hybrid memory solutions he is analyzing have the potential to provide lighter, more agile, flexible, fast, and energy efficient computing power, thereby enabling improved performance, assessment, economic, and actionable decision capabilities.

Ahsen says: "I would like to thank ARCS/MWC for its support. The ARCS award has enabled me to finish my course work and focus on my research. I have used my award for several courses, including one in data mining, allowing me to learn more techniques that I have directly incorporated into my research. I am passionate about the practical applications of my research and would like to see my work end up in the hands of real users. Thank you for helping me work towards this vision."

TAX INFORMATION!

ARCS EVENTS COSTS AND FMV--2015 EVENTS

The 2015 ARCS/MWC dues and events are listed below with the fair market value and donation portion for each. We hope this is helpful with your individual tax preparations. If you need a letter regarding your donations for the year, please contact Marlene Bekey.

	Cost	FMV	Donations
Dues & Obligations	\$150 Dues + \$150 Obligation = \$300 total	----	\$300
Winter Meeting	\$100 per person	\$100 per person	----
April 7 STEM Panel	\$350.00 per person	\$125.00 per person	\$225 per person
Spring General Meeting/Lunch	\$45 per person	\$35 per person	\$10 per person
Spring General Meeting Only	\$10 per person	\$10 per person	----
Fall General Meeting/Lunch	\$45.00 per person	\$45.00 per person	-----
Fall General Meeting Only	\$10.00 per person	\$10.00 per person	-----
Scholar Awards Reception	\$100.00 per person	\$100.00 per person	-----
Marathon Bridge	\$70.00 (\$140 for two groups)	-----	\$70.00 (\$140 for two groups)
Holiday Party	\$130.00	\$130.00	-----

Questions? Please contact Elli Nesbitt (enesbitt1@verizon.net)

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