Message from Dean Breneman

If you recall from my December Dean’s Message, the weather was unusually warm then. For instance, it was definitely not a “White Christmas” – in fact, it was 71 degrees Fahrenheit on December 24 in Troy, potentially creating some serious friction for the reindeer/sleigh/elf delivery system.

What a difference a month makes! It’s definitely cold, but not snow covered here in the “Collar City.” The “Blizzard of 2016” missed the Rensselaer campus, but it affected quite a few Rensselaer leaders, faculty, and several hundred alumni who gathered in Washington, D.C., on January 21 and 22 to celebrate the many accomplishments of President Jackson for which she received the National Medal of Science. Congratulations to Dr. Jackson! The following day, we again celebrated together, but this time it was at the Times Union Center, watching the Engineers win the Mayor’s Cup trophy from Union College (5 to 2 – Let’s Go Red!).

For the past couple of months, I’ve been hinting that Professor Fran Berman of the Department of Computer Science was going to be able to share some great news with us. Well, now I can share it with you: Professor Berman was appointed to the National Council on the Humanities by President Obama, a nomination just confirmed by Congress! Yes, even that esteemed legislative body can sometimes come together in a bipartisan way to recognize someone like Fran!

In other faculty news, Stacy Patterson (Computer Science) just received an NSF CAREER Award, and a Discover magazine story about Heidi Newberg’s work on the Milky Way galaxy, “A Wider, Groovier Milky Way Galaxy,” was ranked one of the top stories of 2015. Congratulations to Stacy and Heidi for their well-deserved recognition!
There are some other exciting developments in the School of Science as well. Four new faculty searches are under way—Chemistry and Chemical Biology (2), Computer Science (1), and Biological Sciences (1)—and they are all attracting top-notch candidates. In fact, we’re hoping to make the first offer in this cycle very soon. Cross your fingers! We always seek out the very best teachers and researchers, so we can add their expertise to the Rensselaer family.

A lot of great things going on in the Rensselaer School of Science. Stay tuned!

Come to Rensselaer and Change the World!

*Curt Breneman, Dean of Science*
President Shirley Ann Jackson Named Recipient of National Medal of Science

The White House has announced that President Barack Obama has selected The Honorable Shirley Ann Jackson, Ph.D., to receive the National Medal of Science, the highest honor for scientific achievement bestowed by the United States government. The award recognizes individuals deserving of special recognition for their outstanding cumulative contributions to knowledge in the physical, biological, mathematical, engineering, or behavioral or social sciences, in service to the nation.

Dr. Jackson will receive the award at a White House ceremony this spring.

“All of us at Rensselaer Polytechnic Institute are very proud that President Jackson has been chosen for the nation’s pre-eminent award for research and leadership in science,” said The Honorable Arthur J. Gajarsa ’62, Chairman of the Rensselaer Board of Trustees. “This honor is truly deserved. In addition to the important contributions Dr. Jackson has made in condensed matter theory, she has advocated vigorously for science and technology within the public realm, and, at Rensselaer, has established a new model for scientific and technological education, designed to address the great global challenges of our day.”

See more

Rensselaer Professor Francine Berman Appointed by President Obama to the National Council on the Humanities

Francine Berman has been appointed by President Obama and confirmed by the U.S. Senate to serve on the National Council on the Humanities (NCH), a board of 26 distinguished individuals who advise the chairman of the National Endowment of the Humanities (NEH). Berman is the Edward
P. Hamilton Distinguished Professor in Computer Science at Rensselaer.

Berman is an international leader in data science whose work focuses on the development of sustainable infrastructure for digital stewardship and preservation. Such infrastructure is critical to support data-driven research and new discovery in a broad variety of fields, including the digital humanities. Berman has worked closely with the library and museum community and co-chaired the Blue Ribbon Task Force on Sustainable Digital Preservation and Access and the National Research Council Board on Research Data and Information. She currently serves as the U.S. chair of the Research Data Alliance, an international community-driven organization founded to accelerate research data sharing and data-driven innovation worldwide.

See more

Rensselaer Cybersecurity Expert Appointed to Homeland Security Science and Technology Advisory Committee

James Hendler, director of the Institute for Data Exploration and Applications (IDEA), has been appointed to the Homeland Security Science and Technology Advisory Committee. The committee provides scientific and technical advice to the Under Secretary for Science and Technology and senior department leadership on matters related to the expansion of technological capabilities across the homeland security enterprise.

Homeland Security Science and Technology Advisory Committee members are selected from disciplines within the following fields of expertise: organizational strategy and management; first responders; cybersecurity/risk; cross-cutting technical expertise; and chemical and biological defense. The 28 new HSSTAC members will join the six current members on the committee. All members serve two-year terms on the committee.

Hendler was selected for his expertise in cybersecurity/risk, along with Vinton G. Cerf, vice president and chief Internet evangelist for Google, and Vincent W.S. Chan, a professor of electrical engineering and computer science at Massachusetts Institute of Technology.

See more
Faculty News and Notes

Deborah McGuinness, Tetherless World Senior Constellation Chair and professor of computer science, received an award as part of the Analysis in Motion Initiative under the Laboratory Directed Research and Development (LDRD) program at Pacific Northwest National Laboratory (PNNL). PNNL is a multi-program national laboratory operated by Battelle for the U.S. Department of Energy.

The research explores Scalable Hypothesis Reasoning and is a continuation of a previous award. This increment is $112,000 and brings the total award to $295,545 and now goes through September 2016.

Faculty News in Brief

Professor Stacy Patterson, professor of computer science, will be receiving an NSF CAREER Award for her proposal titled: “CAREER: Toward A Machine Learning Framework for the Internet of Things”

Professor Heidi Newburg, professor of physics, applied physics, and astronomy, article featuring “A Wider, Groovier Milky Way Galaxy” was listed as #59 on Discover magazine list of top science stories for 2015. See full article

Other News from the NeST Center at Rensselaer

- Published paper: D. Hunt, F. Molnár Jr., B.K. Szymanski, and G. Korniss, "Extreme Fluctuations in Stochastic Network Coordination with Time Delays",

Research News and Notes

Jefferson Project – Working Upstream

Undergraduate J.J. Hu collects a leaf bag, which is used to determine rate of decomposition.
(In this guest post, one of a series on monitoring and experimentation in the Jefferson Project at Lake George, Aaron Stoler, a post-doctoral researcher in the laboratory of project director Rick Relyea, explains why and how researchers monitor tributaries to Lake George, and how that effort fits into the overall strategy of the project.)

Nature is slowing down for the winter. Over the next several months, an icy tapestry will blanket the mountain peaks and valleys. Within this frozen landscape, streams are an exception. Because streams do not freeze, aquatic life in their reach thrives. Finding shelter in cracks between rocks and in the crevices between packed leaves, fish and insects slowly consume the leaf litter from last autumn, and steadily grow while awaiting warmer temperatures.

With the spring thaw, snow melts and seeps through the ground, trickling towards the streams. Along its path, the water dislodges particles of soil and minerals. Bacteria and fungi in the streams absorb these dislodged bits of landscape. Hungry for fresh food, fish and insects in the streams eat the bacteria and fungi. In a short time, many of the insects that have survived the hungry jaws of fish will develop wings and fly out of the stream, and many of the fish will swim downstream towards the lake in search of new food. (The image to the right shows one such insect – a stonefly larva.)

Jeremy Farrell of the Department of Biological Sciences and the Darrin Fresh Water Institute won first prize for his poster in the Professional Division of the Northeast Aquatic Plant Management Society Annual Conference, held January 12-14 at the Gideon Putnam Hotel, Saratoga Springs. The poster is titled "Identifying the effects of eutrophication and disturbance in Nitella sp. and macrophyte communities in Lake George." The paper was co-authored by Jeremy Farrell, Charlotte Caldwell, David Winkler, Lawrence Eichler, Charles Boylen, and Sandra Nierzwicki-Bauer.

Student News and Notes

- Marissa Civic and Daniel Vasilchuk were selected to give presentations at the January meeting of the Eastern NY Section of the American Chemical Society at Union College.
Applications for Summer Undergraduate Research Program in Science Are Still Available

The Summer Undergraduate Research Program (SURP) is a unique, exciting opportunity for students to spend the summer months immersed in leading-edge research with a faculty adviser.

Application to the 10-week, full-time program begins with the submission of a research proposal that is competitively reviewed by a panel of faculty members.

Geared toward more seasoned undergraduate researchers, SURP includes a research stipend for students and is a rich, sustained research experience that will be a memorable and rewarding component of the academic career.

Ready to apply? Complete the School of Science SURP application form here: http://rpi.edu/dept/science/research/SURP_Application_2016.pdf

Alumni and Alumnae News and Notes

- Women’s Hockey Alumnae Weekend – January 29-30, Women’s hockey alumnae are invited to gather with teammates for the 13th Annual Women’s Ice Hockey Alumnae Weekend. Take part in the alumnae game, cheer on the current team, and enjoy a family skate and luncheon.
- Men’s Hockey Alumni Weekend – February 5-6, Men’s hockey alumni are invited to return to campus to reconnect with teammates and to cheer on our current student-athletes. Join us for contests with St. Lawrence and our Freakout game against Clarkson, a hockey social, the traditional alumni game, and more. We look forward to welcoming you back to campus!
- Register online for the Big Red Freakout
- The Honorable Shirley Ann Jackson, Ph.D., President of Rensselaer and recipient of the 2016 National Medal of Science, will speak at The American Enterprise Exhibition at the Smithsonian’s National Museum of American History on Wednesday, February 10, 2016, beginning at 6:30 p.m. Register online.
Upcoming Events

- Rensselaer To Host Black Family Technology Awareness Day Feb. 13, 2016 – Annual event exposes students to opportunities in STEM fields
- 5th Annual Spirit Day: Friday, February 5, 2016 - Bring out your RED for the 5th Annual RPI Spirit Day! What’s Spirit Day? It’s simple – wear or display your RPI gear – at work, at grad school, at the mall, wherever you may find yourself – and put your Rensselaer pride on display for everyone to see. Don’t forget to take a picture and post it to social media with #RPISpiritDay.
- Big Red Freakout: Saturday, February 6, 2016 – Men’s Hockey vs. Clarkson.

Upcoming School of Science Events

Biological Sciences Seminar Series

Thursday, February 4 • 12 – 1 p.m. • Bruggeman Conference Center, CBIS
Refreshments served at 11:45 a.m.
Guest Speaker: Dr. Kristen Koutmou, John Hopkins
Presentation Title: “Ribosomes pause and slide on lysine-encoding homopolymeric A stretches”

Monday, February 8 • 12 – 1 p.m. • Bruggeman Conference Center, CBIS
Refreshments served at 11:45 a.m.
Guest Speaker: Dr. Grant Murphy, Princeton University
Presentation Title: “Toward Artificial Proteomes: Computationally designed libraries of de novo proteins”

Thursday, February 11 • 12 – 1 p.m. • Bruggeman Conference Center, CBIS
Refreshments served at 11:45 a.m.
Guest Speaker: Dr. David Libich, NIH
Presentation Title: “Intrinsic unfoldase/foldase activity of the chaperonin GroEL directly demonstrated using multinuclear relaxation-based NMR”

Thursday, February 18 • 12 – 1 p.m. • Bruggeman Conference Center, CBIS
Refreshments served at 11:45 a.m.
Guest Speaker: Dr. Lalit Deshmukh, NIH
Presentation Title: “Late stages of HIV-1 replication studied by solution NMR spectroscopy”

Monday, February 22 • 12 – 1 p.m. • Bruggeman Conference Center, CBIS
Refreshments served at 11:45 a.m.
Guest Speaker: Dr. Scott Forth, The Rockefeller University
Presentation Title: TBA
Chemistry and Chemical Biology Fall Seminar Series

Tuesday, February 2 • 4 – 5 p.m. • Bruggeman Conference Center, CBIS
Refreshments served at 3:45 p.m.
~All are welcome
• Guest Speakers: Professor Gregory B. Dudley, Department of Chemistry and Biochemistry, Florida State University
• Presentation Title: "Alkyne Chemistry for the Synthesis of Bioactive Molecules"

Tuesday, February 9 • 4 – 5 p.m. • Bruggeman Conference Center, CBIS
Refreshments served at 3:45 p.m.
~All are welcome
• Guest Speakers: Professor Elizabeth Jarvo, University of California - Irvine
• Presentation Title: "Nickel-Catalyzed Stereospecific Cross-Coupling and Reductive Coupling Reactions"

Computer Science Colloquium

Tuesday, January 26 • 4 – 5 p.m. • Location: Troy Building 2018
• Guest Speaker: Dr. Alex Gittens, International Computer Science Institute, Department of Statistics and AMPLab, University of California, Berkeley
• Presentation Title: “Why (Some) Nonlinear Embeddings Capture Compositionality Linearly.”

Department of Mathematical Sciences - DiPrima Lecture

Monday, February 1 • 4 – 5 p.m. • Amos Eaton 214
• Guest Speakers: Professor Randall J. LeVeque, University of Washington
• Presentation Title: “Tsunami Modeling and Hazard Assessment”

Physics, Applied Physics, and Astronomy Colloquium

Wednesday, January 27 • 4 – 5 p.m. • Location: George M. Low Center for Industrial Innovation (CII) 3051
• Guest Speaker: Dr. Joel Giedt, Rensselaer Polytechnic Institute
• Presentation Title: “Scalars”
Wednesday, February 3 • 4 – 5 p.m. • Location: George M. Low Center for Industrial Innovation (CII) 3051
Guest Speaker: Dr. Beth Guiton, University of Kentucky
Presentation Title: “Investigating Nanostructure Synthesis Using In Situ TEM”

Wednesday, February 10 • 4 – 5 p.m. • Location: George M. Low Center for Industrial Innovation (CII) 3051
Guest Speaker: Dr. Shengbai Zhang, Rensselaer Polytechnic Institute
Presentation Title: TBA

Wednesday, February 17 • 4 – 5 p.m. • Location: George M. Low Center for Industrial Innovation (CII) 3051
Guest Speaker: Dr. David Schaich, Syracuse University
Presentation Title: TBA

Catch more School of Science updates on social media!