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Sigma Xi's 2012 Annual Assembly of Delegates

You spoke and we listened! Traveling to the **Sigma Xi Annual Meeting** can be costly and so, in an effort to make our proceedings more available to our membership at-large, we have decided to host it virtually. This new innovation in our meeting's format should provide the opportunity for each member and chapter to participate and become part of the conversation!

This year's virtual meeting will be held on November 3, 2012, beginning at 12:00pm Eastern Time

We are happy to announce that **Dr. Glenn Edwin Schweitzer**, Director for Central Europe and Eurasia National Research Council, will be giving a presentation entitled "Bilateral Science Diplomacy: Then and Now." Additionally, there will be two Town Hall sessions for open discussion between National Officers and fellow members. Please note that more details of the meeting will be posted to our website as we get closer to the date.

This year's Assembly of Delegates is the perfect opportunity for all chapters to have a voice and a vote. The Board of Directors and the staff of Sigma Xi look forward to interacting with you virtually this November. •

From the President

Safety—First, Last, Always

In December 2008 a lab assistant at UCLA was handling pyrophoric materials that ignited and burned her badly, in part because she was not wearing the appropriate personal protective gear. She died from her injuries.

In January 2010 a graduate student at Texas Tech lost several fingers and suffered burns and eye damage during the synthesis of an energetic material. He had decided to scale up the synthesis in violation of protocols.

In April 2011 an undergraduate was found dead with her hair tangled in a lathe in a machine shop at Yale.

These incidents are shocking. Not only because of young lives lost or forever altered, but because they happened at all. I am sad to admit that during my time as a student and an academic researcher I know I didn't always observe the safety protocols. I can even tell you why—it's because the focus was never on safety. I gathered Materials Safety Data Sheets for my laboratory because it was required, not because it made a difference to me. I was focused on getting data and analyzing it. Nothing else mattered.

When I joined a government laboratory, the focus shifted dramatically. My very first day of training showed me that it was not only my right, but it was my absolute responsibility to make sure that I and everyone around me were operating in a safe manner. I have a responsibility to stop other people from doing something unsafe—*even if they are doing something that's unrelated to my job description.*

I have come to learn that this is also true in industrial laboratories—we call it a "culture of safety." We all know what we mean, and we all take it quite seriously. The sad thing is we all had to learn this well after we left being a student (or in my case, a professor). Why?

A friend of mine at an industrial research laboratory asks every new Ph.D. they hire what was most surprising in the transition, and nearly 100% say "the attention to safety." At my employer, every research project we do has risk evaluated and planned for. We have regular reminders about the hazards of working in a research environment and our duty to pay attention to safety protocols. We study the near misses (and injuries) at other sites to make sure we never have them at our site. We take our outstanding safety record very seriously, and we know only continued vigilance and strong planning will keep it moving to where we want it—zero accidents. I have translated this into other areas—when I check into a hotel, the first thing I do is make sure I understand where the exits are in case of an emergency. I make sure I could find them in the dark.

So when academics ask me what they can do to make their students more competitive for positions in government and industry laboratories, I always have the same answer. Let's assume there is a strong technical background in the discipline. The number one thing you can do to help your students to have a successful transition to a government or industrial setting is to cultivate a culture of safety in your academic setting.

Safety starts with each one of us and each has a personal obligation, but "companions in zealous research" can and should work together to strengthen adherence to safety protocols and training. Sigma Xi chapters and members should remember that the health of the research enterprise is central to why we exist. Adopt a culture of safety. Today.

Thanks for reading,
Kelly O. Sullivan

Nancy Elwess: Evan Ferguson Award

Nancy Elwess, Ph.D., at the SUNY Plattsburgh Chapter of Sigma Xi received the Evan Ferguson Award for Service to the Society on Saturday, April 21, 2012. Elwess embodies the best tradition of service, commitment and above all leadership to Sigma Xi, especially in regard to the SUNY Plattsburg Chapter where she has served as past president, a past vice president, and most recently, as the secretary.

Elwess received her Ph.D. from the University of Vermont and was elected to Sigma Xi in 1999. Since joining Sigma Xi, she has nominated and mentored 63 research students for membership. Elwess currently serves on the faculty of SUNY Plattsburgh as an Associate Professor in molecular biology. Her students have focused their recent work on the analysis of DNA from ancient civilizations, and its application to the theory of evolution. Several of her undergraduate researchers have won top honors at research conferences for both the National Association of Biology Teachers and Sigma Xi. She consistently encourages and mentors her students in the grant-writing process early in their academic careers, and we are proud to say that several have also been past recipients Sigma Xi's Grants-in-Aid of Research.

In 2009, President Barack Obama named Elwess a recipient of the Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring. She is one of only a handful of college faculty from across the country to receive this award.

She has also been the recipient of many awards including the 2008-2009 Outstanding Undergraduate Science Teacher Award by the Society for College Science Teachers, the National Association of Biology Teachers' National College Research/Teaching Award, a State University of New York Chancellor's Award for Excellence in Teaching, and alumni achievement awards from both Purdue and the University of Vermont. •

Dennis Meredith: Honorary Life Member

We are happy to announce that **Dennis Meredith**, science author and journalist, was inducted as an honorary life member into Sigma Xi, at an *American Scientist* Pizza Lunch presentation in May of 2012. A 1968 graduate of the University of Texas with a B.S. in chemistry and 1970 M.S. graduate in biochemistry and science writing from the University of Wisconsin, Meredith has built a storied career as a science writer and has served some of the country's finest research institutions, including Massachusetts Institute of Technology, Caltech, Cornell, Duke and the University of Wisconsin.

As the author of over 1,000 news releases and magazine articles, Meredith has been a major contributor both to the field of scientific journalism on behalf of independent journals and scientific societies alike. Meredith has served on the executive board of the National Association of Science Writers (NASW), and also as a judge and manager for the NASW Science-in-Society Awards and the American Association for the Advancement of Sciences (AAAS) Science Writing Awards. In addition, Meredith also served as the primary author on NASW's *Communicating Science News*, the definitive handbook on scientific media relations.

On behalf of AAAS, where in 2007 he was elected a Fellow, he created and developed EurekAlert!—an international research news service which links more than 4,500 journalists to news from 800 subscribing research institutions. Meredith has also worked extensively with government agencies, most notably the National Science Foundation and the *Public Library of Science*, where he assisted in the development of policies for communicating research and collaborating with public information officers.

His workshops for groups seeking to enhance their communication skills is frequently sought out by researchers at universities, research foundations, government agencies and laboratories alike. His May 2012 seminar at Sigma Xi's Headquarters entitled "Should Journalists Teach Scientists to Communicate Better Stories?" discussed the responsibility of science writers to assist scientists and institutions to better improve their communication strategies.

Since 1983, noted science advocates, top science journalists and friends of research who have made important contributions to science but are not eligible for Sigma Xi membership, have been elected into Sigma Xi as Honorary Members. We are pleased to welcome Dennis Meredith into this elite group of contributors to the world of scientific research. •

Joseph DiSimone: Walston Chubb Award for Innovation

Researcher, chemist, mentor, entrepreneur and inventor **Joseph M. DiSimone** of the University of North Carolina at Chapel Hill (UNC) has been named the 2012 Sigma Xi Walston Chubb Award for Innovation recipient. Currently, DiSimone is the Chancellor's Eminent Professor of Chemistry at UNC and the William R. Kenan Jr. Professor of Chemical Engineering at North Carolina State University. This past July, DiSimone was named the Director of the Frank Hawkins Kenan Institute of Private Enterprise, part of UNC's Kenan-Flagler Business School, based on his extensive experience as both a dedicated researcher and an innovative entrepreneur.

A native of Norristown, Pennsylvania, DiSimone received his B.S. in chemistry from Ursinus College, in Collegetown, PA. Following an interest in polymer chemistry sparked at Ursinus, DiSimone continued his education by pursuing a Ph.D. in chemistry at Virginia Polytechnic Institute. Shortly upon graduation, DiSimone accepted an assistant professor position at UNC-Chapel Hill where, with his mentor Dr. Edward Samulski, he launched the first polymer chemistry program in the university's history.

With more than 120 issued patents and over 120 patents pending, DiSimone's body of work spans multiple disciplines and focuses. DiSimone has been a leading innovator of environmentally friendly manufacturing processes, using supercritical carbon dioxide instead of water and detergent, has been especially relevant in the industry of dry cleaning. He has also collaborated with medical researchers at Duke University to develop bio-absorbable, drug eluting stents—which could drastically change the treatment of coronary artery disease in humans. The creation of these stents also led DiSimone to found Bioabsorbable Vascular Solutions, which was acquired by Guidant Corporation in 2003.

DiSimone's current interdisciplinary work in nanotechnology, considered by many in biomedical research to be a true breakthrough for the treatment of cancers, focuses on mass producing microscopic particles in all sizes and shapes. This technology developed by DiSimone's lab and termed PRINT (Particle Replication in Non-Wetting Templates) has recently become a foundation for the Carolina Center for Cancer Nanotechnology Excellence, which is funded by the National Cancer Institute. As a result of his extensive work in nanotechnology, DiSimone founded Liquidia Technologies in Research Triangle Park, NC in 2004.

In 2005, DiSimone was elected into the National Academy of Engineering and the American Academy of Arts and Sciences. He has received more than 40 major awards and recognitions, including the 2009 NIH Director's Pioneer Award, the 2009 North Carolina Award, and the 2008 Lemelson-MIT Prize of $500,000 for Invention and Innovation.

The Sigma Xi Walston Chubb Award for Innovation is designed to honor and promote creativity among scientists and engineers. In the fall of 2012, a video interview with Dr. DiSimone will be posted to Sigma Xi's website and the formal presentation of the Walston Chubb Award for Innovation will take place at the Southeastern Regional Meeting of the American Chemical Society on November 16, 2012. •

Condolences to the family of Walston Chubb

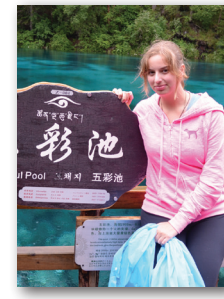
Here at Sigma Xi, we are saddened to learn of the passing of **Walston Chubb**, benefactor of the Walston Chubb Award for Innovation, which honors and promotes creativity in science and engineering.

Walston Chubb was a retired consultant on nuclear materials and radiochemistry who began his career in Columbus, Ohio with Battelle Memorial Institute in 1951, before moving to Westinghouse, where he worked for 20 years on nuclear reactor materials. A graduate of the University of Missouri-Rolla, he published more than 40 scientific papers and holds 10 patents. Chubb was preceded in death by his wife, Carolyn Elizabeth Carpenter Chubb in 2002, and is survived by a son, daughter, and a brother.

His established endowment for the Walston Chubb Award for Innovation is an integral part of Sigma Xi's Society Awards program. The award carries a $4,000 honorarium and an invitation to give the Walston Chubb Award Lecture, typically at Sigma Xi's Annual Meeting. Notable previous recipients of the award include Joseph DeSimone, Casimer DeCusatis, Howard R. Moskowitz, Timothy D. Phillips, Patrick Usoro, Stan Ovshinsky, and Mark T. Holtzapple.

The entire Sigma Xi community offers its sincerest condolences to his family during this difficult time. •

Meet Your Fellow Companion: Samantha Marquez



The honor of membership in Sigma Xi spans disciplines and courses of research study. Each month in Sigma Xi Today, we will be highlighting a different "Fellow Companion"—asking them about their work and what the honor of induction into Sigma Xi has meant to their career.

This month, we are excited to introduce **Samantha Marquez**, a junior at Maggie L. Walker Governor's School for Government and International Studies in Richmond, VA. Her serious interest in science began at age 10 and has been fostered ever since by her parents, both of whom are scientists and researchers themselves. This past spring, Marquez competed at the Intel International Science and Engineering Festival (ISEF) and with her innovative "Celloidosomes®," took first place in her category for the second year in a row. As this magazine went to press, Marquez was chosen to represent the United States at the International Space Olympics in Moscow, Russia, beginning October 2012. We are proud to count Marquez as one the youngest scientists to meet the requirements of membership in Sigma Xi's history.

Please note that the following is just an excerpt all Marquez had to say in response to our questions. To read her interview in full, please visit Sigma Xi's website at http://www.sigmaxi.org.

1) What is the focus of your current research?

Over the last three years, I have pioneered a revolutionary cell-architecture process for the design and engineering of core/shell multicellular structures based on a "bottom-up strategy." This unique 3D organized cell structure is, by definition, a "living capsule" with a biomembrane/tissue shell and a unique core that acts as container or reservoir. I call it: Celloidosomes®.

2) Tell us about something we might see in our daily lives that directly correlates to your work.

While traditional engineering applies physical and mathematical sciences to design and manufacture inanimate structures, bioengineering uses the same sciences to study many aspects of living organisms, i.e. *building multicellular structures to solve problems related to human health.* This is the case of tissue engineering, one of the main fields in which I work.

3) Give us an example of how multi-disciplinary research directly contributed to your work.

I believe my work is more than inter-disciplinary or multi-disciplinary: it is what I consider "trans-disciplinary." It merges many fields of science into one project and can be versatile in its applications, whether in tissue engineering, biomedical sciences or even environmental bioremediation.

4) Describe the patent experience—were there any bumps along the way for you?

My first intellectual property experience was when I was 12 years old and I created a series of trademarks for one of my inventions and filed for several patent applications. The major challenges in creating and protecting intellectual property come from the difference between an "invention" and an "innovation." The most common struggle during the process was to identify a non-obvious claim and a very clear application to avoid the patent from being rejected.

5) What has the honor of induction into Sigma Xi meant to you?

Sigma Xi is a research honor society that recognizes multi-disciplinary research. It is by invitation only, and being part of this selective group of scientists is a humbling honor. In my particular case, I feel extremely honored to have even been considered for the Society due to my age and academic status. Sigma Xi provides and encourages inter-disciplinary networking that has allowed me to look beyond my current research and broaden the scope of my potential applications and interests in science and engineering.

6) How do you believe membership in Sigma Xi will serve you in the future?

As part of my community service, I currently serve as the secretary of the Virginia Commonwealth University Chapter. This has allowed me to get more deeply involved in the Society's mission and values toward their members and the society as a whole.

7) What is your favorite motto?

"Never mistake knowledge for wisdom, one helps you make a living; the other helps you make a life."

–Sandra Carey

Are you interested in being interviewed for our "Meet Your Fellow Companions" series in each issue of *American Scientist*? If so, please contact us at memberinfo@sigmaxi.org.

Be sure to look out for next month's interview—when we talk with one of Sigma Xi's newest members—an astronomer from Williams College!