### **MARCH 2023** THE LEADING MAGAZINE FOR **ENDOCRINOLOGISTS** ocrine

# Women and ENDOCRINOLOGY

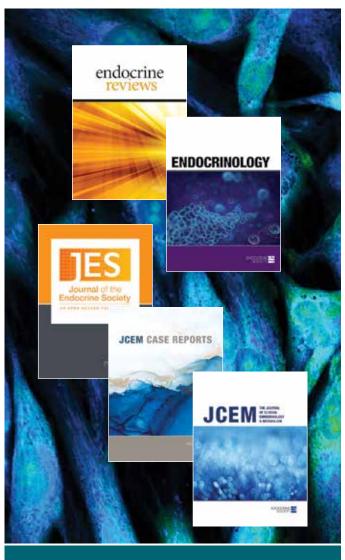
In honor of Women's **History Month**, **Endocrine News** pays tribute to the many contributions women have made to the field of endocrinology.

- BALANCING ACT: How endocrine researcher, teacher, mentor, mother, wife, grant writer, and Tweeter extraordinaire Dequina Nicholas, PhD, pays it forward ... with interest!
- **LEADING THE WAY:** We conduct a roundtable discussion about women in endocrinology, where the field has been, where it's headed, and how women have always made a difference.
- A DETERMINATION TO SUCCEED: An in-depth look at the remarkable life and career of Nobel Prize laureate Rosalyn Yalow, PhD, the Endocrine Society's first woman president.

Dequina Nicholas, PhD



Hormone Science to Healt



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### **32** A Determination to Succeed

The Remarkable Life and Career of Rosalyn Yalow, PhD

Rosalyn Yalow, PhD, became the first woman to serve as the Endocrine Society's president in 1977, the same year she receive the Nobel Prize for Physiology or Medicine for developing the radioimmunoassay technique for hormone measurement. *Endocrine News* salutes this notable "grand dame of science" with a look at her life and career, as well as her impact on generations of endocrinologists.

**BY DEREK BAGLEY** 

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#### A Roundtable Discussion About Women in Endocrinology

Once dominated by men, endocrinology has evolved into a specialty in which women lead the way in clinics, classrooms, and labs. *Endocrine News* spoke to 10 women in endocrinology about their views on the practice, their work and research, the Endocrine Society's impact, and their advice for the next generation of women following in their footsteps.

#### BY KELLY HORVATH

## 38 | Balancing Act

# How Dequina Nicholas, PhD, Pays It Forward ... with Interest!

Dequina Nicholas, PhD, is an assistant professor at UC Irvine. And a PI in her own laboratory studying PCOS, diabetes, and various women's health issues. She's a teacher, mentor, and motivator. She's a wife and the mom of a toddler. When she's not writing grants, she's on hikes with the members of the Nicholas Lab. And she Tweets! She squeezed talking to *Endocrine News* into her unrelenting schedule to tell us not just how she does it, but why she does it.

**BY GLENDA FAUNTLEROY SHAW** 

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# Spirit of Discovery: Honoring Entrepreneurship

t is rewarding to see a discovery progress from the lab bench to clinical trials and finally reach the point where it can benefit patients. With creativity, determination, and dedication, entrepreneurs can transform advances into improvements in patient care. We are proud to support and champion our members' entrepreneurial spirits.

Our Entrepreneurship Special Interest Group (SIG) provides a community where you can connect with other members who share a passion for innovation. More than 450 people have joined this online community exclusively for members.

66

It is rewarding to see a discovery progress from the lab bench to clinical trials and finally reach the point where it can benefit patients.

With creativity, determination, and dedication, entrepreneurs can transform advances into improvements in patient care.

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The SIG has hosted important webinars about grant writing for business and pitching ideas. One event gave SIG members the chance to hear directly from entrepreneur Richard DiMarchi, PhD. Future discussions will delve into how and where to obtain grant funding.

The community gives you a place to ask questions and share ideas with other members who share your interest in entrepreneurship. It is easy to join the community. Learn more by visiting <a href="https://www.endocrine.org/our-community/special-interest-groups">https://www.endocrine.org/our-community/special-interest-groups</a>. Navigate to the webinar library in the DocMatter discussion forum to view on-demand entrepreneurship webinars.

Beyond providing a virtual community for members to discuss their entrepreneurial aspirations, we also have the honor of recognizing leading entrepreneurs in our field. This year, it is our privilege to recognize R. Scott Struthers, PhD, with the Baxter Prize, which pays tribute to the extraordinary achievement of bringing an idea, product, service, or process to market. We will have the pleasure of honoring Struthers' work with a \$50,000 award at ENDO 2023.

As a founder and CEO of Crinetics Pharmaceuticals, Inc., Struthers built a company that is developing much-needed therapies for people with endocrine disorders such as acromegaly, carcinoid syndrome, Cushing's disease, congenital adrenal hyperplasia, and congenital hyperinsulinism.

Struthers has repeatedly displayed his entrepreneurial spirit over the course of his career. He was a founder of Radionetics Oncology, which focuses on novel radiotherapeutics to treat a wide range of cancers. He also co-founded the San Diego Entrepreneurs Exchange, a nonprofit organization that provides networking and resources for early-stage start-ups. He is a former member of the Entrepreneurship SIG Steering Group and developed several of the group's educational programs.

The Baxter Prize is awarded biennially to recognize scientists or healthcare practitioners who have demonstrated entrepreneurship by leveraging endocrine research to improve patient care.

The prize itself is our way of commemorating the legacy of Past-President John D. Baxter, MD, who was the first to clone the human growth hormone gene. Baxter was responsible for many fundamental medical discoveries during his research career. He translated many of them into clinical therapies that had far-reaching implications for the fields of biotechnology and genetic engineering. The Baxter family endowed the prize in his memory.

By honoring the achievements of Baxter, Struthers, and others in our field, we will encourage the next generation of entrepreneurs to transform their own discoveries into marketable advancements in endocrine health. If you are interested in joining their ranks, take this opportunity to check out our Entrepreneurship SIG and connect with others who share your passion. We are glad to be here to support you on this journey.

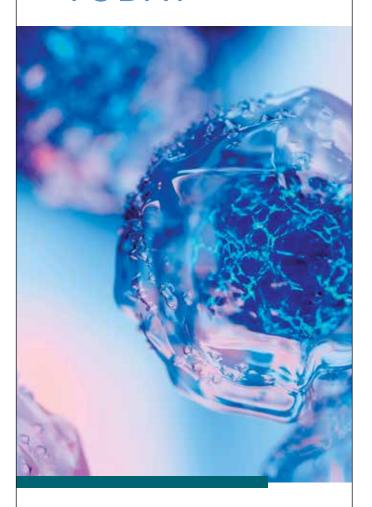
> - Ursula B. Kaiser, MD President, Endocrine Society



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## A Salute to Women in **Endocrinology**

n honor of National Women's History Month, Endocrine News is presenting its first ever "Women in Endocrinology" issue. In the decade that I've been overseeing the magazine and interacting with members of the Endocrine Society, it's apparent that women in endocrinology aren't simply a "contributing factor;" they are the driving forces, especially today. And it's high time we honored the amazing women who are making a difference in the practice and science of endocrinology.

This issue's centerpiece can be found on page 10 and features 10 of the Endocrine Society's outstanding member for "Taking The Lead: A Roundtable Discussion About Women in Endocrinology." Kelly Horvath has taken on the herculean task of talking to 10 women endocrinologists who shared their views on the practice itself, their own work and research, the Endocrine Society's impact on their careers, as well as nuggets of wisdom they wish to share with the next generation of women entering the field. Barbara Onumah, MD, medical director of the Luminis Health Anne Arundel Medical Center, Diabetes and Endocrinology program, in Annapolis, Md., remarks that while endocrinology is challenging, it's also a very gratifying specialty. "It is the perfect blend of science and critical thinking. There are many career paths to choose from," she says, adding "as a clinical endocrinologist, I appreciate the long-term patient-physician relationships, which make practicing this specialty very rewarding. Particularly for women considering this field, endocrinology is a specialty that allows you to tailor your work-life and schedule to the different phases of life."

On page 38, Glenda Fauntleroy Shaw interviews Dequina Nicholas, PhD, an endocrine researcher and an assistant professor at the University of California, Irvine. I first learned about Nicholas at ENDO 2022 in Atlanta, Ga., while I was chatting with Rob Fowkes, PhD; he told me I should really be following her on Twitter, and boy am I glad I did! Her Twitter feed is a constant stream of real-life interactions for today's endocrine scientists who are trying their best to get it right while juggling

#### **MARCH 2023**

# **Endocrine**

THE LEADING MAGAZINE FOR ENDOCRINOLOGISTS

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the responsibilities of family and motherhood. In "Balancing Act: How Dequina Nicholas, PhD, Pays It Forward ... with Interest!," she details her life, specifically how her career first blossomed thanks to amazing mentors all along the way to being the PI of her own lab. Many thanks to Nicholas for finding the time to share her insights with us. She is truly an inspiration.

Speaking of inspirational, on page 32 senior editor Derek Bagley has crafted a feature about the first woman to ever be president of the Endocrine Society, Rosalyn Yalow, PhD. In "A Determination to Succeed," we learn of Yalow's remarkable career and life and her research that led to her receiving the Nobel Prize for Physiology or Medicine in 1977 for developing the radioimmunoassay technique for hormone measurement. We hear from other women endocrinologists about how Yalow's career impacted their own and how her discovery changed the way endocrine research is performed.

Also, Yalow's very presence made an impression on other women in endocrinology at a time when there were so few women in the field. "Her presence at so many Endocrine Society meetings, where she was always smiling and exuding pleasantness and acceptance, impressed me greatly in those days when women were definitely not equal, especially in medicine," says Ann Owen, MD, adding that Yalow made women feel welcome. "She led the way in believing that research was interesting, and that we women could do it. It wasn't something that she questioned."

While this themed issue is a first for *Endocrine News*, it definitely won't be the last. If you have any ideas for a theme you'd like to see covered in our pages, feel free to let me know at: **mnewman@endocrine.org**. Some of our best stories come from recommendations from members like you!

- Mark A. Newman, Executive Editor, Endocrine News

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# Daniel J. Drucker, MD, Receives the 2023 Wolf Prize in Medicine



he Wolf Prize in Medicine for 2023 has been awarded to Daniel J. Drucker, MD, "for pioneering work in elucidating the mechanisms and therapeutic potential of enteroendocrine hormones."

Drucker, professor of medicine at the Lunenfeld Tanenbaum Research Institute of Mt. Sinai Hospital and the University of Toronto in Toronto, Canada, is being recognized for having "made seminal contributions to our understanding of the physiology and pharmacology of glucagon-like peptides (GLPs) and their use for the benefit of patients."

His discoveries of GLP-1, GLP-2, and dipeptidyl peptidase-4 (DPP-4) activity have enabled the development of multiple new innovative classes of medications for the treatment of diabetes, obesity, and obesity-associated comorbidities. He demonstrated that GLP-1 directly stimulates insulin secretion from pancreatic beta cells.

Over the past 35 years, Drucker has led the field in delineating the importance of GLP-1 action for the control of pancreatic beta cell proliferation and survival, regulation of endoplasmic reticulum (ER) stress, and beta cell plasticity. Drucker is widely recognized for his ongoing contributions to multiple new actions of GLP-1 in the brain, gut, the endocrine and exocrine pancreas, the immune system, and the heart and blood vessels. He played a pivotal role in identifying cardiovascular mechanisms of action for incretin agents, including studies of heart rate, blood pressure, atherosclerosis, inflammation, and cardio protection, thus laying the scientific groundwork for the exciting results of recent cardiovascular outcome studies.

Collectively, these findings have provided broad support for the development, use, and safety of GLP-1 therapeutics in human subjects with diabetes and obesity, and have identified new disease areas (NASH, CNS disorders such as Parkinson's and Alzheimer's disease) that may benefit from therapy with GLP-1R agonists. He also described the basic mechanisms linking DPP-4 activity to metabolic control. His pioneering studies validated DPP-4 as a drug target and described the importance of DPP-4 for the control of the enteroinsular axis.

A Fellow of the Royal Society, London, Drucker's discoveries have been recognized by numerous scientific and medical societies. He has been honored with the Endocrine Society's 2020 John D. Baxter Prize for Entrepreneurship, a 2009 Clinical Investigator Award, and the 1993 Richard E. Weitzman Memorial Award; the American Diabetes Association's Banting Award; the Claude Bernard Award from the European Foundation for the Study of Diabetes; the Manpei Suzuki International Prize; the Rolf Luft Award from the Karolinska Institute; and the Harrington Prize for Innovation in Medicine. He is also a past editor-in-chief of the peer-reviewed journal *Endocrine Reviews*.

The announcement was made at a ceremony held on February 7, 2023, at the official residence of Isaac Herzog, the president of the state of Israel.

Founded in 1975, the Wolf Foundation was founded by the late Dr. Ricardo Wolf, alongside his wife, who donated their own capital to establish the foundation, which they co-founded with former President Ephraim Katzir and Prime Minister Yitzhak Rabin. Every year, the president of the State of Israel awards the Wolf Prize for achievements "in advancing science and art for humanity and for friendship between peoples, regardless of race, religion, gender, geographical location, or political view."

For more information: https://wolffund.org.il/home-page/.

# Endocrine Society Praises State of the Union Attention to Insulin Affordability

he Endocrine Society applauds President Joe Biden's call to rein in soaring insulin prices for those with private insurance and urges Congress to take immediate action.

Biden highlighted the need for insulin affordability during the State of the Union address on February 7. He called on Congress to extend insulin price caps — "commonsense, life-saving protection" — to all Americans.

While Congress passed a provision to make insulin more affordable in the Inflation Reduction Act, the monthly \$35 insulin price cap in the law applies only to people with Medicare. An attempt to extend the benefit to millions more with private insurance failed in August in the Senate by a mere three votes.

Limiting out-of-pocket insulin costs to \$35 a month would be life-changing, particularly for the more than 1.8 million American children and adults with type 1 diabetes. Their bodies cannot produce the insulin needed to break down sugar and provide energy, so they depend on the medication to survive.

In 2021 alone, nearly one in five American adults with diabetes — about 1.3 million people — rationed their insulin to save money, according to a study. Rationing insulin causes people with diabetes to become sicker and, in some cases, even die.

"The Endocrine Society has championed measures to improve insulin access for years," says Society President Ursula B. Kaiser, MD. "As physicians and researchers, it is heartbreaking to see our patients struggle to afford the medication that keeps them alive."

More than 7 million people nationwide rely on insulin to manage their diabetes. According to the U.S. Center for Disease Control and Prevention, 37.3 million people nationwide — about 11% of Americans — have diabetes.

While insulin was discovered more than 100 years ago, the price of insulin nearly tripled between 2002 and 2013, and the trend upward has continued over the past decade. This has created an unnecessary crisis in healthcare with many people with diabetes being forced to choose between insulin and other necessities.

The Society will continue to work with policymakers to ensure all people with diabetes who rely on insulin can benefit from lower out-of-pocket costs.

"Insulin affordability is a bipartisan issue," Kaiser says. "Our patients cannot wait any longer for help."

#### **Excerpt from the State of the Union addressing insulin costs:**



"You know, we pay more for prescription drugs than any nation in the world. Let me say it again: We pay more for prescription drugs than any major nation on earth.

But every day, millions need insulin to control their diabetes so they can literally stay alive. Insulin has been around for over 100 years. The guy who invented it didn't even patent it because he wanted it to be available for everyone. It costs the drug companies roughly \$10 a vial

to make that insulin. Package it and all and you may get up to \$13.

But Big Pharma has been unfairly charging people hundreds of dollars, \$400 to \$500 a month, and making record profits.

Not anymore. Not anymore. So many things that we did are only now coming to fruition. We said we were doing this, and we said we passed the law to do it, but people didn't know because the law didn't take effect until Jan. 1 of this year.

We capped the cost of insulin at \$35 a month for seniors on Medicare.

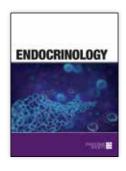
People are just finding out. I'm sure you're getting the same calls I'm getting. Look, there are millions of other Americans who do not or are not on Medicare, including 200,000 young people with type 1 diabetes who need this insulin to stay alive.

Let's finish the job this time.

Let's cap the cost of insulin for everybody at \$35."



BY DEREK BAGLEY
Senior Editor



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The FDA
should consider
reevaluating
the 'human
acceptable
daily intake' of
these chemicals,
and consumers
may wish to
reexamine
their personal
care product use.

99

### **TRENDS** & INSIGHTS

# Paraben Exposure Linked to Mammary Cancer Growth and Metastasis

arabens like methylparaben (MP) and propylparaben (PP), which are commonly used in food, cosmetic, and drug preservatives, are associated with mammary cancer growth and metastasis in mice, according to a study recently published in *Endocrinology*.

Researchers led by Michele A. La Merrill, PhD, of the Department of Environmental Toxicology at the University of California at Davis, point out that the FDA considers MP and PP as parabens that are "generally recognized as safe" at 0.1% for each paraben in food. Humans are exposed to parabens through food and drugs, as well as through the skin via personal care products. "Consequently, parabens have been found in numerous human tissues, including adipose tissue, breast tissue, and tumors," the authors write. "Recent nationally representative surveys of the U.S. population detected MP in the urine of more than 99% of adults and children and PP in 95% of adults and children."

The authors also note that there are disparities in exposures to parabens; non-Hispanic Black women and adolescents have disproportionately high levels of urinary MP and PP. "Given Black women are also more likely to die from breast cancer than white women in the United States, the possibility that their excess paraben exposure may cause increased breast cancer mortality merits examination," the authors write.

These parabens bind with estrogen receptors (ERs) and stimulate mammary tumor cell growth and invasion in vitro, according to the authors. For this study, the researchers exposed female mice to MP or PP at levels the FDA considers "human acceptable daily intake." The paraben-exposed



mice had increased mammary tumor volume and increased pulmonary metastases compared to control mice. Further testing affirmed that MP and PP bound and activated human ER, and RNA-sequencing revealed increased ER expression in mammary tumors among paraben-exposed mice, the authors write.

"We show that paraben exposure at levels common in the U.S. population are capable of accelerating mammary cancer growth and metastasis in mice through at least two key characteristics of carcinogens and alternative splicing events," the authors write in their conclusion. "These data support the provocative possibility that disproportionate paraben exposure is related to the disproportionate risk of ER+/luminal breast cancer mortality among Black women."

The authors go on to conclude that regulatory toxicology test guidelines for carcinogenicity are inadequately designed to replicate their findings. "The FDA should consider reevaluating the 'human acceptable daily intake' of these chemicals, and consumers may wish to reexamine their personal care product use," they write.

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We hope to see you at **ENDO 2023**, taking place June 15 – 18, 2023, in Chicago, III. With more than 7,000 attendees, nearly 2,000 abstracts, and more than 200 other sessions, **ENDO** is the top global meeting on endocrinology research and clinical care. **ENDO** provides the opportunity to collaborate with an unparalleled list of endocrinologists, healthcare practitioners, and leading scientists from around the world. Through sharing our experience, advice on patient care, and new advances in research, we move the needle forward in hormone health and science. Our outstanding slate of world-renowned speakers will showcase the most cutting-edge advances in research and medicine, with presentations spanning the spectrum of science, clinical care, and social implications.

www.endocrine.org/endo2023



#### 3rd International Conference on Diabetes, Endocrinology, and Obesity

Virtual Event March 20 - 21, 2023

This conference focusing on the latest and most exciting innovations in all areas of diabetes research offers a unique opportunity for investigators across the globe to meet, network, and learn about new scientific innovations. This year's annual congress highlights the theme, "New Technologies and Practical Approaches: Diabetes and Endocrine Disorders," which

reflects the innovative progress in diabetes disease research. The two-day conference includes special keynote sessions conducted by eminent and renowned speakers who excel in the field of diabetes.

https://www.diabetesmeet.com/

#### 43rd American Association of **Endocrine Surgeons Annual** Meeting

Birmingham, Alabama April 29 - May 3, 2023

The 2023 AAES Annual Meeting will be an in-person event in Birmingham, Ala. All presentations (podium and poster) will be given in person. New for #AAES2023 is an entire Scientific Session dedicated to health equity. Examples include but are not limited to healthcare workforce disparities; differences in patient access based on social and cultural determinants of health; population-level factors, such as socioeconomic determinants and disparities in healthcare coverage; and

https://www.endocrinesurgerv. org/2023-annual-meeting



#### **Endocrine Society Webinars**

The Endocrine Society holds webinars throughout the year on many topics, from clinical practice and basic research to career development, advocacy, and more. Check below for information on upcoming webinars and links to previous events. Visit our Center for Learning for a full list of Society educational offerings.

Past webinars have included The Complexities of Cushing's Syndrome: Diagnosing and Managing Patients; Utilizing Nurse Practitioners and Physician Assistants to Optimize Patient Care: How to Build Effective Teams; Genetics in Pituitary Disease; Facts and Controversies of Testosterone Replacement Therapy in Male Hypogonadism; and so much more! Most of the webinars are free for Endocrine Society members, but some do require a small registration fee. https://education.endocrine.org/Public/Catalog/Main.aspx

# Taking the BY KELLY HORVATH **A ROUNDTABLE** DISCUSSION

A ROUNDTABLE DISCUSSION ABOUT WOMEN IN ENDOCRINOLOGY

Once dominated by men, endocrinology has evolved into a specialty in which women lead the way in clinics, classrooms, and labs. Endocrine News spoke to 10 women in endocrinology about their views on the practice, their work and research, the Endocrine Society's impact, and their advice for the next generation of women following in their footsteps.

n many ways, the field of endocrinology concerns women's health. According to the Endocrine Society, "Endocrinologists are important members of the care team for women as much of their care is focused on ensuring the correct balance of hormones. The Endocrine Society advocates for improving and protecting access to care for women by pushing for evidence-based policies and advocating for better funding and research to address gaps in endocrine health."

It's no wonder, then, that this same field also attracts talented and visionary women physician-scientists to its ranks. With March home to International Women's Day and Women's History Month, Endocrine News spoke to 10 women endocrinologists about their career trajectories, their work in the lab and in the clinic, the wonderful people who influenced them along the way, and what lasting impact they hope to leave on the field of endocrinology.

Ursula B. Kaiser, MD, is the current Endocrine Society president since July 2022, having served as president-elect since March 2021. She is chief of the Division of Endocrinology, Diabetes, and Hypertension; George W. Thorn, MD, Distinguished Chair in Endocrinology; past-director of the Brigham Research Institute at Brigham and Women's Hospital, and professor of medicine at Harvard Medical School, in Boston, Mass. Kaiser is also a past board member. Carol H. Wysham, MD, is immediate past president of the Endocrine Society and a current board member. She is a clinical endocrinologist and

diabetologist at the Rockwood Clinic, part of the MultiCare Health System in Spokane, Wash., as well as a clinical professor of medicine at the University of Washington. Jenny A. Visser, PhD, is a past Endocrine Society board member and an associate professor in the Department of Internal Medicine, Erasmus MC, Rotterdam, the Netherlands, where she heads the Metabolism and Reproduction Laboratory. Visser will be chairing ENDO2023. Barbara Mensah Onumah, MD, is an Endocrine Society board member and the medical director of the Luminis Health Anne Arundel Medical Center, Diabetes and Endocrinology program, in Annapolis, Md. Andrea C. Gore, PhD, is an Endocrine Society board member and professor and Vacek Chair in Pharmacology at the University of Texas at Austin. Joy Wu, MD, PhD, is a past Endocrine Society board member and chief of the Division of Endocrinology at the Stanford University School of Medicine in Calif. Kristien Boelaert, MD, PhD, MRCP, is professor of endocrinology at the University of Birmingham, U.K., and a consultant endocrinologist at University Hospitals Birmingham in the U.K. She is a member of the Endocrine Society Annual Steering Committee. Licy L. Yanes Cardozo, MD, is a practicing endocrinologist and physician-scientist at the University of Mississippi Medical Center in Jackson. Emilia Modolo Pinto, PhD, is a scientist at St. Jude's Children's Research Hospital in Memphis, Tenn. Kristen R. Vella, PhD, is a past Endocrine Society board member and recently left academia for industry.



# **Endocrine News:** What does being a woman in endocrinology mean to you?

**KAISER:** Endocrinology is a field that is predominantly women — at least currently there are more women entering the field of endocrinology than men. I'm not sure exactly why that is, and we could speculate about potential reasons. Having a lot of women in the field is helpful because you have a peer group who have similar issues, challenges, and concerns as well as enjoyment from their career choice.

Historically, men predominated in all fields of medicine, but now that is evolving, and that evolution has been there long enough that there are now a lot of senior women in endocrinology.

**WYSHAM:** With the exception of diabetes, endocrinologic diagnoses occur in more women than men. Often the presentations are nonspecific and may be overlooked without listening, being mindful, and being nondismissive. I also highly value the relationship that I have with my long-standing patients, especially those with diabetes.

**VISSER:** I was raised with the belief that men and women are equal, and I could do anything that I wanted to do, so I never

focused on whether there are differences between being a woman or being a man in this research field. I always felt comfortable among both male and female colleagues.

**ONUMAH:** In the early 1900s, around when the Endocrine Society was founded, less than 5% of all physicians nationwide in the U.S. were female. One hundred years later, approximately 50% of all physicians in the in the U.S. are women, and even more are endocrinologists. Indeed, we have come a long way over the past century, and we still have farther to go. Being a woman in endocrinology means that I am very privileged and fortunate to be able to have a profession that I am passionate about and enjoy. I especially feel proud to be part of a group that encourages women to excel in medical science and research.

Being a woman in endocrinology, I try to remember daily, as I go about my duties, to find opportunities to inspire and serve as a mentor for younger persons, particularly women who may have interest or may be considering a career in science and medicine.

**GORE:** Women in Endocrinology (WE) has played a significant role in my career. As an early-stage investigator, I applied for and was awarded the Neena Schwartz Achievement Award. This provided travel support to attend the annual **ENDO** meeting in

San Francisco. As a neuroendocrinologist, up until that point, my scientific society loyalty wavered between the Endocrine Society and the Society for Neuroscience. That **ENDO** meeting — which I would not have attended without the WE support — was a fantastic experience and cemented my primary affiliation with both WE and the Endocrine Society.

**WU:** I have always found endocrinology to be a very welcoming field. In the United States, 50% of active endocrinologists and 70% of endocrinologists in training are now women, so hopefully it's a specialty where women can find plenty of opportunity. For example, the Endocrine Society has had excellent representation of women among its leadership.

**BOELAERT:** Essentially, I feel I provide leadership in a field that's traditionally been dominated by men, certainly with regard to research. It's a very academic specialty that, like many fields in medicine, has been male dominated. I think I make a difference to patients who have conditions that often are very relevant to women. Many endocrinologic conditions are much more prevalent in women than in men, so I think being a woman helps to make me a better doctor in that sense, and to care for patients better.

**CARDOZO:** Endocrinology is the perfect specialty for women. It is highly intellectually stimulating, as clinical manifestations in patients can present differently; it is a fantastic feeling when you can put the medical pieces of the puzzle together and succeed in caring for the patient. Moreover, the long-term physician–patient relationships established in the context of life-long medical conditions make me feel like an essential part of someone's life, and that feeling never gets old. Those two characteristics make endocrinology the number one specialty for me.

**PINTO:** It's not about valuing women over men but exploring the qualities and skills that we have for the benefit of all. It's an opportunity to make an impact with my voice, my perspective, my knowledge, and my passion.

**VELLA:** Recently, I've gone through the major transition from being a PhD neuroendocrinologist moving from academia into industry. So, I'm redefining myself, and I'm thinking more about how endocrinology pertains to my job now. Working in an industry job complements all the training I had, but how do those interests that I had before stay relevant? I think I have found a job that allows me to question the science we're doing and make sure that we're thinking about the whole organism — how hormone acts in all tissues.



#### Ursula B. Kaiser, MD,

president, Endocrine Society; chief, Division of Endocrinology,
Diabetes, and Hypertension; George W. Thorn, MD,
Distinguished Chair in Endocrinology; director, Brigham
Research Institute at Brigham and Women's Hospital; professor
of medicine, Harvard Medical School, Boston, Mass.

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Endocrinology is a field that is predominantly women — at least currently there are more women going into endocrinology than men. ... Having a lot of women in the field is nice because you have a peer group that have similar issues, challenges, and concerns as well as enjoyment from their career choice.

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#### Carol H. Wysham, MD,

immediate past-president, Endocrine Society; clinical endocrinologist and diabetologist, Rockwood Clinic, MultiCare Health System, Spokane, Wash.; clinical professor of medicine, University of Washington, Seattle, Wash.

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Female patients value being listened to, and I feel that, as a woman, I am more adept at listening to the patient, acknowledging their concerns, and discussing the likelihood of an endocrine explanation for their symptoms.

When I think about that from the female perspective, navigating a career as a basic scientist or clinician is a little different than how men must think about it. Women think about, do I have a family? How do I integrate my family and professional life? But in industry, the support mechanisms are built a little differently. When COVID-19 hit, I had just started my family, and it really made me evaluate things and to evaluate whether the questions I was pursuing academically were challenging me the way I want to be challenged.

So, now, instead of focusing on one problem, I'm looking at a lot of diseases and a lot of tissues at the same time, which is not only more in line with my preferences, but it also allows me more time to focus on my home life. It was hard to grasp the idea of changing, but it has been beneficial in many ways.

#### EN: What is your particular area of interest?

KAISER: My main areas of interest are neuroendocrinology and reproductive endocrinology. More specifically, in my research program, I study the neuroendocrine regulation of reproduction, study what those pathways are physiologically and then how disturbances in those pathways perturb the reproductive function in women — for example, stress, energy balance, acute and chronic illness, and inflammation. Clinically, my areas of interest are neuroendocrinology and pituitary disease.

**WYSHAM:** It has evolved over time. I have a practice heavily weighted in diabetes, both type 1 and type 2. As I have been in the same practice for over 30 years, I have many patients with more than 40 years of diabetes, many of whom are using advanced technologies. So, my interests are now geriatric diabetology and appropriate use of advanced diabetes technologies. I am also every interested in the cardiovascular and the nontraditional complications of "diabesity." I have an active clinical research program, focusing on new therapies and cardiovascular outcomes. I am also involved in teaching clinical endocrinology to primary care providers, residents, and medical students — a highlight of my day-to-day practice.

**VISSER:** My research focuses on metabolism and reproduction these days. I grew up scientifically in the reproductive field working on anti-Müllerian hormone (AMH), which brought me to polycystic ovarian syndrome (PCOS), the most common reproductive disease in women. A lot of these women also are obese and have insulin insensitivity, yet one of the hallmarks of PCOS is increased androgen levels. I was intrigued: Why do



increased androgen levels have a deleterious effect in women but are beneficial for men? So that led my overarching research aim more into sex differences in metabolism.

In collaboration with my clinical colleagues at our department, we focus now on obesity, ranging from general obesity to genetic causes of obesity. We apply a broad range of techniques ranging from in vitro and in vivo models to genetic approaches like GWAS analysis. So, we cover the complete bench-to-bedside and back approach. It's quite a lot of fun.

**ONUMAH:** I like all of general endocrinology, with particular interest in diabetes and insulin resistance.

GORE: I'm a neuroendocrinologist doing basic research on effects of environmental endocrine-disrupting chemicals on the developing brain and underlying epigenetic mechanisms.

WU: My clinical specialty is metabolic bone disease and osteoporosis, with a focus on bone health in cancer patients and survivors. I also run a research laboratory that studies stem cell sources of bone-forming osteoblasts and the bone marrow hematopoietic microenvironment.

**BOELAERT:** My areas of interest are thyroid disease and, particularly hyperthyroidism, thyroid disease in pregnancy, and thyroid cancer. Most hyperthyroid conditions are about five to 10 times more common in women than in men. So, most of my patients are female, and I think it's always nice to have someone look after you who understands. For example, if I look after a pregnant woman, I have been pregnant, and so I understand certain things that they report because I've "been there done that."

**CARDOZO:** I am particularly interested in women's health with an emphasis on polycystic ovary syndrome (PCOS), which is the most common endocrine disorder in reproductive-aged women.

PINTO: Adrenocortical tumorigenesis, hereditary endocrine tumors, rare tumors, and genetics are my areas of interest.

**VELLA:** As an academic person, I was working on how the brain regulated thyroid hormone and how it also drives the liver to break down thyroid hormone. But now, I'm using the liver to study several diseases. I previously didn't appreciate the liver as much as I do now - such a profound organ, especially its endocrine capacity.

#### EN: Can you describe what you consider defining moments in your career?

KAISER: Certainly, one defining moment is being president of the Endocrine Society this year. It's an incredible honor to have the opportunity to help direct and provide support and service for the early-career members. It's my chance to give back to the Endocrine Society after all that I've gotten from them.

In terms of awards, some that I received early in my career affirmed that my work was being recognized in the field, such as the Women in Endocrinology Janet McArthur Award and



the Ernst Oppenheimer Award from the Endocrine Society. Then later in my career, I was fortunate to be recognized with the Agnes Schonbrunn Award for Distinguished Service to Women in Endocrinology and the Sidney H. Ingbar Award for Distinguished Service to the Endocrine Society. I also received a mentoring award from Harvard Medical School — it is nice to feel that I've contributed and supported and mentored others in the field.

In terms of some of the work I've done, identifying genetic defects associated with changes in the timing of puberty and understanding how those cause either precocious puberty, delayed puberty, or failure to go through puberty stands out. We identified genes that these mutations are associated with, which I hope has made a major lasting contribution to the field of endocrinology and science.

**WYSHAM:** I started the clinical trial program at our clinic in 1993 and then at Washington State University in 2001. Being involved in clinical trials meant interacting with many of the respected researchers in diabetes. These meetings opened doors for leadership positions in the American Diabetes Association and the Endocrine Society as well as opportunities to present at national and international meetings.

**VISSER:** Sometimes, the people you meet can steer you in certain directions. I originally wanted to become a veterinary

surgeon, but I did not get in the program and instead studied animal science. I grew up on a farm, so I was interested in that field, but I was unhappy with the study that I was doing. Then a new undergraduate student mentor was appointed and, recognizing my interest in biology and research, directed me to my first intern supervisor. Through her, I got the opportunity for an internship in the U.K., and that has been a defining moment because my supervisor there, Dr. Wolf Reik, really sparked my interest in research and encouraged me to get a PhD. I really have to give credit to my PhD supervisor Axel Themmen, who trained me in a lot of ways and gave me the confidence to recognize that I actually had some good ideas. He showed me how you can do research, still be critical, and learn in a pleasant environment.

Later on, my postdoc mentor Holly Ingraham taught me other aspects of doing research and leadership. These people have been very influential in sparking and keeping my interest in science. It is your interest that drives you to certain things. and you have to take the initiative in it yourself as well, but if you have the right match of people who support you, that can be great. I've been lucky that I have had such mentors.

**ONUMAH:** A pivotal moment in my career was about seven years ago, when I made a decision to leave my faculty position at a well-established university-based endocrine program to take on a new job as medical director of a diabetes and endocrine program. In this new role, I was tasked with starting a new diabetes

and endocrine practice and developing a diabetes program for the health system. It was exciting and yet terrifying to leave a comfortable and predictable job and take on a completely new venture. However, taking on this challenge gave me exposure to a whole new aspect of healthcare that I would have never had the chance to experience, had I not taken the challenge.

**GORE:** I had the unique opportunity to organize and lead a one-day forum on endocrine-disrupting chemicals (EDCs), which was scheduled the day before ENDO 2005 in San Diego. That meeting launched what is now the Endocrine Society's leadership and preeminence in science, clinical practice, and advocacy around EDCs.

WU: I had always wanted to go to medical school, but, in college, I enjoyed laboratory research so much that I decided to pursue a career as a physician-scientist. Then, during my endocrinology fellowship at Massachusetts General Hospital in Boston, my postdoctoral research training with Henry Kronenberg led me to specialize in bone endocrinology. Finally, my search for a faculty position brought me back to Stanford, where I am thriving in an environment that supports physician-researchers and diversity.

**BOELAERT:** The first was when I decided that I wanted to specialize in endocrinology. At that point I was told I would have to do some research to start on that trajectory because it's a very academic specialty. So, I then reached out to my mentor, Jane Franklyn, one of the pioneering women in thyroidology from a generation before me when there were even fewer women in the field. She was an amazing mentor, and it soon became clear that I really liked clinical academia.

Then, in 2011, I went to the Mayo Clinic for a sabbatical of six weeks, which has been a real steppingstone in my career through learning how they manage their services as well as the contacts I made there. Even though it was difficult to leave my then young children, it enriched my CV and provided crucial career support. I would have extended the sabbatical if I didn't have a family, but it's always a balance of what's feasible.

Finally, becoming a professor of endocrinology was very important. It felt like a bit of a crowning of all the work I've done and the things I had built.

**CARDOZO:** I have several defining moments that clearly define my career path. One of them was when I was a



#### Jenny A. Visser, PhD,

associate professor, Department of Internal Medicine, Erasmus MC, Rotterdam, the Netherlands

In terms of challenges of being a woman, I don't think that way. Obviously, differences do exist I know there is a glass ceiling, particularly for women who have children, and returning to a career after a break is more difficult but, for me personally, I don't like to think there are.



#### Barbara Mensah Onumah, MD,

medical director, Luminis Health Anne Arundel Medical Center, Diabetes and Endocrinology Program, Annapolis, Md.

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Being a woman in endocrinology means that I am very privileged and fortunate to be able to have a profession that I am passionate about and enjoy. I especially feel proud to be part of a group that encourages women to excel in medical science and research.

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second-year medical student in Paraguay. While I was reading Guyton's *Textbook of Medical Physiology*, I thought, "I would like to practice medicine in the U.S., where the medical books are written, and medical guidelines are born." The second defining moment in my career was during my endocrinology fellowship when the Endocrine Fellows Foundation awarded me a research grant and reignited my passion for basic research. Another of those moments was when I became a mom, as the transformative force of being a mom cannot be put into words.

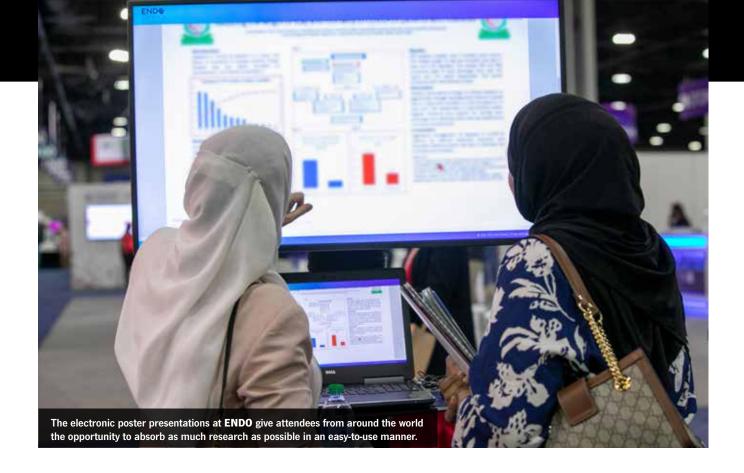
**PINTO:** My better career-defining moment was moving to the U.S. My new assignment as a scientist gave me the opportunity to develop my projects and ideas with collaborations worldwide that totally fuel my career.

**VELLA:** When the world was shutting down and COVID-19 was happening, I said to myself, "I want to cure someone today." I don't want to wait 15 years to get what I'm working on in the clinic. I needed something a little more immediate. So, it was kismet that this position opened, and my boss is a trained endocrinologist, which also definitely helps.

What started me on this path happened just after getting my undergraduate degree at MIT. Our department had a tiny nuclear reactor, and I got a job there as a nuclear operator. It was a huge turning point because we did a lot of research there, and I got exposure to the research process. Realizing that I like answering questions is what encouraged me to apply to graduate school.

Then, the people who supported me are incredibly important. During my graduate work at Umass Amherst, Deborah Good (now at Virginia Tech) nominated me for committee work at the Endocrine Society. That allowed me to see what an endocrine research career could look like. Because of that involvement with the Endocrine Society, I got a postdoc with Tony Hollenberg at Beth Israel. He has been a terrific mentor, and we worked together for 15 years. He gave me all the support needed to start my own lab and was also supportive when I said I was ready to leave.

Another big moment was winning the Endocrine Society's Knockout Rounds for communicating your science in three minutes. That helped me realize that I can really talk about science. Little things like that boosted my confidence and my assurance in myself that I could do these things.



#### **EN:** What challenges have you had to overcome?

**KAISER:** The most challenging time was earlier in my career, when my husband, who is also a physician-scientist, and I were balancing our two careers and raising a family. I felt a constant pull in both directions of making sure that I was meeting my work expectations and yet also meeting my family's needs. My husband was an incredibly supportive spouse and partner, but where we were in our careers at that time meant that much more of the childcare fell to me because my work situation was fortunately more flexible. Later, he was in a different position, and his work allowed him to take on more at home.

**WYSHAM:** That comes down to having to prove myself at both of my postgraduate positions — I am married to a cardiologist - he was being highly recruited at both institutions, and I was the "come along" spouse. Within a year of starting, I was participating in the leadership of the respective clinics. I also have to be more assertive to avoid being talked over or left out of conversations at meetings.

**VISSER:** In terms of challenges of being a woman, I don't think that way. Obviously, differences do exist — I know there is a glass ceiling, particularly for women who have children, and returning to a career after a break is more difficult — but, for me personally, I don't like to think there are.

**ONUMAH:** Balancing professional and family responsibilities has been a challenge.

**WU:** A few challenging times in my career have taught me a lot about resilience. One was starting out as a working mom with young children, with long hours of clinical training and the pressures of getting publications and funding to compete for a tenure-track faculty position. Another was my diagnosis with cancer just as I was going up for tenure, going through months of treatment during a particularly nerve-wracking moment in my career.

I made it through these times, thanks to support from my husband, family, and friends. From these experiences, I came to really appreciate the importance of regular exercise, mindfulness, and asking for help.

**BOELAERT:** My husband is a GP, and he's been amazing in supporting my career, and it's been very much teamwork. But when I was developing as a PhD student, my colleagues were all male, and even for those who were fathers, it's not the same for them with children. That's got good points and bad points: I will also always be the mother of my children, and they will always come to me first with their problems. I would never give up that relationship. But when my colleagues could go home and do some more work, I would go home and take the children to



a music lesson, for example. I feel privileged that I had those wonderful times with my children, but it meant that I climbed the ladder more slowly. Being a working mother is a challenge for anyone, and balancing academia and clinical work is a further challenge, but it was also an opportunity. There is better understanding of these challenges, and we've made huge strides, but being a woman in a man's world may always be a challenge.

**CARDOZO:** Although I came to the U.S. a long time ago, in 2002, living away from my home country Paraguay and the rest of my family has been and still is very hard. Being a physician makes it hard to be away when my family needs me the most.

**PINTO:** My family was able to adapt to my working demands, but maintaining work-life balance and quality of time with my family was a big challenge. In addition, it is important to learn coping strategies to overcome a "not ideal" work environment. Self-confidence, dedication, and hard work helps.

**VELLA:** I remember a professor in the physics department at MIT questioning whether I wanted to be there among all of those "grumpy men." And I really didn't have anyone to turn to discuss that conversation, how it made me feel. I didn't have a support network.

More recently, I've learned how important relationship-building is and to make sure that all the people who are involved in a project stay involved. Keep the communication open.

There have been times when I have felt discouraged, so it's a good idea to have a lot of people you can turn to. Different mentors have different strengths, and not everyone is going to have an answer to the problem you're facing. Sometimes you're going to have to figure it out on your own, but there are people who support you and understand that you're going through a tough decision. I think it's good to have a good support network.

## EN: Does being a woman bring any advantages/insight to your work?

**KAISER:** I think it does in many ways, because of the fields that I work in. The academic area I was interested in was the neuroendocrine regulation of reproduction, and the reproductive pathways tend to be more intricate in women. That ended up being a lot of my focus, and I started being recognized as someone who studies women's health. So, from those aspects, I think being a woman does bring advantages and insight into that work.

**WYSHAM:** Female patients value being listened to, and I feel that, as a woman, I am more adept at listening to the patient, acknowledging their concerns, and discussing the likelihood of an endocrine explanation for their symptoms.

**VISSER:** I work on ovarian reserve with AMH and infertility, and that can have an impact, so I can remind women that, if you do want to have children, don't wait — there's never a "good"

time. I think that as a scientist and as a woman, there will always be moments during your career when you feel like you don't have time; you want to do this other thing first. But I'm also very aware that men say the same thing.

I have noticed over the last few years that I attract more female PhD and undergraduate students. That may be because they feel safer in a female environment. It may also be the research field; here at Erasmus MC, currently 70% or more are female students.

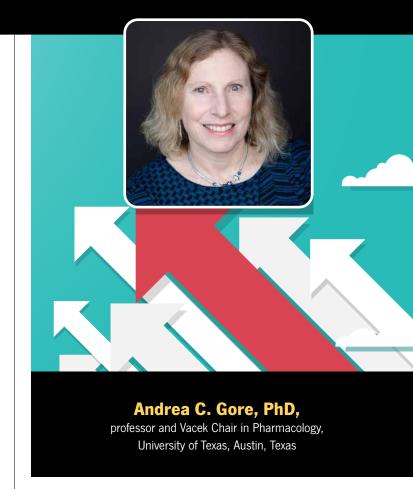
**ONUMAH:** Being a woman in endocrinology means that I am very privileged and fortunate to be able to have a profession that I am passionate about and enjoy. I especially feel proud to be part of a group that encourages women to excel in medical science and research.

WU: Leadership classes often seem to teach a male-centric style of leadership, so, for a long time, I figured I lacked the necessary traits to be a leader. But, during the pandemic, I saw many women model a style of leadership guided by data, teamwork, and compassion. That's the approach I hope to bring to my own various roles at work.

**BOELAERT:** I think being a woman in endocrinology gives me more empathy. One of the things I'm very interested in is the weight gain that results when patients with an overactive thyroid gland get treatment. Many women feel misunderstood and are questioned about why that's important. And, like I said about pregnancy, having been there always helps. Also, I had the benefit of having a really good female role model, and I do hope that I can be a role model for people as well in that it's tough to be a full-time working mother and to balance academic and clinical, but it also gives so many rewards.

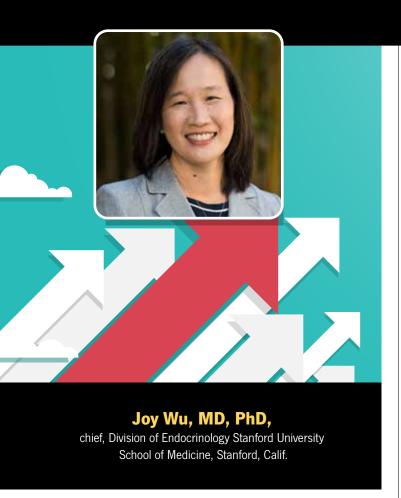
**CARDOZO:** No, as a woman, but yes, as a mom. After having my two daughters, I have become significantly more empathic toward others; I have become more patient and protective of others. Motherhood is the ultimate teacher of those skills.

**PINTO:** I think that a woman brings empathy and passion to the workplace. In addition, the helpful nature and organization also helps to create a healthy workplace. Altogether, these abilities boost productivity levels and satisfaction. But this is not necessarily true in every place. Sometimes competition, discrimination, and jealousy are still present.



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I am a basic researcher, with the hope that my research will reach and influence others in my field mainly through my publications. Through my career. I've learned that the Endocrine Society provides almost limitless opportunities to have a much broader reach.



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I have always found endocrinology to be a very welcoming field. In the United States, 50% of active endocrinologists and 70% of endocrinologists in training are now women, so hopefully it's a specialty where women can find plenty of opportunity. For example, the Endocrine Society has had excellent representation of women among its leadership.

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**VELLA**: It allows me to help other women find their voice. Don't be afraid to get out there and say it and fight for it. Mentorship is a big one.

## **EN:** What conditions (medical or structural) need more attention?

**KAISER:** In my field, polycystic ovarian syndrome is something we still really don't understand very well and really needs more attention. Another condition that essentially affects almost all women is menopause, not only for the symptoms it causes, but also the longer-term risks and how to address those. There's some really exciting work going on in that area right now.

**WYSHAM:** I think the impact of the markedly increased rates of obesity and diabetes (and their treatment) on children, young adults, and women of reproductive age has not received enough attention in primary care, pediatrics, and obstetrics and gynecology.

**VISSER:** For my research field, conditions like PCOS and recognizing obesity as a chronic disease are areas that require more attention. On a professional level for women, there are career aspects that vary a lot between countries, like returning to work after having children and how much time you're allowed to be on a break pre- and post-delivery. So, opportunities for childcare are something that still needs to be looked at, for instance to attend a meeting. Is there childcare? Can you arrange it at home, or do you need funding for it? This has not been looked into enough and is something two of my colleagues and I as cofounders of the European Women in Endocrinology (EUWIN) hope to address. We do see there are opportunities for networking, particularly for female trainees, and ways that peers can help out. We also still need to make sure there is diversity at symposia and committees.

**ONUMAH:** Obesity and related comorbidities like NASH as well as diabetes and insulin resistance are conditions that need more attention. And, as it relates to these conditions, finding ways to ensure access and equitable care and improve affordability of medications for all patients is also important.

**WU:** Osteoporosis is underappreciated as a health risk. Over 50% of women and 25% of men will have a fracture due to osteoporosis in their lifetimes, and hip fractures are especially devastating. We need more attention to the diagnosis, prevention, and treatment of osteoporosis to lower the risk of fractures in aging adults.



**BOELAERT:** I see this from the areas that I'm interested in. The weight gain in patients with hypothyroidism is very much an undervalued and underresearched area, which is actually really important to patients. I would also like more attention to the management of thyroid disease in pregnancy, where there are still so many unanswered questions, despite recently revised guidelines. Another area that still needs attention is how to optimally manage patients with an underactive thyroid.

CARDOZO: Heart disease is the leading cause of death for women in the U.S.; about one in five female deaths are due to cardiovascular diseases.

The research in my lab focuses on PCOS. Women affected with PCOS can present with different clinical manifestations such as acne, excessive hair growth in areas that are generally normal for men, or hair loss on their scalp. They may also suffer from irregular periods or infertility and seek medical advice for those particular issues. As an endocrinologist, I am very concerned because women with PCOS are at a higher risk for obesity, diabetes, high cholesterol, and high blood pressure. The presence of these cardiovascular risk factors results in increased cardiovascular diseases. Obesity is a frequent finding in women with PCOS. My research team studies the impact of androgens on cardiovascular risk factors in women with PCOS and how we can effectively treat cardiovascular diseases in these patients.

PINTO: More space and opportunities for basic scientists and non-physicians in the field is needed. The contribution of these specialists is fundamental for the field.

VELLA: Support for young families is needed. Cornell had a lot of great programs for first-time parents, and they provided a lot of support, i.e., longer maternity leaves. A lot of those were instituted by Laurie Glimcher, who was then the dean.

#### EN: What role has the Endocrine Society played in vour career?

KAISER: The Endocrine Society has had a profound effect on my career in terms of opportunities to meet and learn from other experts in the field and to present and become recognized for my own work. ENDO really has always been the premier meeting for people in endocrinology to present their work. Also, through being involved in the committees and the leadership of the Endocrine Society, I have learned so many skills — for example, how to be a committee member and how to lead a meeting as committee chair . . . and I was able to translate so many of those skills back to my own institution when I became chief of our division of endocrinology.

WYSHAM: I joined the Endocrine Society as soon as I was eligible. I attended meetings and read the journal, but my



Leffert, MD; Ved Gossain, MD; Ricardo Correa, MD, EdD, FACP, FAPCR, FACMQ; Robert Vigersky, MD; Shivani Agarwal, MD; Onumah, and Kathleen Figaro, MD, at the Endocrine Section Council meeting during the Interim Meeting of the AMA House of Delegates in 2018.

involvement with the Endocrine Society happened almost by chance. I was asked to join the Annual Meeting Steering Committee in 2011. In 2014, the Society decided to create a clinical practice co-chair position, and I was invited to act in this capacity for two years, then one year as overall chair, then on the board, and then president. It has been a whirlwind of activity. Being part of the Endocrine Society as a leader has been valuable in meeting the thought leaders in our field, understanding the challenges (pipeline, research funding, reimbursement, education of primary care about treatment of endocrine and metabolic conditions), and participating in development of strategies to address them.

**VISSER:** The role the Endocrine Society has played in my career has been substantial. I've always attended the ENDO meeting because it's a nice combination of basic and clinical science, so for me, as a basic scientist to learn about clinical research. It has been quite influential in that regard, particularly since I returned as a postdoc to a clinical department with strong translational research. The Endocrine Society also asked me to be part of the Annual Meeting Steering Committee several years back, and that has really propelled my involvement as a volunteer within the Endocrine Society. Later on, I became basic science chair of that meeting and a board member, both of which gave me access to leadership training. Those have taught me that I'm quite interested

Boelaert (center) with Society friends Megan Haymart, MD, (left) and Jen Sipos, MD, at a Society for Endocrinology conference.

in governance. I'm now part of the executive board of our clinical experimental medicine initiative at our department to strengthen research between the different disciplines. I also became the chair of the nominating committee so there the governance part also plays a role, with specific training about diversity.

Really, one thing has led to another, and now I'm the chair of ENDO 2023 Steering Committee. It shows that it really is a fantastic society to learn leadership skills, which combined with what you learn at your own institute, you can apply. You bring back from one to the other and the other way around. The Endocrine Society has been very influential on the professional level but also on a personal level. You meet with people who you otherwise might not directly meet because they work in a different field, and you learn from them. It's very collegial, and I really love the networking aspect.

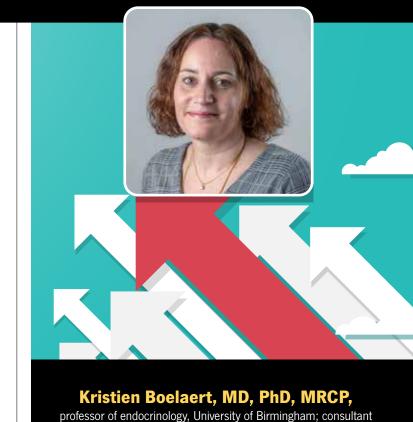
**ONUMAH:** I have been an active member of the Endocrine Society since 2005, and I have always viewed it as my main scientific society. Through my membership, I have had the opportunity to network and develop professionally. I have also met amazing people, with whom I have collaborated professionally and formed lifelong friendships. The Endocrine Society has also helped me stay on top of the constantly evolving scientific discoveries in endocrinology with the many educational and learning options.

**GORE:** I am a basic researcher, with the hope that my research will reach and influence others in my field mainly through my publications. Through my career, I've learned that the Endocrine Society provides almost limitless opportunities to have a much broader reach. Through committee service, I've gone to Capitol Hill to talk with policymakers about endocrine-disrupting chemicals, their adverse effects on endocrine health, and the importance of stronger regulations. I've also had unique opportunities to partner with other international agencies and NGOs on common concerns. These activities gave me a "voice" that I would never have had as an individual scientific researcher.

WU: As a graduate student, my PhD mentor Anthony Means sent me to attend my first Endocrine Society annual meeting in New Orleans. I was so impressed by the interactions between basic scientists, clinical researchers, and practicing physicians that I decided right there to become an endocrinologist. Then, thanks to Dr. Means and my postdoc mentor Henry Kronenberg, both past presidents of the Endocrine Society, I had opportunities to serve on various Society committees from an early stage in my career. The networking that committee service afforded me was invaluable to my career advancement. Eventually, I was elected to the board of directors, where it was an incredible privilege to participate in discussions impacting all aspects of endocrinology around the world.

**BOELAERT:** The Endocrine Society has been amazing. Following on from my going to the Mayo Clinic, I was on the committee that creates the Endocrine Self-Assessment Program (ESAP) product. Writing those questions was a lot of work, but it was very rewarding, and I met some amazing people. So, I suppose my links at the Mayo Clinic led to those opportunities.

Now, I'm on the Annual Meeting Steering Committee, where, again, I meet some amazing people who I may not have ever worked with otherwise. I'm also associate editor for the Journal



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endocrinologist, University Hospitals Birmingham, U.K.

Being a working mother is a challenge for anyone, and balancing academia and clinical work is a further challenge, but it was also an opportunity. There is better understanding of these challenges, and we've made huge strides, but being a woman in a man's world may always be a challenge.





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Embrace the unknown. Challenge the dogma, the current concept.

Every patient is different, and remember that guidelines are there to guide you, not give you orders.

Ask for help; this skill I had to learn, and I am still learning. Build your village, and take care of it. Take care of yourself, and love yourself unconditionally.

"

of the Endocrine Society and have made some great friends there. So, the Endocrine Society has broadened my horizons and has also given me a number of very nice speaking opportunities at meetings. I'm very proud to be a member of the Endocrine Society, but I'm also very grateful to them.

**CARDOZO:** A major one. I became a Future Leaders Advancing Research in Endocrinology (FLARE) fellow during my endocrinology fellowship at the University of Mississippi Medical Center. Teresa Woodruff is my FLARE mentor. I am still in contact with Woodruff; I still share my fears, successes, and life challenges with her via email. The FLARE program believed in me during a critical moment in my career. I am a better physician, scientist, and person because I took the right opportunity at the right time. That is the FLARE program, the right program at the right time.

The **ENDO** meeting is one of my "home meetings;" it is extraordinary to go to a meeting where you can get the most relevant clinical updates as well as the latest discoveries in science. That is unique.

Until recently, I was a member of the Patient Advocacy Committee. That was a transformative experience. I felt my voice was amplified for my patients' benefit, a different sense of accomplishment that was amazing to experience. I am proud to have used my voice to advocate to reduce the cost of insulin for our patients, among other critical changes in favor of our patients.

**PINTO:** The Endocrine Society has provided opportunities for networking, collaboration, recognition from colleagues, and future career prospects.

**VELLA:** I had a mentor who was a member of the Endocrine Society, and that was my gateway in. I'm so glad it was the Endocrine Society because it's such a great organization. I've been on three committees now, chaired a committee, won travel grant awards for my abstracts . . . . The Endocrine Society has been awesome — my career would have been much different without it. I wouldn't have found my voice; I wouldn't be as assertive.

I've also found great friends through the Endocrine Society. We work on very different things, but it's a nice support group.



EN: What advice would you give to female endocrinologists just starting their careers? To women considering entering the field?

KAISER: It's a great field, and there are still so many unanswered questions. But it's a clinical field that suffers a little in terms of the value given to it as an evaluation and management specialty as opposed to the procedure-oriented specialties. I think it's unfortunate that people don't recognize the importance of disease prevention — for example, managing diabetes to prevent cardiovascular disease and reduce the number of procedures that patients might otherwise need. So, to women choosing endocrinology as their field, my advice is to advocate for the importance of the field and the recognition of the value that we provide to our patients and to medical care.

In terms of career development, lean in: be confident and advocate for yourself.

**WYSHAM:** This is a great field that has a lot to offer women. Clinically, the demand is so high that the wages are increasing, and many systems are willing to be more flexible in work hours, which is important to many (and not just women, but particularly women).

**VISSER:** Get involved in a society, whether it's the Endocrine Society or the European Society of Endocrinology, which is the other hat I wear. There are a lot of volunteer opportunities, small and large. Because of the additional training you get, you learn how to network and collaborate with others. Learning how to work with different personalities will help you later, for instance, if you become a group leader in academia or in industry. You will work with a diverse team on many levels. It also teaches you where your interest is. Start small; stay true to yourself.

**ONUMAH:** Endocrinology is a challenging but very gratifying specialty. It is the perfect blend of science and critical thinking. There are many career paths to choose from. As a clinical endocrinologist, I appreciate the long-term patient-physician relationships, which make practicing this specialty very rewarding. Particularly for women considering this field, endocrinology is a specialty that allows you to tailor your worklife and schedule to the different phases of life.



**GORE:** Network as much as possible, identify those people whose ideas and philosophies resonate with yours, and build a mentorship team.

**WU:** Surround yourself with a support network, and use every opportunity to lift each other higher.

**BOELAERT:** My advice is, go for it. It's an amazing specialty and very rewarding. It's very academic, which can provide challenges, but mainly provides opportunities and broadens your horizon. Knowing a lot of research makes you a better doctor not just because you give information to patients, but you can also learn from patients about what's important to them. I think this is a very friendly and accommodating specialty — most of the people I've met are all very approachable and supportive.

Like I've said, I've had the good fortune of having inspiring role models. I see in many other specialties that sometimes people can be self-important and self-centered, but because some of these endocrinologic conditions are quite rare, if you want reasonable patient cohorts and materials, you need collaboration and team science. So, it's a bit of a self-fulfilling prophecy that endocrinology attracts such nice people. It lends itself to collaboration, and, similarly, a lot of it is reliant on the collection of real-world data and the analysis of large databases.

**CARDOZO:** To those who are just starting: I doubted myself a lot during my first years of practice. Endocrinology is a complex specialty; those feedback mechanisms are complicated! And sometimes difficult to remember. Embrace the unknown. Challenge the dogma, the current concept. Every patient is different, and remember that guidelines are there to guide you, not give you orders. Ask for help; this skill I had to learn, and I am still learning. Build your village, and take care of it. Take care of yourself, and love yourself unconditionally.

To those considering entering: Do it!!

**PINTO:** Is this your passion? Go ahead. Please, have self-respect, make the most of your time and develop the skills that are challenging you in the development of your career. Stay on top of technology, trends, etc. Don't worry about quantity but about the quality of your work. Impact depends on the value you create.

**VELLA:** Endocrinology is a female-friendly area of medicine, and there are more women than men entering the field. Find your mentors; never stop looking for them. Anyone can be a mentor. Peer-to-peer mentorship, for example, is invaluable. The Endocrine Society has also been helpful, providing interactions with people at all levels. So, utilize your professional society because they have people whose roles are to facilitate building relationships. It's not a solo science anymore; you have to have a professional work team but also a support team.

#### EN: What is next for you in endocrinology?

KAISER: I'm very happy with where my career has taken me and with what I'm doing now. So, I'd say that what's next for me is trying to leave a good legacy and helping to train the next generation of scientists, particularly physician-scientists.

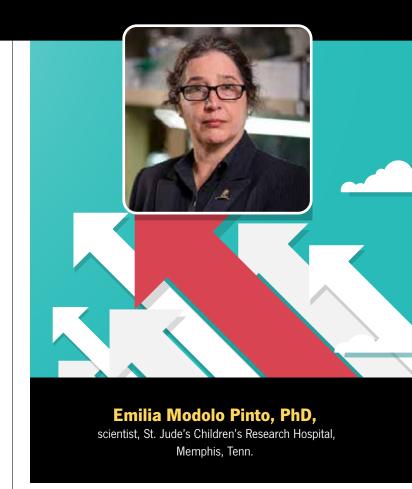
WYSHAM: For me, what's next in endocrinology is more of the same, and, perhaps in addition, working on pipeline, mentorship, and education.

**VISSER:** My group is still growing. We're in transition to a new governance structure at our department, so I'm really focused on strengthening collaboration between my clinical colleagues and doing important translational science to have an impact for patients. For instance, our research can contribute to which patients are eligible for the new obesity drugs. Also, I hope we'll get closer to understanding the etiology of PCOS. How can we contribute so that the clinician can provide better care? That's where we'll be going in the next three to five years. And who knows what's in line for me at the Endocrine Society as well — I love to stay involved because it's been quite a fun route so far.

**ONUMAH:** I hope to continue the things that I enjoy the most about endocrinology, which are taking care of patients and teaching students, residents, and fellows.

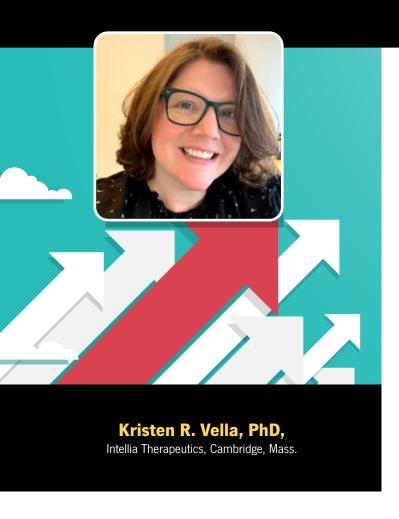
**WU:** I recently became the first woman and the first minority to serve as division chief of endocrinology at Stanford. I am excited about the opportunity to support and grow our clinical, research, education, and community outreach missions here in the coming years.

**BOELAERT:** Next for me are some leadership roles: I'm about to become president of the British Thyroid Association, and I have just taken up the post of chair of the clinical committee



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It's not about valuing women over men but exploring the qualities and skills that we have for the benefit of all. It's an opportunity to make an impact with my voice, my perspective, my knowledge, and my passion.



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Different mentors have different strengths, and not everyone is going to have an answer to the problem you're facing. Sometimes you're going to have to figure it out on your own, but there are people who support you and understand that you're going through a tough decision. I think it's good to have a good support network.

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of the British Endocrine Society. We're also about to start a big U.K.-centered trial on radiofrequency ablation of thyroid nodules from a National Health Service perspective, which often is a lot about health economics and cost effectiveness.

I then have several projects looking at weight gain in patients getting treatment for hyperthyroidism and what the implications are.

I do hope that at some point I'll have some more leadership roles within the Endocrine Society and within other societies.

**CARDOZO:** Next for me is continuing to grow as a physician-scientist, to make a difference "one patient at a time."

**PINTO:** I will continue to work with more basic questions in pediatric adrenocortical tumorigenesis.

**VELLA:** For now, navigating this transition. I don't know what's next, but I like where I am right now. I have these big ideas, but they aren't fleshed out yet.

#### EN: What do you hope your legacy will be?

**KAISER:** The Endocrine Society is such a valuable organization that has had a tremendous impact on my career and also on me as a person. I've made so many friends through both the Endocrine Society and Women in Endocrinology. So, I hope to help ensure that there continues to be support for women physician-scientists and to train the next generation of women leaders.

**WYSHAM:** Although I don't think of a legacy much, probably the most important are our two children (oldest is 40), who have trained to be very capable, compassionate physicians in their own right. I have to say, to have my name listed along with many luminaries who have served as president of the Endocrine Society makes me proud.

**VISSER:** I hope to have an impact on patients through our research contributions. I am a basic scientist, so getting more insight into mechanisms is very important, but then to translate those insights back to the clinic would be really nice. I'd also like to be a role model and say, "yes, you can make it in science." I want to support students, and when they reflect back on their career,



Kristen Vella, PhD, presents her research during the Knock Out Rounds at **ENDO 2016**, where she took first prize.

they remember how I helped them to grow more confidence or showed them that they have a particular passion. I want to pay it forward the way my mentors did for me. I quite like to supervise these students and postdocs, sharing any knowledge that I can pass on to the next generation.

**ONUMAH:** I would like to be remembered as a compassionate and caring human being.

**GORE:** I hope that all the great work being done on environmental endocrine-disrupting chemicals by the community of endocrine researchers, clinicians, and advocates, of which I am a small part, will lead to safer food and water and better health and quality of life.

**WU:** I hope I will be remembered as a champion for bone health, endocrinologists, physician-scientists, and women and underrepresented groups in medicine.

**BOELAERT:** I have written a lot of guidelines for patients, so I do hope that some of that will be a legacy in what is seen as evidence-based care for patients and ideally an individualized patient-centric care model where one can actually make a difference to patients. I do a lot of work with patient organizations because I think that's really important. I'm heavily involved with the British Thyroid Foundation, and I would like to be seen as someone improves patient care. I did a lot of laboratory research initially in my career, and I really liked that

and what came out of that. It built the foundation of a program, which I am still involved with, albeit from the fringes. I've learned in my career that I like research that directly impacts patient care. I know it's important that we understand the basis of diseases and what underlies it all, but I feel I'm better suited to things that may actually make a difference more quickly to patients. I hope I'm seen as a good endocrinologist who made a difference for patients, who did some important research, and who mentored people who had hurdles to overcome. I don't have all the answers on how to do that, but I may have some.

Society President Ursula B. Kaiser, MD, addresses the All SIG

Reception at ENDO 2022 in Atlanta, Ga.

**CARDOZO:** In endocrinology, I hope that discoveries from my lab will help thousands of patients one day. As a physician and mom, I want to inspire my two girls to work hard and fight the "good fight." Several years ago, I heard someone define success "as improving a human condition." I want to live my life following that principle.

**PINTO:** I hope that when I look back, I can be proud of myself for all my accomplishments as a researcher. Not only my academic contribution but how hard it was to get here. How much commitment, dedication, patience, persistence, stress and so much passion... . I hope my legacy will be my values, memories, friendship, passion, and respect.

**VELLA:** Part of it is, when they test drugs and medications, to remember that just because it works well in a man doesn't mean it's going to work well in a woman or in someone who's not a white American. So, we need to think about inclusivity: inclusion in medicine, inclusion in science, inclusion in research. We need to make sure that drugs are developed with inclusive testing. That's something I am very passionate about. I hope people know that I'm a champion for inclusivity.

**BY DEREK BAGLEY** 



The Remarkable
Life and Career
of Rosalyn
Yalow, PhD

# A Determination TO SUCCEED

Rosalyn Yalow, PhD, became the first woman to serve as the Endocrine Society's president in 1977, the same vear she received the Nobel Prize for Physiology or Medicine for developing the radioimmunoassay technique for hormone measurement. Endocrine News salutes this notable "grand dame of science" with a look at her life and career, as well as her impact on generations of endocrinologists.

n her Banquet Speech in Stockholm to receive the 1977 Nobel Prize for Physiology or Medicine, Rosalyn Yalow, PhD, wrote: "We cannot expect in the immediate future that all women who seek it will achieve full equality of opportunity. But if women are to start moving towards that goal, we must believe in ourselves or no one else will believe in us; we must match our aspirations with the competence, courage, and determination to succeed; and we must feel a personal responsibility to ease the path for those who come afterwards. The world cannot afford the loss of the talents of half its people if we are to solve the many problems which beset us."

Yalow, of course, won the Nobel for her work with Solomon Berson, MD, developing the radioimmunoassay (RIA) technique to detect and measure hormones, among other substances — a technique that's fair to say revolutionized medicine, first allowing scientists and physicians to measure insulin, and then expanded to test for HIV, cancers, drug concentrations, and much more.

The speech — a copy of which is displayed in the Endocrine Society offices in Washington, D.C. - ends with Yalow acknowledging that the next generation of scientists and physicians inherits the previous generation's knowledge and problems alike, and calls on both generations to join hands to "work together for their solution so that your world will be better than ours and the world of your children even better."

The Nobel Prize in Physiology or Medicine 1977 was divided, one half jointly to Roger Guillemin and Andrew V. Schally "for their discoveries concerning the peptide hormone production of the brain" and the other half to Yalow "for the development of radioimmunoassays of peptide hormones." (Berson had passed away; the Nobel Prize is not awarded posthumously.)

The Nobel Prize in Physiology or Medicine 1977 was divided, one half jointly to Roger Guillemin (center) and Andrew V. Schally (right) "for their discoveries concerning the peptide hormone production of the brain" and the other half to Rosalyn Yalow "for the development of radioimmunoassays of peptide hormones."





**66** Insulin was the hormone most readily available in a highly purified form. In studying the reaction of insulin with antibodies, we appreciated that we had developed a tool with the potential for measuring circulating insulin .... Thus the era of radioimmunoassay (RIA) can be said to have begun in 1959."

> - ROSALYN YALOW, PHD, FROM HER OFFICIAL NOBEL PRIZE BIOGRAPHY

Endocrine Society President Ursula B. Kaiser, MD, chief of the Division of Endocrinology, Diabetes, and Hypertension; George W. Thorn, MD, Distinguished Chair in Endocrinology; and director of the Brigham Research Institute at Brigham and Women's Hospital, as well as professor of medicine at Harvard Medical School, Boston, Mass., says that it was Yalow's radioimmunoassays that allowed Drs. Guillemin and Schally to purify and isolate hypothalamic neuropeptides such as GnRH (also known as LHRH). "Dr. Yalow had a tremendous influence on my career," Kaiser says. "My research focus during my fellowship was on how varying frequencies of pulsatile GnRH differentially regulated LH and FSH, based in large part on the work of Yalow, Schally, and Guillemin, and the subsequent elegant studies of pulsatile GnRH done by Ernst Knobil. Dr. Yalow was also a tremendous role model for women in science!"

#### A "Backdoor" Route to Science

Yalow was born in New York City in 1921, to parents who had no formal education to speak of themselves but were determined to see their children attend college. By Yalow's account, she wanted to pursue a career in physics, but her family thought she should be an elementary school teacher. Even the "backdoor" route that she used to start taking graduate courses came with the condition that she take stenography classes.

But by February 1941, she was offered a teaching assistantship in physics at the University of Illinois in Champaign-Urbana. "I tore up my stenography books, stayed on as secretary until June and during the summer took two tuition-free physics courses under government auspices at New York University," she wrote for her Nobel autobiography.

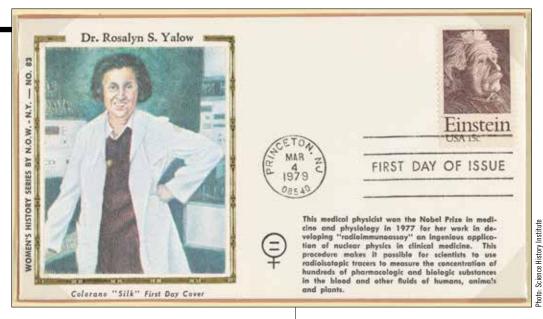
Yalow was aware of the timing. World War II meant that with so many men overseas fighting, graduate schools were in danger of sitting empty. According to writer and lecturer Randi Hutter Epstein, MD, MPH, who detailed some of Yalow's life and work in her book Aroused: The History of Hormones and How They Control Just about Everything, Yalow would later say, "They had to have a war so I could get a PhD and a job in physics."

#### 1959: The RIA Era Begins

It's almost poetic that Yalow was born in 1921, the same year as the discovery of insulin. In 1947, Yalow joined the Bronx Veterans Administration Hospital as a part-time consultant, and by 1950, she joined the VA full time. There, she met Berson, where their first work was on using radioisotopes in blood volume determination, diagnosing thyroid diseases, and the kinetics of iodine metabolism. "It seemed obvious to apply these methods to smaller peptides, i.e., the hormones," Yalow wrote in her Nobel autobiography. "Insulin was the hormone most readily available in a highly purified form .... In studying the reaction of insulin with antibodies, we appreciated that we had developed a tool with the potential for measuring circulating insulin .... Thus the era of radioimmunoassay (RIA) can be said to have begun in 1959."

Andrea Gore, PhD, professor of pharmacology at the University of Texas (UT), tells Endocrine News that the RIA was the basis of her graduate work, which involved measuring pituitary and hypothalamic hormones in guinea pigs and monkeys. "Back in the day the instrument used to count the radioactivity (an index of how much

hormone was in the sample) was connected to a dot matrix printer that churned out the results," she says. "As the printout started emerging, I would hover over it like a vulture — I could tell from the first 20 tubes or so whether the assay worked. I will never forget that feeling of nerves while waiting to see if all of my hard work had paid off."



Ann Owen, MD, says she also remembers the effects of Yalow's contribution. "My mother had her hypothyroidism diagnosed in the 1950s by getting her basal metabolism measured in one of those famous old contraptions," she says. "When I entered medical school, we were taught that RIA was coming; it just wasn't available yet, and thyroid and pituitary diseases were much more difficult to evaluate in those days. By the 1980s, thanks to Professor Yalow's research, we could determine with much more certainty the measurements of the hormones we needed to know; RIA was coming into common practice."

"I do remember suspecting a thyroid receptor resistance problem in that era, when the patient's, and her family members' symptoms seemed obvious, but the thyroid functions were normal, if I remember correctly. We had not yet fully described



Cachet created by Colorano is a depiction of Rosalyn S. Yalow with text describing the work that earned her the 1977 Nobel Prize. Part of the Women's History Series (No. 83) by the National Organization for Women (New York Chapter).

Using an old janitor's closet for a laboratory, Solomon Berson, MD, and Rosalyn Yalow, PhD, teamed up to do groundbreaking research in techniques for the early detection of diseases, including radioimmunoassay, for which Yalow received the Nobel Prize.



Dr. Yalow had a tremendous influence on my career. My research focus during my fellowship was on how varying frequencies of pulsatile GnRH differentially regulated LH and FSH, based in large part on the work of Drs. Yalow, Schally and Guillemin, and the subsequent elegant studies of pulsatile **GnRH** done by Ernst Knobil. Dr. Yalow was also a tremendous role model for women in science!"

> - URSULA B. KAISER, MD, PRESIDENT, ENDOCRINE SOCIETY

receptors, qualitatively or quantitatively," Owen continues. "Our department head went on a search to see if by chance an old basal metabolic apparatus was abandoned in a hospital closet somewhere. He never found it. Thanks to Professor Yalow, we had entered the modern era of thyroid measurement with RIA, and there was no turning back."

#### A "Grand Dame" of Science

In the September 2022 issue of *Endocrine News*, several members shared their memories of **ENDO** conferences past. One of the memories that stood out to Owen was seeing Yalow in the halls of the conference center, offering encouragement to other female researchers and endocrinologists in attendance, making good on her promise of collaborating with and championing the next generation, the next women to discover and develop the next revolution in research.

"Her presence at so many Endocrine Society meetings, where she was always smiling and exuding pleasantness and acceptance, impressed me greatly in those days when women were definitely not equal, especially in medicine," Owen says. "She made women feel welcome; she led the way in believing that research was interesting, and that we women could do it. It wasn't something that she questioned."

Gore remembers Yalow as a "grand dame" of science, an impressive presence, a passionate advocate for the truth. When Gore was a graduate student at the University of Wisconsin, Yalow visited and talked about treating cattle with growth hormone (GH) to stimulate milk production.

"There was a prevailing myth that GH in milk would have effects on humans who consumed it," Gore says. "Of course, that is nonsense because any residual GH would be digested in the stomach. Dr. Yalow was on a campaign to dispel that misinformation about GH in milk. This story is so relevant to current times, when there is so much misinformation out there, and it's so important for credible scientific voices to set the record straight. I remember not understanding why she was so passionate about this issue. Now I understand."

Epstein writes that Yalow had a sign in her laboratory with a quote attributed to renowned feminist and mayor of Ottawa, Canada (the first female mayor of any Canadian city), Charlotte Whitton: "For a woman to get half as much credit as a man, she has to work twice as hard, and be twice as smart. Fortunately, that isn't difficult." [The punchline was added by Yalow!]

Yalow shared a lot with the woman whose words she lived by. Yalow was the first female Endocrine Society president, paving the way for many more female presidents, including the current one, Kaiser. A visionary, a revolutionary, and a trailblazer, not just in science, but an early and significant volley against the glass ceiling.

Yalow passed away in 2011 at the age of 90 after a revered life at the bench and beyond.

- BAGLEY IS THE SENIOR EDITOR OF *ENDOCRINE NEWS*. IN THE FEBRUARY ISSUE, HE SPOKE WITH PAST ENDOCRINE SOCIETY PRESIDENT RICHARD J. SANTEN, MD, ABOUT HOW CLINICIANS CAN CONTINUE TO SEE PATIENTS EVEN AFTER THEY RETIRE USING TELEMEDICINE TECHNOLOGY.



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# Balancing

# How Dequina Nicholas, PhD, Pays It Forward ... with Interest!

an women in the world of endocrinology research have it all? Can they lead a successful lab, earn top funding awards, and start a family early in their careers? In her everyday life, Dequina Nicholas, PhD, shows that, unequivocally yes, all of it is definitely possible. But it wasn't until Nicholas met a mentor who was managing it all that she really believed it was possible for her, too.

Nicholas is an assistant professor in the Department of Molecular Biology and Biochemistry at the University of California, Irvine, who became the principal investigator (PI) of her lab in 2021. After graduating magna cum laude from Southern Adventist University in 2009, she earned her PhD in biochemistry from Loma Linda University, followed by two postdoctoral fellowships.

At UC Irvine, the Nicholas Lab buzzes with 19 team members who work toward the goal of improving diabetes care by unlocking the mysteries of the impact of immune cells on metabolism and reproduction. In 2022, Nicholas' work was recognized with the National Institute of Health (NIH) Director's New Innovator Award from the National Institute of Allergy and Infectious Diseases.

In between long research hours in the lab, Nicholas works to change the culture of lab collaboration. Her Twitter account reads like a 101 course on surviving not only being a young PI but also a scientist of color. It's everything from tips on how to manage time and submitting R01 grants ("#grantwriting") to the joys of making the broccoli dinner requested by her 2-year-old daughter.

*Endocrine News* spoke with Nicholas about how she successfully juggles multiple roles and embraces her culture all while mentoring everyone who needs it under a basic life creed: Pay it forward ... with interest.

Endocrine News: Let's back up a bit before your educational career and talk about how you landed here. I read that your mother struggled with type 2 diabetes and that sparked your interest in the disease. Is that when you knew science or research would be your career path?

**Nicholas:** First, to set everything up, my hometown is Pensacola, Fla., but both my parents are immigrants. My dad came here from Dominica, and my mom's from Jamaica. They didn't really have any idea how the higher education system worked



I want to win a Nobel Prize, to be the first Black woman in medicine to win a Nobel Prize and then change the minds of people so that when they think 'scientist,' it's not a surprise to them that a Black woman is a scientist. I need it to be the norm that scientists can look any type of way."

in the U.S., but culturally they very much value education. So, the message was you've got to get an education. That's how you get ahead in life and that's why we moved to the United States.

I was a chemistry major in undergrad, but I still had no clue what I wanted to do, but I'm super ambitious. So, I went through the honors program, and as part of the honors program you have to do research. I was basically working with acids and alcohols and found the topic incredibly boring. I didn't enjoy the topic I was researching but thought the process of research was amazing. I fell in love with it.

But I still didn't know what I was going to do with my life. Everybody said, obviously you can go to medical school because every single child of an immigrant parent is supposed to go to medical school, you know the American dream. So once again, I got a little bit of experience. I shadowed in an emergency room, and it was cold, all the walls were white, and everybody's sick. I can't do this. Medicine was not for me, but once again, I still loved science. Long story short, my mom's friend's brother happened to be a professor at Loma Linda University. This is a small, private institution that doesn't have a very large research program, but they're pretty well resourced. So, my parents had me talk to him, and he asked me if I was interested in research, and he told me I could do research as a career. I told him that I did research in undergrad, and it was fun and I loved that I could make my own schedule.

He said if I wanted to do research as a career, I had to get a PhD, and I didn't know what that was either. He told me to take the GRE and put in an application that was due in two months. So, I signed up for the next GRE, didn't do great, but I did well

enough to get into the program, and that was the only program I applied to. I was not the most competitive applicant, but God made a way. So that's how I got into graduate school.

In graduate school, they told us you have to rotate through labs and figure out what it is you want to research. I knew what I cared about. My mom has diabetes. My grandma has diabetes. I know it's coming for me, and I wanted to understand how it works. So, eventually I rotated through a lab that was studying diabetes, and I knew I wanted to land there. Little did I know that there are two types of diabetes: type 1 and type 2. I had no idea there were two different kinds. And you can see that through my whole journey, there's just a lot of naivety. I learned as I was going, and this is part of the struggle for any first-generation scholar. As I've gone through my entire journey, my heart has really gone out to those who are trying to navigate this and don't have anyone to tell them what to expect next or even how to be a competitive applicant.

It seems like almost every step in my career I had to figure out stuff after everyone else did, and I hated that feeling. How does everyone else around me know what's going on but me?

EN: You call it naivety, but I think it's just not having doors open for you that many other people do, especially students of color. Can you talk about other mentors who were really important to you, and why you feel it's so important to return the favor to young researchers or students coming behind you?

**Nicholas:** Every step of my career I've had people who have gone out of their way to make sure that I am supported and that I am successful. My grad student mentor at Loma Linda

Nicholas Lab members in front of their research poster at the Institute for Immunology Fair, at UC Irvine in 2022. Pictured (I to r) are: Julio Angulo, Zena Del Mundo, Gabriela Sanchez, Christopher Castro-Garcia, Pauniz Shabakesaz, Dequina Nicholas, Naveena Ujagar, Miranda Lopez, Trupti Sriram, and Josue Gonzalez.



was Dr. William Langridge. Our relationship didn't start out close, but by the time I was graduating, he was supporting me in more than just my science. I can work hard, right, but then life happens. Dr. Langridge came to my dance recitals because I was doing salsa dancing in grad school. When I had a really bad breakup, I sat in his office and cried. He hugged me and said 'you are going to get through this. You are going to be okay.' He even helped my boyfriend, now my husband, set up a Valentine's surprise for me in the lab. It was little things, but he saw me as a whole person and not just as somebody doing research in the lab.

#### **EN**: That type of support is so important.

Nicholas: Yes it is, and this really does attest to why I think it's important to see the student and not just see the work that they're producing. Dr. Kimberly Payne is one of my late mentors at Loma Linda, and I owe her so much. There was a time in grad school where I was going through food insecurity. She noticed that I would come to lunch with my friends, but I wasn't eating anything. Dr. Payne thought "this is not like Dequina, why is she not eating?" Because she knew I liked to cook and always had food, but at that time in my life, I basically had to choose between paying my rent or buying groceries.

Dr. Payne started coming to me saying, "Dequina, I accidentally left this extra food in the freezer. You can have it if you want." So, when she noticed I was eating the food, she knew something was going on with me. She took me aside and set me up with a food pantry. Essentially, I would just get bags of groceries every other week, and I was so very grateful for her supporting me.

EN: And she did something for you that you may have never done for yourself. But she noticed a change and helped you privately. That is really huge.

Nicholas: It is. A third mentor, Dr. Mark Lawson, really taught me how to have fun and prioritize people over products. So those three mentors have done a lot in shaping how I mentor my students now. I let them know when we first start that in my lab, we are hyper-familiar, and if you're uncomfortable with that let us know. I want to know about you as a person and you will know about me as a person. I will share stuff about my family life. They know about my husband and my kid. I know about them. If something happens, we want to be able to support each other. This lab, our community, is a safe space. I've had those safe spaces, and I need my students and mentees to have that same type of safe space.

Another one of my favorite mentors is Dr. Barb Nikolazyk. Once I got into grad school, you very quickly notice when you're the "only." You go to a conference, and you feel like you don't belong. And I had decided from a young age that I wanted a family, but the messaging was very clear that you can't have a family, be a good mom, and also be an awesome scientist. The messaging was very scary. Even simple stuff like, if I change my last name what does that do to my career? And I realized these are big issues that I needed to face, and I really wanted a mentor who understood these issues. I would look and didn't see these women. Where are the women who are top of their field, getting top grant money, all the while raising kids and enjoying their lives?

So, I met Barb because Dr. Payne asked me to pick Barb up from the airport when she was coming to give a talk. So, I picked Barb up from the airport, and the first thing she says when she gets in the car, "Hi, Dr. Payne said a lot of great things about you. I can't wait to go to the Grand Canyon with my kids." She had planned to do all these fun family things, and it was blowing my mind because I knew her from her work. I knew her papers. I knew where she was in the field, and I'm thinking this is exactly the type of mentor I want in my career and in my life.

I later did my postdoc in her lab at Boston University, and she lived up to all my expectations. She made a point to show me the politics behind the job. How faculty talk to each other, and what is going on behind the scenes. Basically, she wanted me to never be disillusioned with the career path that I had chosen, and I loved that. So once again, I'm now very transparent with my own students, too. I want them to know these are things to talk about at faculty meetings. This is how politics works around you. Not so that they're a burden but that they understand this is the environment we are in.

Barb is the one who helped me build my self-confidence. Because you have all different intersectionalities, right. I'm



Nicholas and her husband, Ricardo Alvarado, always make time for big and small celebrations with their daughter, Nairi.

a woman in science. I'm Black. So, you have to navigate all of those things, and now I'm a mom in science, but I saw how she did it, how she coped with it. I can ask her questions about it. She is unapologetically herself.

That was eye-opening to me because I was a little bit careful about how much of my Blackness to share. How much of myself do I share? I want to be my authentic self in any space where I am. When I went on the job market interviewing, it was so much easier after having had her mentorship and guidance to know I wanted to work at an institution that accepts me for who I am. I don't want to be in a place where I feel like I must pretend to be somebody else.

#### EN: And UC Irvine gives you that?

**Nicholas:** Irvine gives me that 100%. I came here to interview, and the faculty made me feel like a colleague. Made me feel like my opinion matters, and they still do that to this day. Everything they say about DEI, for instance, they back up with actions. But everyone is trying, and people actually care.

EN: I love that your Twitter bio says "scientist" and "don't be surprised." Tell me what you mean by that.

**Nicholas:** I think very long term. My long-term goal is by the time I'm 50-whatever, I would have had a long career in science. I want to win a Nobel Prize, to be the first Black woman in medicine to win a Nobel Prize and then change the minds of people so that when they think 'scientist,' it's not a surprise to them that a Black woman is a scientist. I need it to be the norm that scientists can look any type of way. Historically, all the people who have been credited with major scientific discoveries have all been white men.

As a society, we must change minds and show that everyone can do science. And do it well. This is why I am going to climb to the top. The person on the top has the power to enact that change so I've got to get to the top as fast as I can. That's the goal.

EN: Let's talk about the Nicholas Lab. Endocrine News has interviewed many young investigators who are leading their first lab and they talk about the challenges of getting started after the funding grant is approved.



It seems like almost every step in my career I had to figure out stuff after everyone else did, and I hated that feeling. How does everyone else around me know what's going on but me?"

That often there's not much support for learning how to hire a team, or order supplies. How have you navigated these challenges? What stands out as the first couple of things that you had to overcome as a new PI?

**Nicholas:** So that is a very interesting question because by the time I got this position, I had been wanting this for so long, I already knew what I wanted to do. I had plans outlined. I very much became an over-planner, maybe to compensate for me always feeling like I was behind everybody else.

First of all, I picked an institution that gave junior investigators a lot of support. Before even coming on this campus, I had administrative support who explained how to order supplies, hire staff, how to do human resources. So, I don't feel like I ran into any substantial challenges that I hadn't planned for already.

I guess what I couldn't have anticipated of not feeling good enough when you first start. The fear of going from having mentors to running things by to, no, I'm it. I'm in charge. It took me a couple of months to recognize that all my training, everything I've done, has prepared me for what I'm undertaking right now.

One story: There were a couple new PIs, and they were trying to figure out how to get blood samples. I told them we're going to have a 30-minute meeting, and I'm going walk you through every single step. This way it takes them 10 minutes instead of a couple of days with a whole bunch of email chains to figure it

out. I want to stop the mentality of 'I figured it out, so you need to figure it out, too.' I want the thinking to be 'I figured it out, so let's make it easier for the next person.'

EN: I hope anyone who reads this and who is in your position will be motivated by that thinking, that they might think, 'I could do that on my campus.'

Nicholas: It's like every single person who's ever helped you, pay it forward and then some. Pay it forward with interest.

EN: Can you talk about your investigations, and what are your five-year or 10-year research goals?

Nicholas: My research actually divides into two sides that are interconnected. We basically study chronic inflammation and



Nicholas at the bench in the Nicholas Lab at UC Irvine.

endocrine disease. One endocrine disease is type 2 diabetes, and you know from my background why I want to study diabetes. Another endocrine disease is polycystic ovary syndrome (PCOS). In general, women's health and these diseases are understudied, and PCOS is one of those.

So much money has been poured into understanding diabetes, how it's occurring, treatment, etc., all stuff like that, especially type 2 diabetes, which affects so many people. There's chronic inflammation associated with diabetes. We believe this is upstream of insulin resistance. In mice, we can cure diabetes over and over again. It's great. Scientists curing mouse diabetes. But this inflammation that we see in humans is different from mice, and we have no idea what's causing it. I was recently funded with a Director's Innovator Award, to basically investigate the causes of the inflammation. Our lab proposes that there's lipid-specific interactions of the immune system that can drive insulin resistance.

So, our goal over the next five years is to lay a foundation for, first of all, the ability of the human immune system to recognize lipids and what these outcomes look like in human health. And then also how this can be a driver of type 2 diabetes. Then beyond that understanding, I want to allow us to develop immunotherapies that actually help reduce blood sugar, actually help neuropathies, help get this chronic inflammation in people under control.

So, on the other side of my lab we study PCOS. Interestingly, we discovered a whole bunch of immune cells in the pituitary,

and we know that if you get rid of these immune cells in mice then you dysregulate reproductive hormones. So, our whole goal is to understand how the immune system is interacting with hormone production. Hopefully, with more understanding, we can use this to develop immunotherapies for PCOS.

EN: You're not just a scientist. You're a motivator, teacher, and mentor. How do you do it all? How do you do your research, care for a toddler at home, and have family life? And Tweet!

Nicholas: I get asked this question a lot. Of course, there's give and take amongst things. I do a lot, and I juggle a lot, so you do have to prioritize. You must be very organized and work efficiently. So, if I'm up late at night writing a grant and the words are coming slowly, I stop and get some sleep. I think, I'll do it later when I can get it all written down. I also have dedicated space and time when I normally Tweet to maintain a social media presence. I queue the Tweets at night when I'm lying down with the baby because I can't do anything else and then usually around 9 a.m., in transit, I'll shoot off the Tweet. If I'm walking to a meeting across campus, that's five minutes when I can shoot off a Tweet about something that happened during the day. So, I'm not sitting down taking 10 minutes of my precious time and crafting Tweets. That's not efficient.

I also use a lot of calendar blocking for the really, really important things. Then I provide myself with a lot of flexibility in my day. With that said, I've also learned to delegate and



Nicholas at ENDO 2022 in Atlanta. Ga., in June. which she referred to as her "happy place" in a Tweet.

Read more about the work of the Nicholas Lab at: https:// nicholaslab.bio.uci.edu. And follow Nicholas on Twitter @QuinaScience.

Members of the Nicholas Lab team (I to r): Naveena Ujagar, Sizhe Wang, Rubina Kapadia, Josue Gonzalez, Dequina Nicholas, Priscilla Rose Lopez, Christopher Castro-Garcia. Chantal de la Cruz, Gabriela de Robles, and Christy Nguyen.



ask for help. That's been one of the most important things for launching new endeavors. One of my students and I are trying to build an LLC called 1st Gen in Stem. So, we have the groundwork laid out for it.

In general, I do have a very high capacity, and part of it is that I get so much joy from my work. I love what I do. I would not trade it for anything in the world.

EN: Loving your work is key to keeping you moving. I saw you Tweeted a photo of you and your team going hiking. That's showing that keeping that healthy balance is so important.

**Nicholas:** It really is. I love doing active things. I love that my lab team is social, and they talk to each other. We did renovations in the lab before I came in, and I told the planners that I wanted open seating so students could sit in a way that makes them want to talk to each other. People may think if you're not focusing and being quiet, that you're not getting work done. Not true. I want my team to feel like they can talk and have a good time while doing their work.

The Nicholas Lab team on a hike as part of Nicholas' philosophy on the importance of "knowing the whole person."

Building those personal connections and relationships lets them know they can support each other, they can trust each other — not just with their personal lives but with the experiments they're there to create. It's about knowing the whole person.



## **Endocrine Society Advocacy Update**

'e are only a few months into 2023, but the Endocrine Society has been busy advocating for its members. The Endocrine Society has traveled near (to Capitol Hill) and far (to Brussels and Bangkok) to advocate for our policy priorities, which include improved research, treatment, and prevention of diabetes; awareness of endocrine-related research, opportunities, advancements, and gaps; increased National Institutes of Health (NIH) funding for the fiscal year 2024; and better endocrine-disrupting chemical (EDC) regulations in the European Union (EU) and around the globe.

Here's a look back at what we've done and a look ahead at what we are planning to do in just a few of our policy areas:

#### Endocrine Research and NIH Funding

In January, Endocrine Society members met with staff at the National Institute of Mental Health and the National Institute of Aging to discuss the Society's research interests, opportunities, and advancements that fall within the institutes' missions. As a result of these meetings, we were able to influence internal review panels to ensure that endocrinology is represented. We also advocated for women's health research and hosted a congressional reception supporting the Office of Research on Women's Health (ORWH) in collaboration with the Friends of ORWH.

The Endocrine Society will advocate for \$51 billion for the NIH - a number that was determined by the broad research community and reflects a 2.3% increase for biomedical inflation, plus a 5.0% increase for base funding. As we advocate for increased NIH funding, we will continue to call attention to endocrine-related research, opportunities, advancements, and gaps. In March, we will submit testimony to the House and Senate Appropriations Committees sharing examples of the value of endocrine-related research and the need for increased funding. In April, we will conduct a Hill Day during which Society members will meet with congressional offices to advocate for increased funding for biomedical research and highlight the need to support diabetes prevention programs and the Special Diabetes Program. In the spring, we will also launch an online advocacy campaign for our U.S. members to join and share our message about the importance of increasing support for the NIH and endocrine-related research.

#### **EDC Regulation**

In February, a group of European Society members met with EU policymakers in Brussels, Belgium, including Members of the European Parliament, European Commission officials, and representatives from Member States Permanent Representations to present the science about the harm EDCs cause to human health and to urge policymakers to advance regulatory and legislative actions that will better regulate EDCs. As a result of these meetings, the European



**Endocrine Society scientists** and EDC experts met with the senior staff of the Environment, Health, and Industry Cabinet to discuss the impacts of EDCs on human health. Pictured with EU Commission Officials is Mariana Fernandex (3rd from left); Anne-Simone Parent (4th from right); Ana Soto (3rd from right): and Paloma Alonso-Magdalena (right end).

Parliament announced that it will advance the legislation that establishes the hazard classes proposed by the European Commission. With the establishment of these classes, the EU will then look to the United Nations and Organization for Economic Development and Cooperation for adoption of the hazard classes in the global harmonized system (GHS) of classification and labeling of chemicals. We will continue to ensure that implementation of these classes minimizes exposure to harmful EDCs with the goal of improved public health.

The Endocrine Society is also active at the United Nations Environment Programme and participated in a meeting in Bangkok, Thailand, to enhance the interface between scientists and chemicals policy by establishing a Science Policy-Panel (SPP). Society member Scott Belcher, PhD, delivered a statement on behalf of the Endocrine Society supporting the positions of Member States that have emphasized the need to implement robust instruments to ensure transparency, independence, and conflict-free activities, especially as it relates to definition of scope and function of the SPP and selection of SPP membership. The Society will continue to engage with the work group as it establishes the framework and operations of the SPP to ensure that the panel's outputs incorporate the expertise of endocrine scientists and develop policy proposals that improve endocrine health by reducing exposure to hazardous chemicals.

#### Obesity

The Endocrine Society has made addressing obesity a top priority. Consequently, we are addressing this issue through advocacy. We are conducting a special initiative to educate members of Congress about obesity so that they will be better informed when they consider obesity-related legislation, including coverage of obesity medication, obesity-related research, obesity prevention, health disparities, and social determinants of health. During Obesity Care Week, we will distribute an "Obesity Playbook" to all members of Congress with information about obesity. We also are planning educational obesity briefings for Congress. In addition to our congressional activities, we also have been working with the Food and Drug Administration's Office on Drug Shortages to resolve recent shortages of semaglitude.

#### Diabetes

The Endocrine Society is a lead advocate for the Special Diabetes Program (SDP), a federal program composed of two entities

- the Special Diabetes Program for Type 1 Diabetes and the Special Diabetes Program for Indians. Congress created these programs in 1997 to advance research for type 1 diabetes at the National Institute of Diabetes and Digestive and Kidney Disorders and to provide treatment and education programs for type 2 diabetes among American Indians and Alaska Natives. Each program currently receives \$150 million a year.

Despite the SDP's success and bipartisan support, the program is in jeopardy. Funding for SDP will expire on September 30 unless Congress passes legislation to reauthorize the program. The Endocrine Society is working with the leaders of the Congressional Diabetes Caucus to ensure that this Congress prioritizes reauthorizing the SDP. We are urging Congress to pass a long-term extension with the highest funding possible. We also continue to be a lead advocate for making insulin affordable. Last year, the Society successfully advocated to cap the cost of insulin at \$35 a month for people with Medicare. This year, we continue to advocate to expand that cap to people with private insurance, and we were especially pleased when President Biden included our messages about insulin affordability and expanding the cap in his State of the Union address. We are meeting with congressional leaders to urge action in addition to meeting with the White House to discuss policy options.

In the spring, we will conduct a diabetes-focused Hill Day during which Society members will have an opportunity to talk about these issues with their representatives and senators, and we will also launch online advocacy campaigns for our U.S. members to share these messages with their congressional delegations.

In addition to the areas above, the Society continues to advocate for access to gender-affirming care, access to women's healthcare, the impact of climate change on endocrine health, and physician payment issues. We will provide additional details on these topics in future issues of *Endocrine News*.

The Endocrine Society relies on our members' voices to advocate for our policy priorities. Throughout 2023, there will be opportunities for members to participate in campaigns, Hill Days, meetings with elected officials, and other advocacy activities that support endocrinology research, care, professionals, and patients. With help from our members, we believe that we really will be able to influence the policies affecting endocrine-related research and practice.

## **Endocrine Society Drives Global EDC Regulatory Efforts**

s experts in the field of endocrine-disrupting chemicals (EDCs), our members have an opportunity to advise policymakers around the world as they work to address the environmental and public health impacts of hazardous chemicals.

In February, the Endocrine Society took a group of its members who are experts in EDCs to Brussels, Belgium, to urge lawmakers to advance and implement regulatory proposals that will minimize exposure to hazardous EDCs in commerce. We met with Members of the European Parliament, European Commission officials, and staff from Member State Permanent Representations to advocate for swift implementation of a proposal, which includes a new hazard class for EDCs, to update the European Union (EU) regulation on Classification, Labeling, and Packaging (CLP).

We also asked policymakers to advance proposals for the regulation on legislation known as Registration, Evaluation, and Authorization of Chemicals (REACH) that would introduce restrictions on EDCs following from the hazard classes established in the CLP proposal. On the final day of our meetings, the chair of the Society's EU EDC Task Force, Anne-Simone Parent, MD, PhD, delivered statements at a European Commission meeting on the implementation of the EU Chemicals Strategy for Sustainability emphasizing these priorities as part of a harmonized regulatory approach that will create a sustainable approach to chemicals management that prioritizes human health.

Responses to our meetings were encouraging. Following our visits, we learned that the CLP proposal would not be objected to by the Parliament, removing a potential barrier to rapid implementation of this regulation. Staff from the Environment Directorate also reiterated their intention to deliver REACH proposals by June 2023, so that the Commission and Parliament can act on them during the current term. While the EU continues to lead the way on addressing EDC exposures through better regulation, it has also prepared initiatives to include the new EDC hazard classes in the Global Harmonized System to help advance a truly global regulatory framework for EDC regulation. Therefore, our participation on relevant bodies such as the United Nations Environment Programme (UNEP) and Organization for Economic Cooperation and Development (OECD) is particularly critical at this juncture to maximize our impact.

As a UNEP-accredited organization, earlier this year Endocrine Society members Marina Fernandez, PhD, and Leonardo Trasande, MD, MPP, attended the first meeting of the International Negotiating Committee to develop an international legally binding instrument on plastic pollution. The meeting in Punta del Este, Uruguay, provided the first opportunity for Member States and non-governmental organizations to lay the framework for a global treaty that reduces plastic pollution. Our statements during the plenary sessions and contributions to ancillary meetings emphasized that the treaty should be recognized as a global public health treaty, and an opportunity to reduce exposures to hazardous





EDCs in plastics. We encouraged participants to consider, as negotiations proceed, developing milestones that target reductions in plastic production and longitudinal scientific assessments of the body burden of chemicals in plastics, with particular attention to workers and communities with disproportionate exposures. We also stressed our ability to provide scientific and technical expertise given our members' unique knowledge of the health effects of chemicals in plastics.

Following the plastics treaty meeting, and while our European delegation was navigating the corridors in Brussels, Scott Belcher, PhD, was in Bangkok, Thailand, as part of a UNEP meeting to develop a panel to enhance the science-policy interface for chemicals and waste. The meeting aimed to clarify the scope and functions of the panel, and Belcher encouraged participants to establish clear and consistent policies governing conflicts of interest to ensure that the panel can deliver unbiased information for policymakers around the world about the health impacts of chemical pollution.

All of these activities follow decades of research by endocrine scientists and years of advocacy by the Endocrine Society. As lawmakers grapple with the scientific details of endocrine disruption and design solutions to reduce harm to populations, we will continue to provide science-based, policy-relevant resources, and position our members to serve as trusted advisors to decision makers.





# SAVE THE DATE

### CLINICAL ENDOCRINOLOGY UPDATE

SEPTEMBER 21-23, 2023 ONLINE EVENT

STAY UP TO DATE ON NEW ADVANCEMENTS IN HORMONE CARE

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