ENDO 2020 PREVIEW: YOU SHOULD BE GOING TO SAN FRANCISCO

THE LEADING MAGAZINE FOR _____ ENDOCRINOLOGISTS

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INTERNATIONAL

DECEMBER 2019

ENDOCRINE INNOVATIONS

A Year of **Groundbreaking Science**

Endocrine science has proven once again that it is on the leading edge of new discoveries that will result in improving the lives of patients around the world for generations to come. Endocrine Society journal editors share their top picks for the biggest advances in endocrine research.

SHOOTING STARS:

The FLARE program's impact on endocrinology

POST PRANDIAL GLUCOSE MANAGEMENT:

Simple ways patients with diabetes can regulate glucose levels after meals



Hormone Science to Health

Endocrine

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Hormone Science to Health

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Wrapping Up a Year of Outstanding Accomplishments

s we approach the end of the year, I look back with a deep sense of appreciation to our members and Society staff, at all the accomplishments of the year. I began my presidential term after ENDO 2019, where the board approved the Governance Task Force (GTF) recommendations to implement several important governance changes, such as expansion of the Nominating Committee, enhancement of the Call for Nominations process, and selection of the open Board at large and early-career representative positions by the Nominating Committee. I am pleased to report that all these changes have been implemented successfully. You have seen a slate of new members to the board, and by the time that you read this, the results of the president-elect ballot would have been announced. Moreover, we have also enhanced our member profiles to improve our ability to better understand your interests and to help us to more easily identify opportunities for our members to serve.

In May, the Annual Meeting Steering Committee met to develop a robust and diverse program for ENDO 2020. I am excited by the lineup of outstanding Plenary lectures. Building upon last year's successful initiatives — including the Science Pathways, Guided Posters and the Session Viewing Lounge — we are expanding the Science Pathways and accompanying networking receptions adding diabetes and metabolism to the existing lineup of neuroendocrinology, nuclear receptors and gene regulation, and reproductive endocrinology. The strong clinical program will feature several debates, master clinician sessions, and two-person Meet-the-Professor sessions. I am grateful for the hard work of the conference co-chairs, Carolyn Smith, Stephen Hammes, David D'Alessio, and Maralyn Druce. I am excited to share the great news about the total number of abstract submissions, which has surpassed our expectations and currently stands at 2,213. I look forward to welcoming all of you to San Francisco, California, next March!

The CEU meetings in Miami, Florida, and Seattle, Washington, were also record-breaking meetings, with a combined attendance of 807 participants who benefited from a comprehensive program in both venues. The Endocrine Board Review (EBR), held in Seattle in conjunction with the CEU, was also a very well-attended event with 259 participants. I am grateful for the hard work of the CEU and EBR conference chairs, Marc-Andre Cornier and Serge Jabbour, and all the speakers.

Our advocacy efforts continue moving forward. Two separate Capitol Hill visits were conducted in September. We co-sponsored the Rally for Medical Research Hill Day on September 19, which successfully encouraged Congress to continue to support NIH funding. On September 23, our members met with lawmakers on Capitol Hill to advocate for insulin affordability, renewal of the Special Diabetes Program, and expanded coverage for telehealth services provided by endocrinologists.

In early December, our European Union EDC task force is meeting in Brussels, Belgium, to participate in a briefing in the European Parliament about the potential adverse effects of EDCs. They will also meet with their members of Parliament to discuss the science driving our policy recommendations for stricter regulation.

Our journals are thriving. Incoming JCEM editor-in-chief, Paul Stewart, MD, FRCP, and his global editorial team began receiving new submissions in early September at the strong rate of more than 235 a month, while the combined submissions across all journals have increased by 12% over the last two years, to more than 4,250 manuscripts a year. Our business and strategic partnership with Oxford University Press, initiated in 2017, to host, produce, print, promote, and

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We continue to strengthen our global outreach by collaborating with local endocrine organizations in the following countries: Argentina, Brazil, India, Peru, Philippines, Sri Lanka, and Turkey. We embrace our growing international membership as we support the needs of endocrinologists worldwide.

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sell our journals continues to yield significant growth in our journals' circulation, which now extends to 172 countries. We have seen a 75% increase in library subscriptions worldwide since 2016 — from 4,451 to 7,800. Approximately 8,000 nonprofit research institutions in over 100 developing countries — 70% in Africa, 9% in Europe, and the remaining 21% in South East Asia and Oceania, Asia, and South America — are eligible for discounted or free online access to JCEM, *Endocrinology*, and *Endocrine Reviews*; and, of course, our Open Access journal, *Journal of the Endocrine Society*, is free to read online everywhere.

We continue to strengthen our global outreach by collaborating with local endocrine organizations in the following countries: Argentina, Brazil, India, Peru, Philippines, Sri Lanka, and Turkey. We embrace our growing international membership as we support the needs of endocrinologists worldwide.

The media coverage in 2019 has increased exponentially. There have been more than 5,700 news stories that have featured our work so far this year, including pieces in the *New York Times*, CNN, BBC News, *Time* magazine, United Press International, *Everyday Health*, and *New Scientist*.

This is just a brief summary of the many ongoing and some of the new initiatives and programs that are being developed by our dedicated members and our talented staff. I would like to take this opportunity to thank members and staff for their hard work and to wish everyone a wonderful holiday season, looking forward to a New Year full of hope, optimism, and energy. Happy Holidays!

Thanks to all of you who have helped advance these efforts. Your voice is a critical component in the advocacy work we do, and we hope more of you will get involved. To learn more about how you can participate, please contact us at **advocacy@endocrine.org**.

E. Dale Abel, MB, BS, DPhil, MD, PhD President, Endocrine Society FROM THE EDITOR



Highlighting the Year in Endocrine Discoveries

s 2019 comes to a close, we wrap up the year with two articles that provide a somewhat comprehensive overview of what took place over the course of the year from an endocrine science and treatment perspective.

2019 was no different from previous years in terms of endocrine research breakthroughs. For the fifth consecutive year, we are running "Eureka! The Year's Biggest Discoveries in Endocrine Science." This topic has proved to be so popular in the past that we decided to make this an annual feature (p. 24). This year's roundup is put together by Kelly Horvath who spoke with several editors from the Endocrine Society's own scientific journals for their input on new breakthroughs that could easily affect the future of endocrine science for years to come.

On page 46, Glenda Fauntleroy Shaw discusses the history of the Endocrine Society's Future Leaders Advancing Research in Endocrinology (FLARE) program, which has singlehandedly changed the face of endocrinology due to its valiant efforts to increase underrepresented minority participation in the U.S. "Getting involved in FLARE taught me that it's never too late to share your gifts and talent with the world," says Bryan Wilson, PhD, MBA, regional medical scientific director for cardiovascular sciences, Merck Research Laboratories, New Orleans, La. "When you're a trainee in development, we sometimes feel as if our talents aren't good enough. However, people are actually anticipating authenticity and eagerly want to learn from our experiences and perspectives."

After the Endocrine Society convened an expert panel to discuss the challenges of maintaining blood glucose levels after meals and published the results in October in the *Journal of the Endocrine Society*, we felt it was vitally important to include these findings in *Endocrine News*. In "The Challenge of Postprandial Glucose Management in Diabetes" on page 52, Eric Seaborg details what the panel identified as some lifestyle and nutritional steps patients can take, as well as a look at a variety of treatments and new technologies. According to panel chair John L. Leahy, MD, cochief, Division of Endocrinology, Diabetes, and Metabolism, University of Vermont Medical Center, Colchester, "the expert group was not willing to choose specific blood glucose goals, duration goals, or time-in-range goals without more evidence. We need to spend the next several years clearly

Endocrine news

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defining those things, so we can get to a place where we truly understand the basis of healthy blood glucose control."

As 2020 approaches, that means that **ENDO 2020** is closer than you think! Taking place in San Francisco from March 28 to 31, there's no time like the present to start planning your trip. And if you're anything like me, when you travel you need to have as many things planned as possible before

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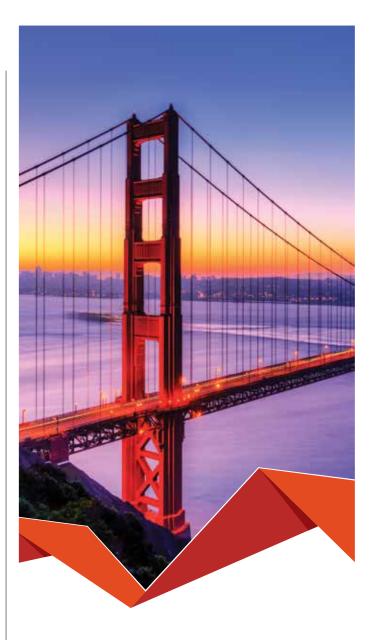
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you board that plane, train, or automobile, so that's why we have included a comprehensive look at San Francisco in this issue. We've included a San Francisco travelogue on page 37 by Courtney Carson that we hope will give you plenty of ideas of how to spend your time after the scientific sessions have ended. (And once again, tickets to *Hamilton* are available during **ENDO 2020**!)

As usual, if you have your own treatment or research stories to share with the readers of *Endocrine News*, feel free to contact me at **mnewman@endocrine.org.**

- Mark A. Newman, Editor, Endocrine News





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INTOUCH

EndoBridge[®] 2019: Seven Years of Solidarity in the World of Hormones



he seventh annual meeting of EndoBridge[®] took place October 24 — 27, 2019, in Antalya, Turkey, co-hosted by the Endocrine Society and European Society of Endocrinology in collaboration with the Society of Endocrinology and Metabolism of Turkey.

The meeting was held in English with simultaneous translation into Russian, Arabic, and Turkish and accredited by the European Accreditation Council for Continuing Medical Education (EACCME). The three-day scientific program included state-of-the-art lectures by world-renown experts and interactive discussion sessions of challenging and interesting clinical cases covering all aspects of endocrinology.



"We had 680 delegates from 41 countries and over 100 case presentations this year," says Bulent Yildiz, MD, a faculty member at Hacettepe University School of Medicine in Ankara, Turkey, and the founder and president of EndoBridge^{*}. "As usual, the meeting provided excellent opportunities for learning, collaboration and networking in a welcoming environment. Our annual meeting has now become one of the highlights of the year in the hormone world."

According to Christopher Urena, the Endocrine Society's chief learning officer, EndoBridge 2019 was an incredible opportunity to collaborate with and learn from colleagues across the globe. "This conference epitomizes 'bridging' the practice of endocrinology from all corners of the planet to advance clinical practice and patient outcomes," he says. "We're a global community committed



to a common cause and together we stand united and strong."

The eighth EndoBridge^{*} will be held in Antalya, Turkey, October 22 — 25, 2020. Further information can be found at **www. endobridge.org**.



custody case in Texas has sparked heated debate and embroiled state policy makers in public discussions about the diagnosis and appropriate medical treatment of transgender children.

Unfortunately, many of the claims being made about genderaffirming care for transgender and gender-incongruent individuals are inaccurate. Policies concerning the diagnosis and treatment of transgender individuals should be based on science, not politics.

Claims that a transgender child would receive surgical or irreversible hormonal treatment do not reflect the reality of medical practice. The Endocrine Society's *Clinical Practice Guideline*, which sets the standard of care for transgender individuals, recommends avoiding hormone therapy for transgender children prior to puberty. The guideline is co-sponsored by the American Association of Clinical Endocrinologists, American Society of Andrology, European Society for Paediatric Endocrinology, European Society of Endocrinology, Pediatric Endocrine Society, and the World Professional Association for Transgender Health.

As noted in the Endocrine Society's evidence-based guideline, transgender individuals, both children and adults, should be encouraged to experience living in the new gender role and assess whether this improves their quality of life. Mental health care is recommended throughout this process, and only a mental health professional with training or experience in childhood and adolescent gender development should make a diagnosis of gender incongruence in a child or teenager.

Endocrine Society Urges Policy Makers to Follow Science on Transgender Health

Transgender individuals who are denied care from a healthcare provider are more likely to report having suicidal thoughts and suicide attempts, according to an analysis of the 2015 U.S. Transgender Survey of adults released last month. Among individuals who were refused gender-affirming care in the previous year, 62.0% reported experiencing thoughts of suicide and 14.4% attempted suicide. Nearly half of transgender individuals who were rejected by their family have attempted suicide, while 33% who were not rejected attempted suicide.

Over the past few decades, understanding of gender identity has rapidly expanded. Considerable scientific evidence has emerged demonstrating a durable biological element underlying gender identity. There do not seem to be external forces that genuinely cause individuals to change gender identity. The Endocrine Society called for policies to reflect this reality in our position statement on transgender health.

The custody case has prompted a Texas state policy maker to announce plans to introduce legislation that would prohibit the use of puberty blockers for children under the age of 18. This proposal defies best medical practices.

Suppressing puberty is fully reversible, and it gives individuals experiencing gender incongruence more time to explore their options and to live out their gender identity before they undergo hormone or surgical treatment. Research has found puberty suppression in this population improves psychological functioning. Blocking pubertal hormones early in puberty also prevents a teenager from developing irreversible secondary sex characteristics, such as facial hair and breast growth.

It is critical that transgender individuals have access to the appropriate treatment and care to ensure their health and wellbeing. $\textcircled{\label{eq:stable}}$



BY DEREK BAGLEY Senior Editor



Metreleptin supplementation improved her serum triglyceride and lipoprotein profiles, with reductions in the VLDL and IDL cholesterol fractions.

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Case Study Illuminates Metreleptin's Possible Role in Improving Lipid and Glycemic Profiles

esearchers in Japan have detailed a case report in which a young woman who survived childhood cancer was treated with metreleptin supplementation to improve her acquired incomplete lipodystrophy and published their findings in the *Journal of the Endocrine Society*.

The researchers, led by Ayako Nagayama, MD, and Kenji Ashida, MD, PhD, (Nomura Laboratory) of Kurume University School of Medicine in Fukuoka, Japan, point out that childhood cancer survivors (CCSs) often have impaired glucose tolerance and hypertriglyceridemia as later complications of the total-body irradiation they had as children to treat their cancers. "These patients typically do not have a history of obesity, and they exhibit high-grade insulin resistance, fatty liver, and high mortality from cardiovascular disease," the authors write. "Therefore, such cases are considered to be acquired incomplete lipodystrophy, which is thought to be associated with total-body irradiation and hematopoietic stem cell transplantation."

Metreleptin, a recombinant leptin analog, is indicated for treating the complications of leptin deficiency in patients with generalized lipodystrophy, but the administration of metreleptin as a supplement in patients with incomplete lipodystrophy has not been reported. That is until these authors treated a female patient with acquired incomplete lipodystrophy, likely caused by total-body irradiation and allogeneic stem-cell transplantation for lymphocytic leukemia.

The patient in this case presented to the hospital with diabetes and hypertriglyceridemia at 24 years of age. When she was three, she was diagnosed with acute lymphocytic leukemia. Three years later, she underwent total-body irradiation and allogeneic stem cell transplantation to treat her cancer, which worked, but then at 11 years old, she was diagnosed with the hypertriglyceridemia and diabetes mellitus.

When the authors administered metreleptin

(initially 0.04 mg/kg daily for one week, then 0.08 mg/kg daily subcutaneous injections), it immediately regulated her appetite and reduced her food intake, and at one month, the patient revealed remarkable improvements in her serum lipid profile and vitality.

"We report a case of young female childhood cancer survivor complicated with acquired incomplete lipodystrophy," Ashida says. "Her lipoprotein profile was changed by one-month metreleptin administration. In addition, improvement of the peripheral glucose sensitivity was disclosed after six-month initiation by the glucose cramp method. We intended to indicate that the leptin secreted from adipose tissues regulate serum and ectopic organ, including liver and skeletal muscles, lipid contents."

The authors provide three plausible explanations for how leptin supplementation improved this patient's lipid and glycemic profiles, and indeed in future patients: High serum triglyceride levels might indicate reduced leptin activity, similar to generalized lipodystrophy; leptin may activate residual brown adipose tissue via the central nervous system, which could promote LPL (lipoprotein lipase) activity and plasma triglyceride clearance; and leptin activity may be reduced in atrophic fat tissue after radiation therapy, as systemic irradiation therapy can induce abnormalities in adipose tissue differentiation from mesenchymal stem cells.

Findings: "In conclusion, we encountered a patient with acquired incomplete lipodystrophy that was likely related to total-body irradiation," the authors write. "Metreleptin supplementation improved her serum triglyceride and lipoprotein profiles, with reductions in the VLDL and IDL cholesterol fractions. Furthermore, metreleptin supplementation ameliorated the disturbed insulin sensitivity. These findings suggest that metreleptin supplementation may be a useful alternative therapy."

esearchers have identified a protein kinase that controls weight and homeostasis and when deficient or inactivated can lead to metabolic diseases like obesity and type 2 diabetes, according to a mouse study recently published in *Endocrinology*.

Researchers led by Eiichi Hinoi of the Laboratory of Pharmacology in the Department of Bioactive Molecules at Gifu Pharmaceutical University in Gifu, Japan, point out that an imbalance between energy intake and energy expenditure can lead to certain metabolic diseases like obesity and type 2 diabetes, which have become worldwide epidemics.

According to the authors, insulin helps to maintain body weight and energy metabolism through phosphoinositide 3-kinase (PI3K) and mitogen-activated protein kinase (MAPK), the major pathways involved in insulin receptor (IR) signaling. "Moreover, leptin also modulates various



cellular functions of hypothalamic leptin receptor (LepR)-expressing neurons and coordinates metabolic parameters, such as energy intake, energy expenditure, and glucose homeostasis, via the Janus tyrosine kinase signal transducer and activator of transcription (STAT), PI3K, and MAPK signaling pathways," they write.

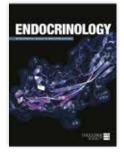
Extracellular signal-regulated kinase 5 (Erk5) is a member of the MAPK family and has been linked to odor discrimination and long-term memory, but little is known about how neuronal Erk5 affects body weight and homeostasis, so the researchers sought to reveal Erk5's role in homeostasis through expression in the central nervous system (CNS). They used LepR-Cre mice,

Protein Kinase Revealed to Regulate Body Weight and Energy Homeostasis

in which Cre recombinase is specifically expressed in LepR neurons involved in metabolisms that are abundantly localised in hypothalamus in the CNS. "Using specific Erk5-deficient mice with LepR-Cre, we [show] that Erk5 in LepR-expressing neurons contributes to body weight and systemic energy balance maintenance, and demonstrate a novel target for metabolic diseases such as obesity and type 2 diabetes," the authors write.

The researchers injected insulin into the mice, which induced phosphorylation of Erk5 in the hypothalamus. Moreover, Erk5 deficiency in leptin receptor (LepR)-expressing neurons led to an obesity phenotype, with an increased white adipose tissue mass due to increased adipocyte size only in female mice fed a normal chow diet. "Furthermore, Erk5 deficiency in LepR-expressing neurons showed impaired glucose tolerance along with decreased physical activity, food intake, and energy expenditure," the authors write.

Findings: Based on their findings, the authors conclude that Erk5 controls body weight and energy homeostasis and could potentially be a novel target for metabolic diseases like obesity and type 2 diabetes. "Our findings may contribute to improving our understanding of the molecular mechanisms underlying the central control of body weight and energy homeostasis via hypothalamic neurons, and the manipulation of neuronal Mek5/ Erk5 axis is a plausible strategy for coordinating a sophisticated balance between energy intake and energy expenditure required for protection against obesity and a variety of obesity-related metabolic diseases in humans," the authors write.



Erk5 deficiency in LepR-expressing neurons showed impaired glucose tolerance along with decreased physical activity, food intake, and energy expenditure.

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I AM ENDOCRINOLOGY

Reproduction, Hormones, and Bones

BY CHRISTOPHER S. KOVACS, MD, FRCPC, FACP, FACE, UNIVERSITY RESEARCH PROFESSOR, (Endocrinology and Metabolism), Obstetrics and Gynecology, and BioMedical Sciences, Memorial University of Newfoundland, St. John's, Newfoundland, Canada

remember well the key events that made me become an endocrinologist.

I first decided in second year medicine at Queen's University in Canada, when we learned about endocrinology. I was fascinated by the thermostatic control of each endocrine gland and how with clever insight or detective work an endocrinologist could determine exactly where the problem lay. I was also struck by how other specialties, in their zealous focus on one organ or system, could miss the big picture. The same patient can present to the cardiologist with atrial fibrillation, to the neurologist with tremors, or to the gastroenterologist with weight loss and frequent motions, and be investigated and treated solely for those respective, organ-specific symptoms. But to the endocrinologist, who appreciates that hormones rule everything, the diagnosis of hyperthyroidism is obvious.

Then as an intern in internal medicine (PGY-1 in current lingo) at Queen's, I worked with the late Edmund Yendt,

#IAMENDOCRINOLOGY

NAME: Christopher S. Kovacs, MD, FRCPC, FACP, FACE AFFILIATION: Memorial University of Newfoundland, St. John's, Newfoundland, Canada

MENTORS: Edmund R. Yendt, MD; Constance L. Chik, MD, PhD; Anthony K. Ho, PhD; Henry M. Kronenberg, MD; and T. John Martin, MD HOW HAS THE ENDOCRINE SOCIETY SUPPORTED YOU IN YOUR CAREER? The Endocrine Society has been a home base for me since I joined as an in-training member in 1993; they gave me one of my first young investigator awards in 1996. I return to ENDO every year to refresh my knowledge. MD, endocrinologist and clinician scientist. He focused on disorders of bone and mineral metabolism, especially hyperparathyroidism and kidney stones, and had his own research laboratory. Suddenly, I had gained a specific focus, role model, and mentor. But I didn't yet believe that I was capable of doing research and settled instead on writing case reports.

Those embryonic steps delivered me to the University of Alberta for a clinical fellowship in endocrinology and metabolism, where I met Connie Chik, MD, PhD, (pituitary endocrinologist and clinician scientist) and her husband Tony Ho, PhD, (physiologist). Under their tutelage, I began bench research by studying signal transduction induced by bone-relevant hormones in pituitary and pineal cells. With Dr. Chik's help I designed, secured funding, and carried out a clinical observational study of calcium and bone metabolism in breastfeeding women. My two years in Alberta yielded three research papers (two basic and one clinical - that appeared in JCEM). I'd been thoroughly transfixed with the clinician scientist virus, and my career path was set. I had become fascinated by the effects of pregnancy and breastfeeding on bone and mineral metabolism, and the recently discovered hormone PTHrP.

Those successes spurred me on to secure funding for a postdoctoral fellowship from the Medical Research Council of Canada (now Canadian Institutes of Health Research). That brought me to Harvard Medical School and Massachusetts General Hospital, where Henry "Hank" Kronenberg, MD, became my supervisor and another key

If you would like to share your story with our readers around the world, contact Editor Mark A. Newman at **mnewman@endocrine.org**. **EDITOR'S NOTE:** The opinions and views of the author do not necessarily represent those of *Endocrine News* or the Endocrine Society. Share your stories, photos, and experiences on social media using the hashtag **#IAmEndocrinology**. Don't forget to tag **@Endocrine_News** and **@TheEndoSociety** on Twitter. mentor. He first tasked me to study calcium physiology in fetuses that lacked PTHrP, which was only a small shift in focus from pregnancy and lactation. Little was known about calcium and bone metabolism during fetal development. Very quickly our studies established some of the roles that PTHrP, PTH, and the calcium-sensing receptor play during fetal development.

My training gave me varied experiences in clinical and basic/translational research, bone and mineral metabolism, pregnancy and lactation, and fetal and neonatal development. Along the way, presentations and awards at international conferences (including **ENDO** and ASBMR) led to new collaborations and friendships, and another key mentor in T. John "Jack" Martin, MD, from the University of Melbourne.

I've been a clinician scientist at Memorial University of Newfoundland in Canada since November 1997. I've maintained my interests in the clinic (focused on osteoporosis and disorders of mineral metabolism), in clinical research (osteoporosis, bone metabolism during pregnancy/lactation, and diabetes), and in basic/translational research (bone metabolism during pregnancy, lactation, and fetal/neonatal development). I'm a mentor and supervisor of medical and graduate students; in turn, their enthusiasm and successes inspire me. The Canadian Institutes of Health Research have continued to support my research, with at least 25 years of continuous support now secured.

Things go full circle from bench to bedside and back again. I'm often asked by clinicians from around the globe for advice about the management of hyperparathyroidism or hypoparathyroidism during pregnancy. Some colleagues tell me that I'm the international expert on bone metabolism during pregnancy and lactation, while others say that I'm the expert on that subject during fetal and neonatal development. I've written comprehensive reviews and chapters in both areas. I'm often mistaken for an obstetrician/gynecologist or a neonatologist. But no, I'm an adult endocrinologist who is endlessly fascinated by the adaptations in mineral and bone metabolism during the reproductive periods.

When Elsevier asked if I could think of any textbook subject that they were missing, I pointed out the obvious gap: Most

endocrine texts devote a few lines to pregnancy, if at all. And that's why I'm now chief editor of the recently published *Maternal-Fetal and Neonatal Endocrinology: Physiology, Pathophysiology, and Clinical Management*, which features

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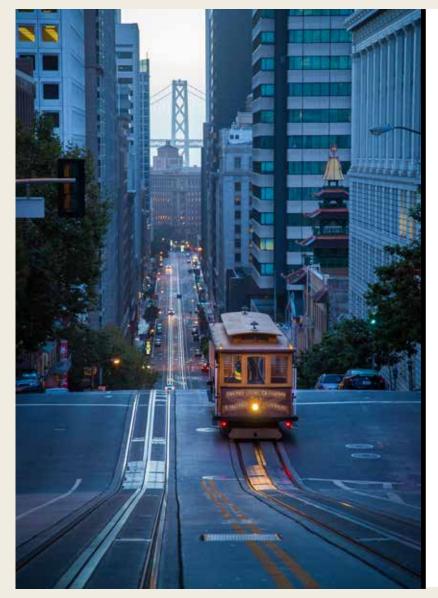
I first decided in second year medicine at Queen's University in Canada, when we learned about endocrinology. I was fascinated by the thermostatic control of each endocrine gland and how with clever insight or detective work an endocrinologist could determine exactly where the problem lay.

110 authors and 53 chapters. The book reflects my career interests, spanning basic through translational to clinical knowledge of endocrine physiology and disorders (plus artwork, but that's another story).

It seems only a few years ago that thermostats and hormones first fascinated me.

Somewhere along the way, people began telling me that endocrinology is the most difficult and cerebral of all specialties, which few can understand. It's a frequently repeated mantra from non-endocrinologists. No, they're all wrong. I just nod sagely and don't disabuse them. To me, endocrinology is easy and the most fun. And I haven't stopped having fun since that second year of medical school.

ENDOCRINE **ITINERARY**



ENDO 2020

San Francisco, California March 28 – 31, 2020

KEY DATES ADVANCE REGISTRATION: through December 12, 2019 LAST CALL ABSTRACTS: Opens Jan 9, 2020 HOUSING DEADLINE: March 3, 2020

With over 7,000 attendees, over 2,000 abstracts, and more than 200 sessions, ENDO 2020 is the leading global meeting for endocrinology research and clinical care. Join us for the most well attended and valued translational endocrinology meeting in the world. Bringing together leading experts, researchers, and the most respected clinicians in the field, ENDO 2020 represents a convergence of science and practice that highlights and facilitates breakthrough discoveries in the field of endocrinology. Spend time connecting with peers and colleagues, exchanging ideas and information, and getting out in front of the latest trends and advancements in hormone health. The meeting also hosts other satellite and pre-conference events.

www.endocrine.org/endo2020

5th NY Masters Course in Comprehensive Endocrine Surgery

New York, New York December 12 – 13, 2019

The Masters Course in Comprehensive Endocrine Surgery will review a wide range of endocrine surgery topics in an interactive setting involving didactic and panel discussions. Basic topics include thyroid, parathyroid, adrenal, and pancreatic disorders, with sessions focused on familial and neuroendocrine topics with an emphasis on current trends in endocrinology and techniques in minimally invasive surgery. At the end of each session, a case presentation and panel discussion will take place allowing for dialogue between the audience and faculty.

www.mssm.cloud-cme.com/NYendo19

Miami Thyroid Oncology Symposium Miami, Florida

March 13 – 14, 2020 Organized by the Miami Cancer Research Center, the 4th Annual Miami Thyroid Oncology Symposium will begin with a course on the essentials of clinical genomics that aims to provide a strong foundation for practicing physicians and help them understand the evolving role of clinical molecular testing. There will be an oral/poster abstract presentation session, followed by an expert panel discussion on the first day, which will provide a platform for young physicians in training and all academic and practicing physicians to present and discuss their research work and clinical experience.

www.miamicancerresearch.org

ENDOCRINE **ITINERARY**

Clinical Endocrinology 2020

Boston, Massachusetts March 21 – 25, 2020

Harvard Medical School has selected over 40 faculty and outside experts to present up-to-date, evidencebased approaches to endocrine problems. This course will cover many topics including osteoporosis, diabetes, hypercholesterolemia, pituitary tumors, menopause, thyroid abnormalities, reproductive dysfunction, and a broad spectrum of other clinical problems in endocrinology.

www.endocrinology.hmscme.com

Endocrine Fellows Series: Type 1 Diabetes Care and Management San Francisco, California

March 24 – 26, 2020

Fellows Series: Type 1 Diabetes Care and Management is a comprehensive conference for adult and pediatric endocrine fellows interested in type 1 diabetes. A preconference event to **ENDO**, the unique and highly sought after program offers an opportunity to learn from leaders in the field through interactive sessions, small group discussions, and hands-on learning. The curriculum provides comprehensive education not typically taught in fellowship and opportunities to connect with thought-leaders and peers. www.endocrine.org/meetings-and-events/ fellows-conferences/t1d-fellows

American Association of Endocrine Surgeons 41st Annual Meeting Birmingham, Alabama

April 4 – 6, 2020

The American Association of Endocrine Surgeons (AAES) 41st Annual Meeting will feature symposia on wellness, diversity and inclusion, business in surgery, interesting case presentations, and a new quick shot poster session to allow more presenters to the podium. Additionally, the AAES will again host the Advanced Endocrine Surgery Course as an opportunity to review current standards in management of complex endocrine diseases, while engaging on a personal level with nationally recognized authorities in the field. www.endocrinesurgery.org

INTERNATIONAL ITINERARY

Diabetes Expo Asia Pacific – Global Summit on Diabetes and Endocrinology Bangkok, Thailand

January 27 – 28, 2020

The theme of the 2020 Diabetes Expo Asia Pacific will be "Novel Advancements in Diabetes and Endocrinology." The conference will look at various metabolic diseases and their complications including diabetic nephropathy, ophthalmology in diabetics, and diabetes skin complications. Tracks will also look at genetic mechanisms leading to endocrine disease, functional studies of genetic mutations that shed novel insights into the pathogenesis of endocrine disorders, and how the endocrine system regulates interactions with environmental stimuli. www.diabetesconference.endocrineconferences.com

Groningen Pituitary and Skullbase Symposium

Groningen, Netherlands

March 4 – 6, 2020

The Groningen Pituitary and Skullbase Symposium will look into the care and cure of patients with pituitary or skullbase pathology. The conference will focus on various aspects of pituitary and skullbase diseases. A national and international faculty will be present to elucidate on radiology, radiotherapy, endocrinology, surgery, and research topics.

www.gps-symposium.com

17th Biennial Congress of the Asian Association of Endocrine Surgeons – AsAES 2020

Melbourne, Australia

March 5 – 7, 2020

AsAES 2020: Controversies in Endocrine Surgery will focus on key areas of endocrine surgery including benign and malignant thyroid disease, parathyroid disease, and management of adrenal pathology. Partnering with the Endocrine Society of Australia — ESA, the symposia will offer a combined multidisciplinary program on Day 2, which will focus on areas of combined interest to both endocrine surgeons and endocrinologists.

www.asaes.com

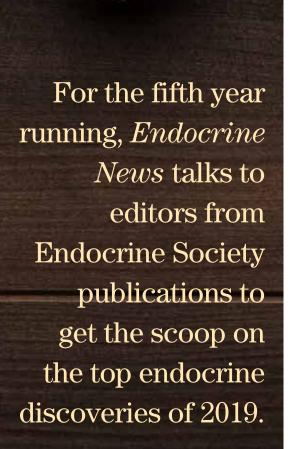
EMBO EMBL Symposium Inter-Organ Communication in Physiology and Disease

Heidelberg, Germany March 15 – 18, 2020

This symposium will showcase how sophisticated genetic approaches are transforming the understanding of physiology and reveal emerging paradigms of inter-organ communication relevant to metabolic homeostasis and disease. The conference aims to provide a high visibility platform to scientists who use modern molecular genetic tools to discover inter-organ communications to illustrate how much our molecular and genetic understanding of whole-organism physiology has progressed in the past 20 years.

www.embo-embl-symposia.org

BY KELLY HORVATH





hat science gold did researchers discover in the last year? In the field of endocrinology, they may have struck the mother

lode. This article compiles highlights from what stood out to editors from *Endocrinology, Endocrine Reviews, Journal of the Endocrine Society* (JES), and *The Journal of Clinical Endocrinology & Metabolism* (JCEM) as the most important endocrinology studies published this year.

This vital research ranges from discovering novel regulatory pathways to unmasking health threats to better understanding physiologic responses to environmental stimuli. The following important breakthroughs merit this best-of-year recognition and will ultimately lead to improvements in evaluation and treatment of endocrinopathies.

Rodent Studies Unlock Endocrine Secrets

Editor-in-chief Teresa K. Woodruff, PhD, professor of obstetrics and gynecology, medical social sciences, and medicine at the Feinberg School of Medicine at Northwestern University in Chicago, Ill., listed four papers of note from *Endocrinology*, two on metabolic health and two on development.

In "Sex Differences in Inflammatory Responses to Adipose Tissue Lipolysis in Diet-Induced Obesity," published in February, Singer, K., et. al., tease out a mechanism underlying sexual dimorphism in metabolic health. Chronic inflammation in obesity can lead to such serious complications



as type 2 diabetes, cardiovascular diseases, hypertension, and atherosclerosis. Females exhibit less inflammation in obesity from high-fat diets than do males, and the researchers posit that this difference could be mediated by sex-related variation in lipolytic metabolites. Using a mouse model, they demonstrated that females' enhanced ability to store gonadal white adipose tissue led to induced adipocyte remodeling.

Sudo, N., et. al., answer an important question about anorexia nervosa that until now had remained unclear. In "The Gut Microbiome Derived from Anorexia Nervosa Patients Impairs Weight Gain and Behavioral Performance in Female Mice," from October, they show that mice given microbiota from human patients with the restricting type of anorexia nervosa (as opposed to the binge-eating type) ate less and accordingly gained less weight than control mice; exhibited anxiety-related, compulsive behavior; and had lower brainstem serotonin levels. Their ability to convert ingested food to unit of body substance was also impaired. Thus, gut dysbiosis, specifically, lower concentrations of certain species of microorganisms, appears to be a driver of the metabolic and neuropsychiatric abnormalities in anorexia nervosa.

Tsukamura, H., et. al., further elucidate how estrogenic chemicals contribute to male infertility in "Neonatal Estrogen Causes Irreversible Male Infertility via Specific Suppressive Action on Hypothalamic Kiss1 Neurons" from May. Neonatal treatment with estradiol benzoate lasting 10 days resulted in smaller seminiferous tubules, abnormal spermatogenesis, and decreased plasma testosterone in adult male rats. Researchers report that this reproductive dysfunction is likely due to irreversible suppression of kisspeptin-neurokinin Bdynorphin A neurons in the arcuate nucleus from chronic estrogen exposure.

From August, "Transgenerational Bisphenol A Causes Deficits in Social Recognition and Alters Postsynaptic Density Genes in Mice" likewise looks at the effects of endocrine-disrupting chemicals on development. Rissman, E.F., et. al., bred secondgeneration mice exposed to bisphenol A (BPA) and examined the brains of the offspring with polymerase chain reaction (PCR) after observing their live behavior for a period.

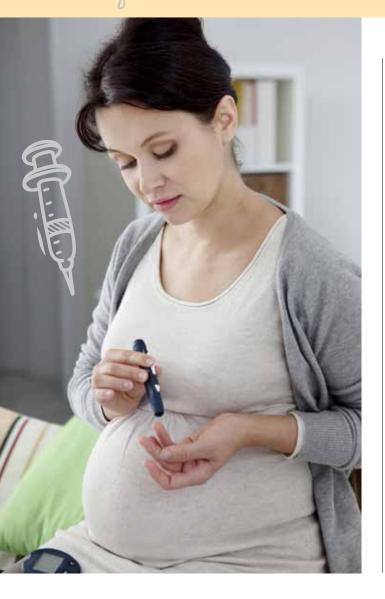
Mice whose great-grandmothers were exposed to BPA during pregnancy showed no curiosity about new mice introduced to the group, which is strikingly aberrant mouse behavior. The researchers found that BPA exposure in third-generation mice disrupted social interactions and caused abnormal expression of excitatory postsynaptic densities genes known to be associated with neurobehavioral disorders like autism and attention deficit hyperactivity disorder. These transgenerational effects of BPA exposure will therefore be seen for some time to come, even if BPA were banned today.

Diabetes, Generational Impact During Pregnancy

Endocrinology associate editor Patricia Brubaker, PhD, FRSC, professor, Departments of Physiology and Medicine at the University of Toronto, in Ontario, credits "Gestational Diabetes

E-cigarette use or vaping is on a daunting rise, particularly in youth with a misperception that it is safe. This study provides new evidence that vaping not only has unfavorable effects on a woman's ability to conceive, but it may also adversely influence future health of the newborn, probably through genetic and epigenetic mechanisms."

> - BÜLENT O. YILDIZ, MD, PROFESSOR, HACETTEPE UNIVERSITY SCHOOL OF MEDICINE, ANKARA, TURKEY; ASSOCIATE EDITOR, JOURNAL OF THE ENDOCRINE SOCIETY



Adversely Affects Pancreatic Islet Architecture and Function in the Male Rat Offspring" by Dolinsky, V.W., et. al., from August as worth highlighting. Prior studies have shown that exposure to diabetes during pregnancy impaired beta cell function in offspring and correlated with early-onset type 2 diabetes, possibly due to altered gene expression. For this study, researchers induced gestational diabetes mellitus (GDM) in female rats via diet to determine how GDM influences pancreatic islet structure and function in one-day-old neonates and in 15-week-olds (young adulthood).

In male offspring fed high-fat, high-sugar diets, insulin and glucagon secretion were significantly reduced. Thus, effects on islet gene expression were worse in male rats than they were on control in terms of inflammation, mitochondrial function/ oxidative stress resistance, and ribosomal proteins. "This study demonstrated, in a rat model, that gestational diabetes causes significant changes in islet gene expression that are linked to impaired glucose homeostasis in the adult offspring," Brubaker says. "The findings provide novel testable hypotheses that may help us to understand the generational impact of diabetes during pregnancy."

Unlocking the Secrets of FGF21

Finally, *Endocrinology* associate editor David Grattan, PhD, BSc, professor of neuroendocrinology at the University of Otago in Dunedin, New Zealand, chose "Fibroblast Growth Factor-21 Controls Dietary Protein Intake in Male Mice," by Ryan, K.K., et. al., from May.

Teplizumab, a drug that partially blocks a component of the immune response that destroys insulin-producing islet beta cells, delayed progression to clinical type 1 diabetes in high-risk participants.

This has been an elusive 'holy grail' type of result and should reenergize the science underlying the prevention of type 1 diabetes and efforts to preserve beta cell function in the face of an immune attack."

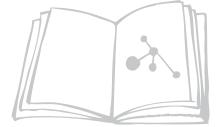
 DANIEL J. DRUCKER, MD, SENIOR SCIENTIST, LUNENFELD TANENBAUM RESEARCH INSTITUTE OF THE MT. SINAI HOSPITAL, TORONTO, ONTARIO; EDITOR-IN-CHIEF, ENDOCRINE REVIEWS In this study, researchers uncover the neuroendocrine mechanism that regulates dietary protein, which is not stored, unlike carbohydrates and fats. They propose that fibroblast growth factor-21 (FGF21), which is secreted in response to low protein or amino acid levels, is the likely candidate and conducted experiments to determine whether FGF21 would induce intake of carbohydrates or protein in male mice. FGF21 increased protein intake, while reducing carbohydrate and fat intake. The study suggests that hepatic FGF21 is secreted in times of protein restriction but not carbohydrate and fat restriction, signaling the brain that protein is needed.

"What I liked about this study was that it provided an insight into a previously unrecognized neuroendocrine feedback pathway regulating dietary protein intake. In doing so, it provided a clear explanation of the functions of a liver-derived hormone (FGF-21) that had been known about for some time, but for which a physiological context was lacking," Grattan explains. "Here they showed that the hormone was secreted in response to low protein, and that it acts in the brain to promote preferential intake of protein over carbohydrates, thereby restoring macronutrient balance."

New Hope for Individuals at High Risk for Developing Type 1 Diabetes

Endocrine Reviews Editor-in-Chief Daniel J. Drucker, MD, and senior scientist at the Lunenfeld Tanenbaum Research Institute of the Mt. Sinai Hospital in Toronto, Ontario, points to a paper that provides hope for individuals at very high risk for development of type 1 diabetes.

Published in August in the *New England Journal of Medicine*, "An Anti-CD3 Antibody, Teplizumab, in Relatives at Risk for Type 1 Diabetes" by Herold, K.C., et. al., demonstrates that manipulating the immune system in these individuals can preserve beta cell function and meaningfully delay diabetes onset. The trial comprised 76 participants in two randomized groups, 44 taking teplizumab for a 14-day period and 32 taking placebo. Oral glucose-tolerance tests were then performed at six-month intervals to monitor progression to type 1 diabetes. In those taking teplizumab, 14.9% per year were diagnosed with diabetes, compared to 35.9% per year in the placebo group.





"Teplizumab, a drug that partially blocks a component of the immune response that destroys insulin-producing islet beta cells, delayed progression to clinical type 1 diabetes in high-risk participants," Drucker says. "This has been an elusive 'holy grail' type of result and should re-energize the science underlying the prevention of type 1 diabetes and efforts to preserve beta cell function in the face of an immune attack."

Targeting Therapy in Diabetes

Endocrine Reviews associate editor Anna Gloyn, DPhil, professor of molecular genetics and metabolism and Wellcome Trust Senior Fellow in Basic Biomedical Science at the University of Oxford in the United Kingdom, finds "Genetic Risk Scores for Diabetes Diagnosis and Precision Medicine," by Mahajan A., et al., especially compelling.

Published in July, this study provides ample support for the idea that polygenic scoring used in precision medicine could translate to effective targeted therapy in diabetes. "One of the most exciting developments in the area of genetics of diabetes has been the implementation of 'soft-clustering' approaches to gain mechanistic inference at type 2 diabetes genome-wide association studies (GWAS) loci," Gloyn says. "In 2018, two groups independently developed approaches to cluster T2D-risk variants based on their impact on relevant physiological traits. This year in *Endocrine Reviews*, the authors of these papers put together an informative article covering the potential of this approach to inform on diabetes diagnosis and aid precision medicine."

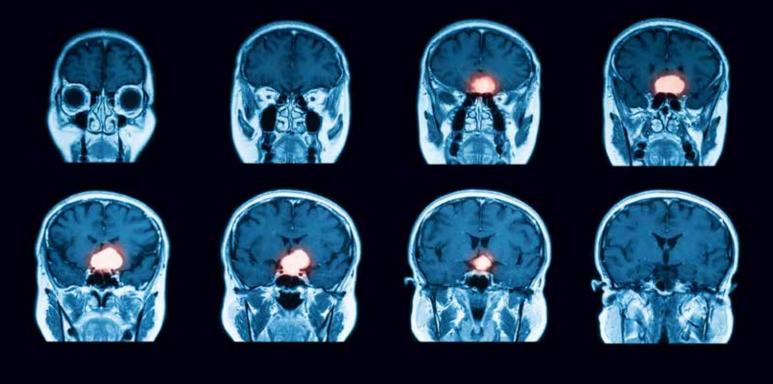
MRI & Brown Adipose Fat Activity

Journal of the Endocrine Society editor-in-chief J. Larry Jameson, MD, PhD, professor of medicine, dean of the Perelman School of Medicine, and executive vice president for the Health System at the University of Pennsylvania, in Philadelphia highlights "Magnetic Resonance Imaging Reveals Human Brown Adipose Tissue Is Rapidly Activated in Response to Cold," by Steinberg, G.R., and Morrison, K.M., et. al., from October.

"Brown adipose tissue (BAT) is an important source of thermogenesis and energy, particularly in response to cold. Studies in humans have been somewhat limited by appropriate methodologies," Jameson says. Accordingly, researchers recruited 12 healthy young men between the ages of 18 and 29 years for a first visit during which body measurements were taken and a second comprising sequential cold and warm exposures and simultaneous magnetic resonance imaging (MRI). BAT was rapidly activated in response to cold, likely mediated by triacylglycerol lipolysis. "This study suggests that MRI techniques can provide measurements of BAT activity in humans," Jameson says.

Vaping During Pregnancy: Effects on Offspring

Journal of the Endocrine Society (JES) associate editor Bülent O. Yildiz, MD, professor at Hacettepe University School of Medicine in Ankara, Turkey, chose "E-Cigarette Exposure



Delays Implantation and Causes Reduced Weight Gain in Female Offspring Exposed In Utero," by Caron, K.M., et. al., also published in October, as his top JES pick of 2019.

Researchers exposed female mice to e-cigarette vapor resulting in delayed first pregnancy and possible fetal death. Furthermore, e-cigarette exposure in mating mice caused a delay in embryo attachment, and female offspring exposed to e-cigarettes in utero failed to grow to normal size at age 8.5 months. "E-cigarette use or vaping is on a daunting rise, particularly in youth with a misperception that it is safe," remarked Yildiz. "This study provides new evidence that vaping not only has unfavorable effects on a woman's ability to conceive, but it may also adversely influence future health of the newborn, probably through genetic and epigenetic mechanisms," he says.

Hypogonadal Young Men and Depression

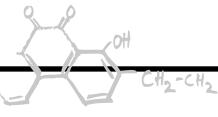
Former JES associate editor and soon-to-be editor-in-chief of JCEM, Paul M. Stewart, MD, FRCP, FMedSci, executive dean and professor at the University of Leeds School of Medicine in the United Kingdom, chose "Depression in Nonclassical Hypogonadism in Young Men," by Korenman, S.G., et. al., from November 2018.

Researchers set out to determine whether men with hypogonadism have increased depression, or if it's the other way around — that men with depression have a high prevalence of hypogonadism. After studying 186 young adult men (ages 18–40 years) with eugonadotropic hypogonadism and a depression rate of 22.6% compared to 404 matched controls with a depression rate of 13.4%, they found that depression might be an underlying cause of hypogonadism, possibly due to reduced reactivity of the hypothalamic-pituitary-gonadal axis. The researchers suggest that evaluation and treatment for depression are warranted in young men with nonclassical hypogonadism.

A New Look at Pituitary Tumors

From April, "DNA Methylation of Tumor Suppressor Genes in Pituitary Neuroendocrine Tumors," by Picó, A., et. al., was selected by JCEM associate editor Anthony P. Heaney, MD, PhD, professor at the David Geffen School of Medicine at the University of California, in Los Angeles.

"Although pituitary tumors are very common, they are notable for the lack of traditional driver mutations found in other tumor types," Heaney explains. The team of researchers used PCR to analyze the effect that deoxyribonucleic acid (DNA) methylation would have on expression of 35 tumor suppressor genes (TSGs) in 105 pituitary neuroendocrine tumors (PitNETs). Effects varied with PitNET subtypes. "This study adds to existing knowledge that epigenetic deregulation, including DNA methylation, histone modification, nucleosome remodeling, and ribonucleic acid (RNA)-mediated targeting, plays a causative role in pituitary tumorigenesis," Heaney says.



In this well-designed and implemented study in overweight and obese men, the data demonstrate that exercise before nutrient intake produces increased muscle lipid utilization and improves insulin sensitivity. Now it's an opportune time to extend this work to people with type 1 and type 2 diabetes."

> — ROBERT H. ECKEL, MD, PROFESSOR, UNIVERSITY OF COLORADO ANSCHUTZ MEDICAL CAMPUS, AURORA, COLORADO; ASSOCIATE EDITOR, JCEM

Exercise Before Meals Improves Insulin Sensitivity in Obese Men

Associate editor for JCEM as well as professor at the University of Colorado Anschutz Medical Campus in Aurora, Robert H. Eckel, MD, selected "Lipid Metabolism Links Nutrient-Exercise Timing to Insulin Sensitivity in Men Classified as Overweight or Obese," by Wallis, G.A., and Gonzalez, J.T., et. al., and published in October. "The best time to exercise related to food intake has been debated," Eckel says. "In particular, there is a deficit in understanding how the skeletal muscle response to a period of exercise training modifies this timing."

In two experiments, researchers looked at acute metabolic responses to manipulating nutrient-exercise timing in 12 sedentary obese men (the "Acute Study"), then longer-term adaptations to carbohydrate-exercise timing in 30 sedentary obese men (the "Training Study"). Acute Study participants ate a standardized breakfast of 25% of their daily food intake requirements, followed by 90 minutes of rest, then a single bout of 60 minutes of cycling. They also reversed the events, having a session of exercise followed immediately by breakfast.

Training Study participants were randomized to three groups — a no-exercise control group, a breakfast before exercise group, and an exercise before breakfast group for six weeks. The Acute Study demonstrated that exercise before food intake increased whole body and skeletal muscle lipid utilization. The Training Study demonstrated that increases in lipid utilization were sustained with exercise before food intake for six weeks. Likewise, insulin sensitivity increased.

"In this well-designed and implemented study in overweight and obese men, the data demonstrate that exercise before nutrient intake produces increased muscle lipid utilization and improves insulin sensitivity," Eckel says. "Now it's an opportune time to extend this work to people with type 1 and type 2 diabetes."

As another year comes to an end, 2019 has been a remarkable time for endocrine science. These new discoveries will improve patient care as well as human life around the world for decades to come. As a new decade dawns, it's exciting to anticipate what new innovations and breakthroughs are waiting to be found!

- HORVATH IS A FREELANCE WRITER BASED IN BALTIMORE, MD. SHE WROTE ABOUT HOW WALKING DOWNHILL AFTER MEALS CAN BE A BENEFIT TO MAINTAINING STRONG BONES IN POSTMENOPAUSAL WOMEN WITH DIABETES IN THE NOVEMBER ISSUE.

The Golden Gate Bridge at dawn. Photo credit: DanS63, Shutterstock.com

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ENDO 2020 is heading west so Endocrine News is hoping to encourage you to attend the most important meeting of endocrinology scientists and clinicians from around the world by tempting you with a few highlights of this year's host city: San Francisco. Passengers enjoy a ride in a cable car in San Francisco. Photo credit: ben bryant / Shutterstock.com

an Francisco is known for its cable cars, iconic bridge, and for being the home of hippies, tech startups, and...endocrinology? March 28 — 31, 2020, San Francisco, will be a home away from home for endocrinologists from across the globe as **ENDO 2020** heads to California.

The Endocrine Society's annual meeting and the world's largest event for presenting and obtaining the latest in endocrine science and medicine, **ENDO** will be a can't-miss event in 2020. New for 2020, **ENDO** will feature educational design enhancements in addition to its four Basic Science Pathways: Diabetes and Metabolism, Neuroendocrinology, Nuclear Receptors and Gene Regulation, and Reproductive Endocrinology.

If you haven't already reserved your space, hurry up and do so. ENDO 2020 will take place in one of the world's top tourist destinations that is guaranteed to provide a memorable getaway.

Whether you're traveling solo, meeting friends at the conference, or want to bring the whole family along, San Francisco has endless options for all and will certainly be a favorite destination for everyone who travels there. Visit **www.endocrine.org/endo2020**, and begin planning your stay today!

If you haven't made your reservations for ENDO 2020 yet, what are you waiting for?

Staying Golden Through the Years

Located along the natural bay known as the Golden Gate to the Pacific Ocean, San Francisco (named after Saint Francis of Assisi) was originally a Spanish territory, before becoming the property of Mexico. In 1846, the city officially became the property of the U.S. — a prize in the Mexican-American War. At the time, the population was only 1,000, but that quickly changed with the discovery of gold, and the beginning of the Gold Rush, in 1848. 1849 brought treasure-seekers from across the globe, increasing the population to 25,000 in just one year. Arguably the most significant period in the city's history, the Gold Rush brought the negatives along with the positives — the city was lawless and wild, with six major fires breaking out in less than two years.

END©2020 Day *by* Day

No doubt your days will be packed while you're at San Francisco's Moscone Center, weaving through the crowds as you make your way to various sessions and presentations at **ENDO 2020**. Here are just a few highlights — among hundreds — that might appeal to you.

Saturday March 28

The Business of Running a Lab: Top 5 Strategies to Running a Successful Lab, *9:45 a.m.*

This session will cover important tips on: 1. Hiring and personnel management; 2. Successful budgeting; 3. Projects and resource management; 4. Negotiating for what you need; and 5. Time management (research, teaching, committees, etc.) with time for peer mentoring and discussion with successful scientists.

Cushing Disease and Syndrome: When Genes Go Wrong, 4:15 p.m.

There have been significant advances in our understanding of the genetic mutations that cause both pituitary and adrenal driven cortisol excess. This symposium will highlight the translational research in this area and will include pituitary, adrenal, and familial Cushing presentations.

Sunday March 29

Meet-the-Scientist: Bench to Bedside: Bringing Drugs from the Lab to the Patient, 8:00 a.m.

Endocrine Reviews editor-in-chief, Daniel J. Drucker, MD, Mt. Sinai Hospital, Toronto, Ontario, Canada, hosts this session that gives attendees the opportunity to ask questions about the process of going from a basic science observation to commercialization. Participants need to sign up ahead of time and will have an opportunity to pre-submit questions as well as during the session. The session will start with a 20-minute



presentation focused on process rather than information transfer, followed by structured questions.

Knockout Rounds, 1:45 p.m.

Communicating the importance of endocrine research to funders and the public is an essential skill. Back for its third year, Knockout Rounds provide trainees and early-career professionals with a novel presentation opportunity. With a single slide each, presenters will describe the impact of their research on enhancing health outcomes. Attendees vote for their favorite along with an esteemed panel of judges.

Monday March 30

What's New in 131-I Refractory Thyroid Cancer? 9:15 a.m.

Radioiodine refractory thyroid cancers lose the ability to effectively update iodide, thus limiting the efficacy of this therapy. New strategies to promote redifferentiation increased iodine avidity will be discussed in this session. New genomic studies on Hurthle cell carcinoma will also be addressed.

Update on Clinical Assay Issues: What Clinicians Should Know, 4:15 p.m.

After a needs assessment was performed by an informal survey of past symposium attendees and discussions with practicing clinical endocrinologists, the three critical issues to be discussed using a casebased approach will be: 1. The laboratory monitoring of transgender adolescents and adults during hormone therapy; 2. The controversies in the laboratory diagnosis of secondary adrenal insufficiency; and 3. When LC-MS/MS is critical in the diagnosis of challenging patients.

Tuesday March 31

Maximizing the Mentor and Mentee Relationship, 9:30 a.m.

This session will discuss the importance of building successful mentoring relationships as a mentee and as a mentor to others. Panelists will teach the importance of being an effective mentor, how to be a good mentee, and the benefits of having multiple mentors. Breakout groups will engage participants with common scenarios and discuss responses.

The Myth and Reality of Vitamin D, *11:45 a.m.*

Numerous recent and large trials in vitamin D are addressing important disease outcomes. These trials are difficult to design and complex to interpret. The speakers will reflect on their experiences as leading investigators of these trials.

These sessions are just a tiny fraction of the dozens of options available to attendees that cover a vast range of topics in patient treatment outcomes, basic science, and clinical research.

The silver boom of Nevada's Comstock Lode again filled the city's docks and lined its pockets in 1859; and the construction of the Central Pacific Railroad drew thousands of laborers from China. The city expanded as cable cars enabled the city's grid to spread over its steepest hills.

On April 18, 1906, the San Andreas Fault slipped more than 10 feet, unleashing a massive earthquake. The tremors broke water mains and triggered fires that raged for four days, killing 3,000 people, destroying 25,000 buildings, and leaving 250,000 homeless. But the city rebuilt quickly and continued to grow.

Over the next century, San Francisco was home to the hippie movement, which peaked with the "Summer of Love" in 1967. The 1980s brought the gay rights movement that was centered in San Francisco's Castro District. During the dotcom boom of the late 1990s, large numbers of entrepreneurs and computer software professionals moved into the city.

While it has had its share of negatives over time, most of San Francisco's history has kept the city in a positive light, one of the reasons it is one of the top tourist destinations in the world.

Top: Crowds enjoying PIER 39 at Fisherman's Wharf, *photo credit: Clari Massimiliano* / *Shutterstock.com.* Bottom: Streetcar traveling through the Castro District, *photo credit: Lynn Yeh* / *Shutterstock.com.*

Out and About

With all this city has to offer, it's hard to imagine that it's only seven miles by seven miles. But regardless of the amount of space the city takes up, there's more to do here than in many destinations across the U.S. The most iconic site in San Francisco, the Golden Gate Bridge has been described as "possibly the most beautiful, certainly the most photographed, bridge in the world." While the bridge can be seen by helicopter, boat, and even bike tours, the most popular way to see this can't miss destination is by foot. Bear in mind the walk is three miles roundtrip, but the views offered from the bridge make it worth the hike.

Another one of San Francisco's most iconic destinations is Alcatraz. Alcatraz was the site of the first lighthouse in the western U.S. but became a federal penitentiary from 1934 to 1963, housing famous convicts such as Al Capone and George "Machine Gun" Kelly. Now, this once infamous prison island is part of the Bay Area's 80,000-acre Golden Gate National Recreation Area. Bay cruises are offered to the island, and guests can even get an inside look at one of the most famous



Yachts sailing in San Francisco Bay with Alcatraz in the background, photo credit: Sergey Novikov / Shutterstock.com.

prisons in history with the awardwinning audio presentation "Doing Time: The Alcatraz Cellhouse" tour, which features the stories of life inside from real prisoners and a real-life look into a prison breakout as told by correctional officers who lived and worked on the island.

San Francisco's most visited tourist destination is PIER 39 in Fisherman's Wharf. Here, guests young and old will love catching a glimpse of the PIER's "Sea Lebrities," sea lions that bask in the sun at PIER 39's West Marina. The PIER will continue to please crowds of all ages with the

Aquarium of The Bay, the San Francisco Carousel, the Flyer, a simulated flight throughout the city, and more.

There is no shortage of museums from the San Francisco Museum of Modern Art to the Cable Car Museum to the Exploratorium featuring more than 600 hands-on exhibits and breathtaking views of the city and bay in the spectacular glass-andsteel Bay Observatory.

Other can't miss attractions include the Presidio and Yerba Buena Gardens. A former military post, the Presidio is now a national park site and recreational paradise featuring spectacular vistas, beautiful trails, and historic and architectural treasures. Yerba Buena Gardens is an award-winning public facility at the heart of San Francisco's downtown cultural district that features a children's garden, public art, and more.

Night view of the SHN Orpheum Theatre facade on Market Street. Photo credit: Sundry Photography / Shutterstock.com

Scene Stealers: A Night at the Theater

San Francisco's thriving arts scene lets you get in on the acts all across the Bay Area every night of the week. Here are just a few theatrical highlights playing near **ENDO 2020**.

Hamilton: An American Musical

If you missed it in 2019 in New Orleans and in 2018 in Chicago, this may be your last chance to hit your mark and witness this historical musical. Showing at the opulent Orpheum Theater, this world-wide phenomenon received armloads of Tonys, a Grammy, and a Pulitzer Prize, and it definitely lives up to the hype. hamiltonmusical.com/san-francisco

Gloria

This satirical play by Brendan Jacobs-Jenkins takes place in the cutthroat world of magazine publishing in Manhattan and offers a unique look at workplace dynamics and how technology impacts careers, lives...and deaths. A finalist for the 2016 Pulitzer Prize for Drama (thanks, *Hamilton!*), Gloria leaves nobody unscathed. www.act-sf.org

Harry Potter & The Cursed Child

This two-part play tells the story of the adult wizard Harry Potter, his friends, his enemies, and the next generation of Hogwarts students. You'll love seeing your favorites all grown up, not to mention the new adventures they encounter along the way. The stagecraft in this production is so phenomenal that you will be in wonder at the magic that takes place live right in front of you!

www.harrypottertheplay.com/san-francisco



Happy Hours

Just four blocks away from the Moscone Center, in the basement of the Hearst Building is the aptly named **Local Edition**. This chic underground lounge has a vintage newspaper theme, but it's bound to appeal to those who don't have newsprint running through their veins. Don't be surprised if once you descend the stairs you hear the horns and keyboards from a cool swing, dance, rhumba, or jazz band that calls this joint home. www.localeditionsf.com

If you're looking for a swanky happy hour, then look no further than **Hawthorn**, a multi-room lounge that serves both the afterwork crowd and the weekend clubbers. Housed below ground in an area just a few blocks from Union Square that was once home to brothels, Hawthorn has a full menu of craft cocktails to help you unwind from a long day of sessions. Be warned, when the lights go down, the music goes up and the party is just getting started! www.hawthornsf.com

Sometimes all you need to relax is an American classic, and that's exactly what the **Keystone Social House** is. Billing its drinks as "unique, yet approachable," Keystone is the ideal spot for an escape from the bustling streets of San Francisco outside. With a menu full of contemporary Bay Area fare, you find that Keystone will quickly become your go-to gathering place with your cohorts once the sessions have ended for the day. www.thekeystonesf.com

Billed as a Tenderloin "beer mecca," **Mikkeller Bar** is known for its selection of local brews and... sausage? Popular for its gregarious staff and dozens of beers on tap, Mikkeller also boasts The Tivoli sour room, home of the best Lambic and sour beers from around the world. Located in a Victorian building at 34 Mason Street and packed with rows of communal tables, it won't be long before "everybody knows your name!" **www.mikkellerbar.com** With all there is to see and do, travelers are sure to work up an appetite. San Francisco is a great place to be hungry because the options for dining are endless here.

Always In "Sea"-son

Fresh seafood is always on the menu in San Francisco. One of the city's favorite spots is Ayala, the cutting-edge, seafood-forward restaurant of Melissa Perfit who made a name for herself on *Bravo's Top Chef.* The Louie Salad is one of the standouts on the creative menu — a savory combination of Dungeness crab, prawns, soft egg, and avocado that is filling without being too heavy. For a delicious meal with a side of beautiful views, Angler serves up an ever-changing menu of prime seafood and meat dishes like the giant octopus, hot grilled rabbit, and California king crab. But its most famous for its raw oysters and clams, which can be the starting point of dinner with appetizer portions or come as a full meal.

A multi-level culinary destination, ONE65 is made up of six floors. The first floor is a patisserie with macarons and baked goods. The Bistro & Grill is on the second and third floors, where light lunch and dinner comfort foods are on the menu. Experimental cocktails can be found on the fourth floor at Elements Bar, while the top two floors offer a unique, 10-course prix fix experience. While ONE65 is known for its wide variety of culinary options, the consistent crowd pleaser is the charcoal oven-cooked beef cheek.

If a burger and beer sound more appealing, the Golden Gate Taproom is sure to hit the spot. This lively sports bar offers pub food favorites and countless beers on tap.

It's no surprise that San Francisco is known for its exceptional Chinese food, and M.Y. China is one of the shining stars of the city's dining scene. Celebrity chef Martin Yan offers a delightful experience for all the senses including a full menu of seafood, wok dishes, dumplings, and roasted meats.

Going back to the city's roots, Cochinita Pibil at Mezcalito is the place to get an authentic Mexican meal with some true classics, like Cochinita Pibil, a dish featuring slow-baked pork cooked in banana leaves, seasoned with spices and citrus, served with pickled red onion, frijoles, and queso fresco. Original cocktails and mescal and tequila flights round out this spirited dining experience.

While chains can be found around San Francisco, this is a city where eating like a local is a requirement for all travelers.

Home Away from Home

After a day of traveling up and down the hilly streets, followed by meals that will fill even the hungriest diner, travelers can rest assured they'll get a good night's sleep at their home away from home. **ENDO 2020's** list of official host hotels offers options for every type of traveler. The Moscone Convention Center, which will house **ENDO 2020**, is located conveniently near all of the suggested options.

The Marriott Marquis, located only .3 miles from the convention center, is ideal for business travelers. Contemporary rooms and suites offering impressive views of the city allow travelers to relax and recharge right in the center of the action. Set in a striking high-rise building, this polished downtown hotel also houses The View, a 39th-floor lounge offering panoramic views, small plates, and cocktails, plus a casual gastropub and a café. Travelers looking to stay on top of their workout routines will find a fitness center and guests can unwind in the hotel's luxurious spa to feel refreshed after a long day of meetings.

A uniquely stylish hotel inspired by the area's bold and progressive history, Hotel Zeppelin rebelliously celebrates the collision of San Francisco's countercultural tradition with a mischievous approach to contemporary hospitality. Considered Top: Colorful flowers at Yerba Buena downtown San Francisco, *photo credit: Levent Konuk / Shutterstock.com.* Bottom: Entrance to Moscone Center North Hall, *photo credit: Sheila Fitzgerald* / *Shutterstock.com.*

Top: Palace of Fine Arts San Francisco, *photo credit: TanyaBird / Shutterstock. com.* Bottom: Golden Gate Bridge and San Francisco skyline at sunrise, *photo credit: f11photo / Shutterstock.com.*

an "urban, avant-garde nirvana," this hotel features guest rooms honoring San Francisco's bold, bohemian past with custom-designed furniture, vintage turntables, vinyl records, and funky artwork. The hotel is also home to a high-concept game room, a fitness center with city views, and The Rambler, a cool cafe and bar with a fireplace.

Sir Francis Drake has been called the Grand Dame of boutique hotels in San Francisco. Housed in a building from the 1920s, the hotel evokes an oldworld feel with its grand staircases, gilded ceilings, sleek marble walls, and crystal chandeliers, while thoughtfully updated furnishings in the lobby as well as guest rooms and suites showcase modern comforts in a classical setting. The hotel hosts a free afternoon wine hour and has a glamorous top-floor lounge called Lizzie's Starlight, Scala's Italian Bistro, and a retro lobby bar.

Additional options are available and can be found at: www.endocrine.org/ endo2020.

If you haven't made your reservations for **ENDO 2020** yet, what are you waiting for? **ENDO 2020** is an excellent opportunity to connect with thousands of colleagues from around the world to discover the most innovative scientific and clinical breakthroughs in the field. Add in an unforgettable trip exploring one of the world's top travel destinations and you cannot go wrong. Register today to take part in the most valued endocrinology meeting in the world.



- CARSON IS A FREELANCE WRITER BASED IN BIRMINGHAM, ALA. SHE CONTRIBUTES THE MONTHLY ENDOGEAR COLUMN TO *ENDOCRINE NEWS*.

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SHOOTING STARS: How the Endocrine Society's FLARE Program Has Changed the Face of Endocrinology

The Endocrine Society's Future Leaders Advancing Research in Endocrinology program — better known as FLARE — has not only enriched the Society by increasing underrepresented minority participation, but it has enriched the field of endocrinology in the U.S.

BY GLENDA FAUNTLEROY SHAW



LARE. It's an acronym that forms the word meaning "a blaze of light used to attract attention" and "a spreading outward." These definitions may be the best way to describe the goal of the Future Leaders Advancing Research in Endocrinology —

one of the Endocrine Society's three major diversity programs that have aimed to increase representation of minorities in the specialty. FLARE follows the path of two past programs, the "Endocrine Short Courses" and Minority Access Program, started in 1998 and 2006, respectively.



FLARE class of 2017 includes: Alexandra Acevedo-Rodriguez, Diana Alba, Anika Anam, Maigen Bethea, Justin Echouffo Tcheugui, Betiel Fesseha, Inga Harbuz-Miller, Angelina Hernandez, Allison LaRoche, Jean Marie Mwiza, Victoria Parker, Melissa Rodriguez, Keisha Smith, Chinenye Usoh, Desiree Williford, and Aurelia Wood.

While those earlier programs conducted outreach to minority undergraduate students, FLARE's goal has been to support minorities further along in their academic or scientific research careers who have demonstrated achievement in endocrine research.

Endocrine Society president, E. Dale Abel, MD, PhD, has served as the director of FLARE since the start. "For many years, I was also involved in the Minority Affairs Committee and we recognized there was a need for professional development training for underrepresented minorities in that transition between the end of either their PhD or graduate school training, their postdoc or fellowship or during the early stages of their faculty career," recalls Abel, chair of the Department of Internal Medicine and Director of the Fraternal Order of Eagles Diabetes Research Center at the University of Iowa.

In 2013, Abel helped the Endocrine Society win a grant award from the National Institutes of Diabetes and Digestive and Kidney Diseases that funded FLARE for an initial five years.



Puneet Arora, MD, Camille McLean, MD, Irene Aninye, PhD, Cherie Butts, PhD, Andrew LaPelusa, Sade Williams, and Diana Elizondo during a team-building activity at a FLARE workshop.



666 FLARE taught me to utilize my strengths, become comfortable outside of my comfort zone, and be confident in what I set out to do. More than making me a better and more efficient scientist, it also provided a community of individuals from all different stages and career backgrounds that continue to support my growth and success."

- SHANNA NEWTON, PHD CANDIDATE, UNIVERSITY OF CALIFORNIA SAN DIEGO; 2018 FLARE FELLOW

And for Abel, the challenge was clear. "We wanted to determine if increasing minority participation in the Endocrine Society as a result of participation in the program would not only increase the likelihood of both their long-term retention in science and their long-term success, but also increase diversity in the governance and leadership of this professional society," he says.

FLARE's basic criteria is that applicants are currently enrolled in a U.S. graduate program, post-doctoral fellowship, endocrine clinical fellowship, or junior faculty (within one to three years of obtaining faculty position). They must also be of an ethnic minority group underrepresented in the biomedical sciences. The majority (93%) of accepted fellows are African American and Hispanic American/Latino.

FLARE was awarded a second five-year grant in 2018 that allowed for a class that year of 24 fellows. During the first award, the program trained 104 FLARE fellows.

The program's chief component is an annual two-day workshop where fellows hone career development skills such as developing a professional development plan, effective mentorship, finding research funding, managing a lab or research team, self-awareness training, dealing with interpersonal conflict, and marketing oneself to potential employers. During the workshop, Endocrine Society members who serve as FLARE faculty share their professional wisdom and guidance and begin long-lasting mentor relationships with participants.

After the workshop, fellows choose to continue their career development through one of two paths — internship or mentorship.

Paying It Forward

Leonor Corsino, MD, associate professor of medicine in the Division of Endocrinology, Metabolism, and Nutrition at Duke University School of Medicine, Durham, N.C., is part of the FLARE faculty and says she joined the program because she strongly believes in investing in the next generation of providers in the field. "I am passionate about mentoring and serving as guidance for those coming behind me," she says. "I have been fortunate to have had the amazing opportunity to work with an array of mentors who provided me with the much-needed guidance to get where I am today."

Puneet Arora, MD, vice president, clinical development at Principia Biopharma, South San Francisco, Calif., echoes the sentiment. The February 2020 FLARE workshop taking place in Austin, Texas, will mark his seventh term as faculty. "FLARE is a great opportunity for both fellows and faculty to broaden horizons and explore new ideas," Arora says. "I was working with the Minority Affairs Committee when I first got involved and saw it as an opportunity to start a discussion on non-academic science career options. I have endeavored to use my own career path as an example for fellows early in their careers, to encourage thinking outside the box and to examine diverse options and be willing to take chances and embrace change.

"It's a unique workshop that brings together peers and mentors in an open atmosphere, while providing exposure to successful role models," he continues. "I have often told fellows that I wish there had been such opportunities when I was a fellow."



The class of 2013, the first FLARE Class: Irene Aninye, Diana Cittelly, Geraldine Ekpo, Latrice Faulkner, Christina Garlington, Mariana Haedo, Courtney Law, Mario Oyola, Michelle Rivera-Vega, Isabel Rubio Schlaepfer, Tanya Russell, Carmen Soto-Rivera, Rhonda Souvenir, and Lindsey Trevino.

One of FLARE's many success stories is Bryan Wilson, PhD, MBA, a regional medical scientific director for cardiovascular sciences at Merck Research Laboratories in New Orleans, La.

"I was inspired to apply to FLARE because I noticed firsthand how dedicated the program is toward developing the science pipeline," Wilson recalls. "All of the mentors in FLARE are incredibly excellent in their fields of study. Additionally, they are equally excellent in paying it forward to assist science trainees becoming successful."

Shanna Newton, a PhD candidate at the University of California, San Diego, is a 2018 FLARE fellow whose research is focused in reproductive neuroendocrinology. She learned about FLARE from a fellow graduate student and FLARE alumni. "The FLARE program has impacted my professional growth more than I would have ever expected," Newton says. "Prior to my involvement, I was extremely reserved and overly critical, overwhelmed with what I didn't know, and too afraid to speak up when I had something meaningful to contribute. The workshop was key in shifting my mindset and thus my productivity.

"FLARE taught me to utilize my strengths, become comfortable outside of my comfort zone, and be confident in what I set out to do," she adds. "More than making me a better and more efficient scientist, it also provided a community of individuals from all different stages and career backgrounds that continue to support my growth and success."



FLARE is a great opportunity for both fellows and faculty to broaden horizons and explore new ideas. I have endeavored to use my own career path as an example for fellows early in their careers, to encourage thinking outside the box and to examine diverse options and be willing to take chances and embrace change."

- PUNEET ARORA, MD, VICE PRESIDENT, CLINICAL DEVELOPMENT, PRINCIPIA BIOPHARMA, SOUTH SAN FRANCISCO, CALIF.



"Creating a Robust Pipeline"

FLARE has helped place past participants in positions at the National Institutes of Health (NIH), nonprofit, and academic institutions, Abel says. "They're being tapped for leadership roles as well," he says. "So, it has been incredibly effective and we were able to demonstrate that in the grant renewal. It obviously convinced the reviewers that the initial investment was well spent and the likelihood for ongoing success was high."

The impact has especially been felt at the Endocrine Society in the representation in Society governance and leadership. In 2002, about 8% of underrepresented minorities served on a Society committee. By 2018, that number had more than doubled to about 17%.

"This shows we clearly have a significant impact on creating a robust pipeline of future leaders," Abel points out. "We also realize, though, that there's a long way to go."

Past FLARE fellows have participated on several committees, including the Governance Task Force, Trainee/Early Career Committee, Leadership Development Task Force, and Research Affairs, to name a few. FLARE fellows are also serving as near-peer mentors to students and speaking regularly at Society events and activities.

"I'm very proud of the tremendous loyalty the program has imbued in the individuals who have participated and then, in kind, paid it forward," Abel says. "I think what we are seeing is a multiplying effect that we're going to have individuals who not only have been direct beneficiaries but, ultimately, will become mentors and servants in order to ensure the pipeline remains robust."

Newton is one who sets the example.

"I have since become a member of the Endocrine Society's Trainee and Career Development Core Committee and have helped lead this year's Summer Research Fellows so that I



666 I am passionate about mentoring and serving as guidance for those coming behind me. I have been fortunate to have had the amazing opportunity to work with an array of mentors who provided me with the much-needed guidance to get where I am today."

- LEONOR CORSINO, MD, ASSOCIATE PROFESSOR OF MEDICINE IN THE DIVISION OF ENDOCRINOLOGY, METABOLISM, AND NUTRITION, DUKE UNIVERSITY SCHOOL OF MEDICINE, DURHAM, N.C.



666 Getting involved in FLARE taught me that it's never too late to share your gifts and talent with the world. When you're a trainee in development, we sometimes feel as if our talents aren't good enough. However, people are actually anticipating authenticity and eagerly want to learn from our experiences and perspectives."

— BRYAN WILSON, PHD, MBA, REGIONAL MEDICAL SCIENTIFIC DIRECTOR FOR CARDIOVASCULAR SCIENCES, MERCK RESEARCH LABORATORIES, NEW ORLEANS, LA.

can inspire and empower the next generation of endocrine researchers and clinicians," she says.

Wilson's advice for minority scientists considering applying for FLARE is to "just do it!"

"Getting involved in FLARE taught me that it's never too late to share your gifts and talent with the world," he adds. "When you're a trainee in development, we sometimes feel as if our talents aren't good enough. However, people are actually anticipating authenticity and eagerly want to learn from our experiences and perspectives." FLARE 2020 Watch for news of the FLARE Class of 2020. For more information, email diversity@endocrine.org.



One of the lectures taking place during the first FLARE workshop in 2013.

- FAUNTLEROY SHAW IS A FREELANCE WRITER BASED IN CARMEL, IND. SHE IS A REGULAR CONTRIBUTOR TO *ENDOCRINE NEWS*.

BY ERIC SEABORG

The Challenge of POSTPRANDIAL GLUCOSE MANAGEMENT in Diabetes

Many questions remain about the best ways to limit glucose levels after meals, but patients can implement a few simple changes that should help.





eeping blood glucose levels from rising excessively after a meal is one of the trickiest tasks in diabetes management. Technology for continuous glucose monitoring (CGM) and new treatments promise to make better control possible, but endocrinologists are still investigating how best to use these tools.

The Endocrine Society convened an expert panel to examine the evidence surrounding this challenge, and that group published its findings, "Optimizing Postprandial Glucose Management in Adults with Insulin-Requiring Diabetes: Report and Recommendations," in the October edition of the *Journal of the Endocrine Society*.

Although the report has specific recommendations for clinical management of these patients, it also provides a roadmap for the many questions that need to be answered in the next few years, according to the panel chair John L. Leahy, MD, co-chief of the Division of Endocrinology, Diabetes, and Metabolism at the University of Vermont Medical Center.

Beyond Hemoglobin A1c

CGM provides a wealth of information that diabetes experts are only beginning to digest. The measurement of hemoglobin A1c has been the standard for tracking glucose control for the past couple of decades, but CGM results have added a new dimension by showing how even good hemoglobin A1c values can mask the ups and downs that can occur over a patient's day.



We still lack evidence for what those goals ought to be, and what are healthy and not healthy goals. The expert group was not willing to choose specific blood glucose goals, duration goals, or time-in-range goals without more evidence. We need to spend the next several years clearly defining those things, so we can get to a place where we truly understand the basis of healthy blood glucose control."

- JOHN L. LEAHY, MD, CO-CHIEF, DIVISION OF ENDOCRINOLOGY, DIABETES, AND METABOLISM, UNIVERSITY OF VERMONT MEDICAL CENTER, COLCHESTER, VT.

Leahy cites patients whose A1c results are good but who are disconcerted when they start using a CGM system by the swings in glucose that occur with meals: "People who have worked hard on blood glucose control for a number of years feel they are doing well. Then they start on a CGM, and they come in frustrated when they discover that their mealtime glucoses are not nearly as well controlled as they thought. CGM has introduced for people a whole new analysis and understanding that they never had before, with a common observation that mealtime insulin management is one of the hardest things to do with blood glucose management."

But it is important, the report notes, because "evidence suggests that reducing postprandial glucose (PPG) excursions may be equally or more important than reducing fasting plasma glucose in achieving overall A1c goals and in reducing risk of diabetes-related complications."

Lifestyle Adjustments a Patient Can Do

The report includes some recommendations that can "be explained to a patient relatively easily and easily integrated into a patient's lifestyle," Leahy says. They include:

- Monitoring blood glucose by a fingerstick or continuous glucose monitor an hour or two after meals to check on the patient's status and the need for a corrective dose of rapid-acting insulin.
- Taking insulin with enough time before eating to allow it to start working, typically up to 20 minutes for analog insulins.
- Eating protein and non-starchy vegetables first, leaving carbohydrates and starchy vegetables for last.
- Adding 500 mg of vitamin C, a fiber supplement, and one teaspoon of apple cider vinegar to meals.
- Exercising moderately for 10 to 20 minutes within an hour of eating. Suggested activities include brisk walking, using an exercise machine, or lifting light weights.

Pharmaceutical Possibilities

The report also notes that new drugs have come on the market, and that "fasteracting insulins more closely mimicking physiologic action of endogenously secreted insulin may improve PPG control," but that their use and impact require more investigation. The pharmaceuticals it mentions include:

- Fast-acting insulin aspart (Fiasp) was approved by the Food and Drug Administration in 2017. "Clinical studies in type 1 diabetes show modest improvement in A1c and PPG over conventional aspart, with peak impact one hour after eating," the report says.
- Inhaled insulin is absorbed more quickly than conventional rapid-acting insulin analogs and can improve PPG more effectively at one and two hours, but dosing is challenging and its very high cost limits its use.
- Pramlintide, a synthetic form of amylin, is known to reduce PPG excursions in insulin-requiring adults, but its high risks of hypoglycemia and gastrointestinal side effects limit its use.
- Glucagon-like peptide-1 (GLP-1) analogs are helpful in glycemic and weight control in patients with type 2 diabetes using basal insulin, but in type 1 diabetes patients, the drugs show neither consistent nor sustained reductions in hemoglobin A1c, and come with risks of severe hypoglycemia and diabetic ketoacidosis.

AT A GLANCE

- Postprandial glucose control is one of the most difficult challenges facing diabetes patients, so the Endocrine Society convened an expert panel to explore the use of new technologies and treatments to optimize it.
- The expert panel identified some easily followed lifestyle and nutritional steps patients can implement to lower their post-meal glucose levels.
- New technologies especially continuous glucose monitors – provide a great deal of information, but more research is needed to set evidencebased goals on glucose levels and the timing of post-meal measurements.

66

People who have worked hard on blood glucose control for a number of years feel they are doing well. Then they start on a CGM, and they come in frustrated when they discover that their mealtime glucoses are not nearly as well controlled as they thought."

 – JOHN L. LEAHY, MD, CO-CHIEF, DIVISION OF ENDOCRINOLOGY, DIABETES, AND METABOLISM, UNIVERSITY OF VERMONT MEDICAL CENTER, COLCHESTER, VT.

Sodium-glucose cotransporter type 2 (SGLT2) inhibitors are commonly used as second-line therapies in type 2 diabetes. Recent Phase III clinical trials involving inadequately controlled type 1 diabetes patients suggest that the drugs improve both fasting and postprandial glycemic control, lower blood pressure, and aid in weight loss without increasing hypoglycemia, but increase the risk of diabetic ketoacidosis.

Questions to Answer

In addition to the expert panel's attempts to define useful clinical approaches, an important part of the panel's task was to identify the many unanswered questions and needs for research. "It remains unclear whether controlling [postprandial] glycemic spikes affects the development or progression of microvascular or macrovascular disease above that attributed to overall glycemia," the report notes.

Leahy says that there are published guidelines that attempt to define postprandial glucose goals, but they are somewhat simplistic given today's ability to use CGM to monitor the blood glucose values that occur with a meal: "We still lack evidence for what those goals ought to be, and what are healthy and not healthy goals. The expert group was not



willing to choose specific blood glucose goals, duration goals, or time-in-range goals without more evidence. We need to spend the next several years clearly defining those things, so we can get to a place where we truly understand the basis of healthy blood glucose control."

The report lays out many specific avenues of research needed to establish the evidence base for attaining better management of this aspect of diabetes. "Managing PPG to minimize or prevent diabetes-related complications will require a deeper understanding of fundamental questions about quantifying and clinically assessing the metabolic dysregulation and other consequences of the abnormal postprandial state. We particularly need more rigorously defined parameters for successful PPG management, including a maximum allowable PPG value and the precise time to measure it," concludes the expert panel, which was supported by an unrestricted grant from Lilly USA and Novo Nordisk. "While we identified several promising behavioral strategies that may have immediate clinical value, defining effective and sustainable clinical strategies and tools for healthy PPG management calls for substantial research addressing these basic questions."

- SEABORG IS A FREELANCE WRITER BASED IN CHARLOTTESVILLE, VA. HE WROTE ABOUT USING TIME IN RANGE AS AN ESTIMATE FOR MANAGING DIABETES PATIENTS IN THE NOVEMBER ISSUE.

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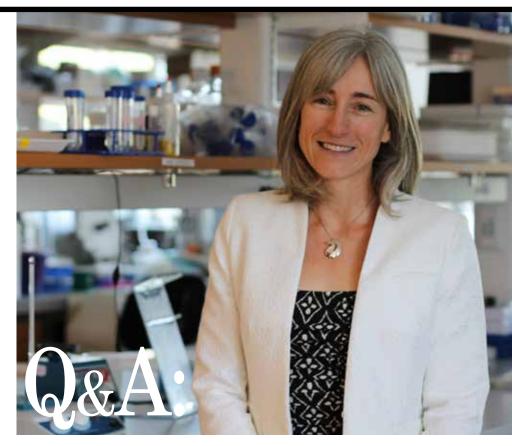
Awards will be presented at ENDO 2020: The Annual Meeting & Expo in San Francisco, CA, March 28-31, 2020.



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LABORATORY NOTES

Endocrine News talks with Laura Alonso, MD, from Weill Cornell Medicine and NewYork-Presbyterian/Weill Cornell Medical Center where she discusses research funding and how she hopes her research improves the lives of patients with diabetes.



Laura Alonso, MD

aura Alonso, MD, is a physician-scientist working on a cutting-edge approach to replenish the body's insulin-producing beta cells to treat diabetes. Alonso was recently named chief of the Division of Endocrinology, Diabetes and Metabolism at Weill Cornell Medicine and NewYork-Presbyterian/Weill Cornell Medical Center.

Endocrine News caught up with her to learn more about her leading diabetes research and ways she plans to have a lasting impact at Weill Cornell.

Endocrine News: It's been a little over a month since you started your new position. Can you share any short-term goals you've set for Weill Cornell?

Alonso: My short-term goals are to map out the next few years in terms of developing that Endocrine Division, and also the Weill Center for Metabolic Health, which is a new diabetes and metabolism research center that we are developing on campus.

EN: Your research is leading to advancements in diabetes treatment. That doesn't happen without research funding. How do you help other researchers at your institution get funding?

Alonso: You're absolutely right that obtaining funding is one of the major challenges today in bio-medical research, and that's also a challenge in diabetes and metabolic

BY GLENDA FAUNTLEROY SHAW



66 Obtaining funding is one of the major challenges today in bio-medical research, and that's also a challenge in diabetes and metabolic research."

research. I put a high priority on mentoring junior faculty towards their first National Institutes of Health (NIH) grant. Foundation funding has also been extremely important for me. A big priority for me is to help our faculty and trainees get research funding. I think it's also important to help people get experience on grant review panels so they can understand what goes into writing a successful proposal. I'd also like to have a group on campus that helps each other develop exciting research proposals both in clinical research and basic research in the metabolic area.

EN: Did you have that kind of support when you were a young researcher?

Alonso: I did! Not formally, but I had wonderful mentors in the beginning of my career at the University of Pittsburgh when I wrote my first NIH proposal. I remember presenting my ideas, that I had worked really hard on, to several of my more senior colleagues and emerging from that room in tears. And the proposal that I ultimately sent had nothing to do with the ideas that I went into that room with. So, I think gaining insight from people with experience is extremely important for people starting out.

EN: How will your approach to beta cell biology transform diabetes care?

Alonso: Several forms of diabetes result from an inadequate supply of beta cells. The main goal of my research is to help discover a new way to induce the pancreas to generate new beta cells in order to prevent diabetes or to treat established diabetes. And what we have discovered in my lab is that — and I think this remains controversial — when beta cells make more insulin, that engages a process called the unfolded protein response that helps each individual cell increase its insulin production capacity, but at the same time it also triggers a proliferation response to increase the number of beta cells. So, we'd like to learn more about that process and see whether we can harness that for therapeutic purposes.

EN: What about present day? What do you think is the biggest challenge facing endocrinologists who care for diabetes patients?

Alonso: One of the major challenges is that technology's improving at an incredible pace. We have new devices for treating type 1 diabetes, and for measuring the blood sugar continuously. We have amazing medications for type 2 diabetes that help people lose weight and address the root cause of their diabetes. But for many people these technologies and medications are out of reach because of cost.

EN: There has been news about pharmaceutical and insurance companies trying to ease the cost of insulin but it's not widespread. Is there enough driving the need to change the cost of these drugs and devices?

Alonso: I am optimistic that we will be able to solve this problem. There are a lot of really smart people working hard on this, and I think that the awareness of the problem has grown substantially among the general public. I'm sure they will be able to find a workable solution.

I think another one of the challenges that people with diabetes face is that current therapies that we have are difficult for people to implement. If you ask people to change their food, that's hard to do. Giving multiple injections of insulin each day, or managing devices like an insulin pump and a CGM, that's hard to do. I hope that the technology improves to make the experience of having diabetes easier for people while at the same time preventing complications.

- FAUNTLEROY SHAW IS A FREELANCE WRITER BASED IN CARMEL, IND. SHE IS A REGULAR CONTRIBUTOR TO *ENDOCRINE NEWS*.

ADVOCACY



Endocrine Society members Abby Fleisch, MD, MPH (center) and Zeyan Liew, PhD, MPH (right) spoke at a recent congressional briefing to share the latest science with policy makers on how research conducted and funded by the National Institute of Environmental Health Sciences (NIEHS) is helping us understand and address the health effects of exposure to PFAS.

Endocrine Society Educates Congress About PFAS

n Wednesday, November 6, we hosted a congressional briefing to share the latest science with policy makers on how research conducted and funded by the National Institute of Environmental Health Sciences (NIEHS) is helping us understand and address the health effects of exposure to per- and polyfluoroalkyl substances, also known as PFAS. The briefing was organized in collaboration with the Michael J. Fox Foundation for Parkinson's Research and the Friends of the National Institute of Environmental Health Sciences (NIEHS) and sponsored by Representatives Dan Kildee (D-MI) and Brian Fitzpatrick (R-PA), co-chairs of the Bipartisan Congressional PFAS Task Force.

During the briefing, attendees heard from expert scientists about widespread contamination issues and diverse health effects attributed to PFAS exposure. Mark Miller, MS, MBA, PhD, chief of staff, NIEHS, gave an overview of NIEHS' research portfolio and various other activities to help address PFAS contamination among communities.

Zeyan Liew, PhD, MPH, shared some of his research exploring the effects of PFAS on maternal thyroid function and potential neurodevelopmental outcomes in exposed children. "Prenatal exposures to PFAS are associated with a range of adverse health outcomes in children, including some sex-specific effects," Liew explains. "It is critical for the Congress to hear about the latest science on these effects so that they can make informed decisions and better protect the health of their constituents." Endocrine Society member Abby Fleisch, MD, MPH, then shared insights gathered from her research on cohort studies exploring how PFAS may play a role in obesity and osteoporosis across the lifespan. "Our research raises several important questions about the health effects of PFAS exposure — like when during the lifespan do PFAS have the strongest effects on obesity?" she says. "More NIH-funded studies are needed to answer these and many other questions."

The briefing was extraordinarily well attended, with over 85 congressional staff from the House and Senate packing the room to learn more about an area of intense national interest. Attendees were highly engaged, staying in the room following the program to ask questions of the speakers and discuss next steps in their research programs.

The Society is highly involved in raising awareness about PFAS exposure and consequent health effects due to the ability of these chemicals to interfere with endocrine systems and cause disease. We also strongly support the work of the Friends of NIEHS to ensure that the NIH/NIEHS receives steady, sustainable increases in funding to advance research on PFAS and other environmental toxicants. We will continue to educate policy makers, the media, and other stakeholders about NIH's critical role in developing scientific knowledge on these chemicals and informing regulatory activity to reduce harmful exposures.

ADVOCACY



Endocrine Society Scientific Leaders Share Research Priorities with the NIH

Endocrine Society members Anne Cappola, MD, ScM, (left) and Holly Brown-Borg, PhD, (right) flank Richard Hodes, MD, director, National Institute on Aging. uring November, we conducted meetings with leadership at the National Institutes of Health (NIH) to discuss research goals and other opportunities to partner with the institutes to advance the field. Anne Cappola, MD, ScM, and Holly Brown-Borg, PhD, met with Richard Hodes, MD, director of the National Institute on Aging (NIA); and Jennifer Richer, PhD, and Endocrine Society president-elect Gary Hammer, MD, met with Dinah Singer, PhD, deputy director for scientific strategy and development at the National Cancer Institute (NCI). Hodes and Singer were joined by several members of their team at the NIA and the NCI, respectively.

During the meeting with the NIA, Hodes provided an update on the NIA budget and outlook, and shared information about several events, including a recently concluded summit on geroscience. Hodes and his team expressed interest in our long-term agenda for both basic and clinical research, and they were enthusiastic about the opportunity to hear more about our priorities in several specific areas such as lipids and aging, and the use of statins in older adults. Participants also discussed opportunities to convene meetings and workshops at **ENDO** to discuss these and other emerging aging-related research topics.

During the meeting with the NCI, participants identified a need to motivate trainees to engage in research on endocrine neoplasia, particularly for those areas such as thyroid cancer and rare tumors where the NCI is seeing fewer grant applications. They were excited about the Endocrine Society's FLARE program, and we discussed educational opportunities that would engage FLARE fellows as well as research trainees at the Society more broadly. We also discussed opportunities to advance research at the interface between different institutes and centers at the NIH, such as altered insulin signaling in cancer. The NCI suggested that the Endocrine Society further advance challenging research areas by engaging with foundations to build collaborative platforms to fund endocrine research.

We always seek opportunities to ensure that endocrine research is prioritized in funding opportunities and other announcements. Several action items were identified during the meetings with the NIA and the NCI,

and our members will remain engaged on these action items in the coming months to advance our relationship with the institutes in support of our member researchers.

Pictured (I to r): The NCI's Kimberly Seyferth and Melanie Santos; Endocrine Society president-elect Gary Hammer, MD, PhD; Dinah Singer, PhD, NCI's Deputy director, Scientific Strategy and Development; Rihab Yassin, PhD, Cancer Cell Biology Branch chief; Neeraja Sathyamoorthy, PhD, program director, Tumor Biology and Microenvironment Branch; Jennifer Richer, PhD, ENDO 2021 basic science chair; Weiwei Chen, PhD, program director; NCI's Preclinical Therapeutics Grants Branch, met to discuss methods to motivate trainees.



Advocating for NIH Funding as Lawmakers Continue Work on FY 2020 Appropriations Bills

The federal government has been operating on stopgap funding since the new fiscal year began on October 1, 2019, and that will last through November 21, 2019. As this issue of *Endocrine News* goes to press, lawmakers are working toward agreement on a bipartisan, bicameral set of funding levels for the 12 fiscal 2020 spending bills.

While the House of Representatives has passed 10 of the 12 annual spending bills that fund the government, the Senate has passed only four, and the two chambers have not resolved their differences on any of them. House Majority Leader Steny Hoyer (D-MD) has said that the chamber will pass a second stopgap spending bill, or continuing resolution (CR), before November 21 to fund the government from November 22 to December 20, 2019. Unfortunately, this means that funding for the National Institutes of Health (NIH) continues to be held hostage until a final FY 2020 funding bill can be passed. While operating under a stopgap funding measure, the NIH policy is that it will issue non-competing research grant awards at a level below that indicated on the most recent Notice of Award (generally up to 90% of the previously committed level). Upward adjustments to awarded levels will be considered after FY 2020 appropriations are enacted.

If lawmakers agree to a set of topline allocations by November 20, 2019, they have indicated a plan to draft final versions of some bills and get them to the president's desk by the December 20, 2019, deadline.

The Endocrine Society has been the most vocal advocate for funding endocrine-related research. We have testified before Congress, visited key leaders, and conducted Hill Days, but we need to keep the pressure on. Please join us advocating for endocrine-related research by joining our online advocacy campaign to urge your representative and senators to support NIH funding by passing a final appropriations bill with at least a \$2 billion increase for the NIH. Visit **endocrine.org/takeaction** to participate today!

Endocrine Society Participates in AMA HOD

he Endocrine Society sent a delegation, including members Amanda Bell and Shivani Agarwal, to participate in the American Medical Association (AMA) House of Delegates (HOD) in November to establish policy positions on topics of importance to endocrinologists and the patients they treat.

We attend the AMA meetings to further our policy agenda by garnering the support of the House of Medicine, which bolsters our advocacy efforts on Capitol Hill and with federal agencies as an additional means of support. In addition to passing policy that supports our priorities, we also fight against resolutions that will be detrimental.

In November, the HOD considered a wide range of resolutions, from legalization of the Deferred Action for Legal Childhood Arrival to gender equity in medicine. We focused our attention on resolutions that dealt with transgender/gender identity, contraception, drug pricing, endocrine-disrupting chemicals, and obesity. We spoke in support of a resolution advocating for electronic medical records to include the organs that a transgender patient has so physicians have the ability to order tests relevant to those organs rather than those associated with the gender recorded in the record (i.e., prostate exam for a transgender woman).

Another resolution on transgender health issues that we supported focused on the need for a comprehensive medical education curriculum on transgender health issues. We also spoke in support of resolutions on the need for more research on the impact of perfluoroalkyl and polyfluoroalkyl (PFAS) chemicals on human health and legislation and regulation seeking to address contamination, exposure, classification, and clean-up of PFAS substances. We are analyzing the impact of these new policies on our members and will work with the AMA to advance our mutual policy priorities.

We also worked closely with the delegates from the American Association of Clinical Endocrinologists, American Society for Reproductive Medicine, and American Association of Endocrine Surgeons during the meeting on issues of importance to endocrinologists.



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Since its inception in 2008, the UK Barnstable Brown Diabetes Center has been a leader in diabetes prevention, education, research and comprehensive care. The center assists more than 7,500 adult patients and 2,500 pediatric patients each year in the management and treatment of diabetes and related diseases, working closely with the patient's primary care physician. The comprehensive approach to diabetes treatment, education and research has earned the UK Barnstable Brown Diabetes Center a place on the national stage. In 2018, UK HealthCare was ranked 33rd in the country among diabetes and endocrinology programs by U.S. News & World Report. While this is an honor, the center takes the most pride in knowing that its providers are serving patients – and the people of the Commonwealth – in the battle against this deadly disease.



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