

JANUARY 2016

THE LEADING MAGAZINE FOR ENDOCRINOLOGISTS

Endocrine news

Welcome to 2016: THE YEAR OF ENDOCRINOLOGY

JANUARY IS THYROID MONTH:

Is Biotin Skewing Your Patient's Test Results?

You may be treating them for something they don't even have

The Colorful Saga of Radioiodine Therapy

How a legendary thyroid treatment evolved from one man's simple question

Is Thyroid Cancer Screening Going to the Dogs?

These pups have a remarkably high success rate in detecting cancer

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FEATURE

26 | Clash of the Titans: THE SAGA OF RADIOIODINE THERAPY

The history of treating the thyroid with radioiodine is fraught with battles in labs, universities, prestigious medical journals, and even World War II.

BY DEREK BAGLEY

COVER STORY

12 | Beware of Biotin

More patients are taking the dietary supplement biotin, which could be throwing off a number of test results from thyroid cancer to Graves' disease.

BY ERIC SEABORG

FEATURE

17 | 2016 Laureate Award Winners

For more than 70 years, the Endocrine Society has recognized the achievements of endocrinologists worldwide. Take a look at this year's distinguished recipients who join the list of prestigious practitioners and researchers.

PRACTICE RESOURCES

34 | Who Let the Dogs Out?

Thyroid cancer-sniffing dogs have a remarkable success rate. But will the medical community – as well as patients – accept these canine diagnosticians?

BY GLENDA FAUNTLEROY



FROM THE **EDITOR**

JANUARY 2016

Endocrine news

THE LEADING MAGAZINE FOR ENDOCRINOLOGISTS

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Endocrine News informs and engages the global endocrine community by delivering timely, accurate, and trusted content covering the practice, research, and profession of endocrinology.

The mission of the Endocrine Society is to advance excellence in endocrinology and promote its essential and integrative role in scientific discovery, medical practice, and human health.

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2016: The Year of Endocrinology


WELCOME TO THE 100TH YEAR OF THE ENDOCRINE SOCIETY! *Endocrine News* is going to use every month of 2016 to celebrate this remarkable milestone. First off, there is a year-long editorial calendar that celebrates the “Year of Endocrinology,” and January is devoted to the thyroid. To that end, while we will be showcasing some of the history of thyroid treatment, we are also featuring some newer developments as well.

And what better way to kick of this momentous year than with a tribute to our 2016 Endocrine Society Laureate Award winners (p. 17)? Here you'll find all 17 laureates as well as the citations written by the professionals who nominated them for these prestigious awards. From educators and practicing physicians to scientists and “endocrine ambassadors,” we are all very fortunate to be able to rub elbows with these living legends of endocrinology.

Our cover story, “Beware of Biotin” (p. 12) by Eric Seaborg addresses how the use of this popular dietary supplement can distort the results of a variety of thyroid tests. In fact, there have been more than a few cases of misdiagnoses by very experienced endocrinologists because the patients didn't think to mention that they were taking biotin. Colorado-based endocrinologist, Carol Greenlee, MD, became so concerned about the effects of this supplement that her office has huge signs that read “Are you taking biotin?”

As we dig into the history of treating thyroid ailments, associate editor Derek Bagley looks at the discovery of using radioiodine to diagnose thyroid cancer in “Clash of the Titans: The Saga of Radioiodine Therapy” (p. 26). From one simple question being asked by a curious young physician in 1936, a therapy that has saved thousands of lives was born. From the past to the future, we look at the phenomenon of using dogs to sniff out thyroid cancer (“Who Let the Dogs Out?” p. 34). Sure, a pooch is a lot less invasive than a fine needle aspiration biopsy, but will the medical community — and patients — accept this four-legged method? The results have been promising, but a lot more studies are needed before this becomes commonplace.

In honor of the Society's 100th year, we are debuting a couple of new features with this issue. One of our goals for 2016 was to get the membership more involved with *Endocrine News*, and to that end we have a new monthly column called “Why Endocrinology?” where your colleagues speak from the heart about what led them to choose this amazing and exciting field. In this month's installment, Vin Tanchpricha, MD, from the Emory University School of Medicine in Atlanta, talks about his father's influence on his career choice (p. 6). And check out the *Endocrine News* Dashboard (p. 5) for some quick bits of info.

Enjoy the Year of Endocrinology; it's going to be an exciting 12 months! 

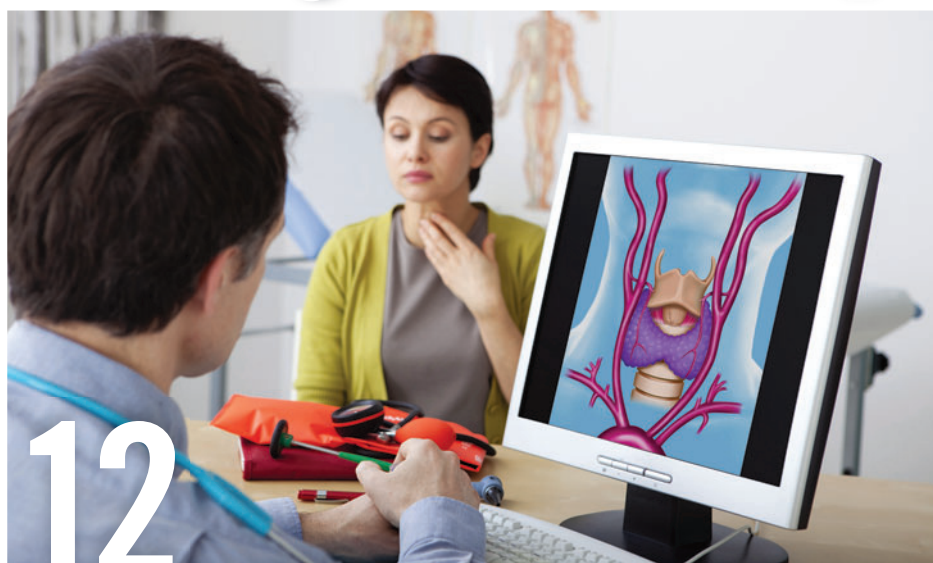
— **Mark A. Newman**, Editor, *Endocrine News*

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IN THIS ISSUE

JANUARY 2016



2 | FROM THE EDITOR

Celebrating thyroid treatment's past, present, and future.

4 | PRESIDENT'S VIEWPOINT

The centennial countdown has started! 2016 will be a year-long celebration of endocrinology as well as the Endocrine Society.

5 | DASHBOARD

A snapshot at what's trending in the world of endocrinology.

6 | WHY ENDOCRINOLOGY?

A father's profound influence results in a renowned endocrinologist.

BY VIN TANGPRICHA, MD, PHD

7 | TRENDS & INSIGHTS

A look at the latest research: low selenium linked to increased thyroid disease risk; developmental progestin exposure linked to impaired cognitive function; incretin agents and pancreatic cancer risk, viagra improves insulin sensitivity

31 | LABORATORY NOTES BACK TO SCHOOL

Endocrine News takes a look at how one lab took mentorship to a new level by recruiting both grad students and a high school student.

BY DEREK BAGLEY

38 | ADVOCACY

Society supports USPSTF's women's health research; Congress approves \$2 billion research increase; Changes to MOC

40 | INTOUCH

New senior staff; PCOS scientific statement published; *NYT* praises Society's EDC work.

45 | CLASSIFIEDS

Career opportunities

47 | HORMONE HEALTH NETWORK

An informative handout for patients about thyroid cancer.

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The Centennial Countdown Has Started!

THE SOCIETY HAS COME A LONG WAY FROM JUNE of 1916 when a group gathered at the American Medical Association's meeting to explore creating a professional society for those working in the fledgling field of endocrinology. That discussion resulted in the founding of the Association for the Study of Internal Secretions with 300 charter members. Do you know when the name was changed to the Endocrine Society? (See below for the answer!)

In January, the celebration for the Society's 100th birthday kicks off with the launch of a new **Centennial website**, www.ESCentennial.org. To highlight the history of the field and the Society, an interactive **Century of Endocrinology Timeline** will present important milestones. Organized by decade, the timeline will show growth in the field of endocrinology and in the Society's history.


A special **2016 Endocrinology Calendar** has been created to celebrate the achievements of the past with an eye on the future of the field. January will celebrate Thyroid Awareness. Each month will be supported by historical information on awareness in a single area and will feature educational content, applicable Clinical Practice Guidelines, *Endocrine News* articles, Endocrine Facts & Figures Infographics, journal articles, the Journey through the Endocrine System/HHN public and patient materials, media stories, oral/video histories, Scientific Statements, and trivia questions. New videos are being created to highlight the achievements in endocrinology with a historical and future perspective. One highlight of the calendar will be the creation of "Endocrinology Month" in April. The goal is to broaden the awareness of endocrinology with a variety of advocacy activities.

The program for **ENDO 2016** has been developed to fully support the Centennial celebration. All seven plenary sessions are organized thematically to celebrate Nobel Prizes in endocrine research. Twelve symposia (one in each topical area) have been identified to have the chair present a brief historical introduction of the session topic.

The Sawin Memorial Lecture is titled, "A Biographical History of Endocrinology," and will be presented by D. Lynn Loriaux, MD, PhD. Several Meet-the-Professor speakers will provide a historical overview of their topics, and a debate on the safety of growth hormone therapy in children will open with a special historical review. The Society's booth will have areas dedicated to the Centennial, and a **History Wall** will be prominently displayed in the Convention Center.

The celebration will continue at the **Clinical Endocrinology Update** program, September 8 – 10, 2016, in Seattle where a special **Centennial ESAP** (Endocrine Self-Assessment Program) live presentation will be given. This program will include historical information about how a patient might have been treated in the past, how the patient would be treated in present day, and a preview of what is coming in the future.

Many thanks to the Centennial Task Force — the co-chairs M. Susan Smith, PhD, and Mitch Lazar, MD, PhD, and members Mark Bach, MD, Joanna Burdette, PhD, Don DeFranco, PhD, John Funder, MD, PhD, Al Powers, MD, and Len Wartofsky, MD, MACP — for their dedication and guidance for this project.

2016 will be a continual celebration of the 100 years in the field of endocrinology and the Endocrine Society which received its new name in 1952! I hope you will join me in visiting the website throughout the Centennial year — new content will be added each month — and that you will join us in Boston to celebrate April 1 – 4 at **ENDO 2016**. 

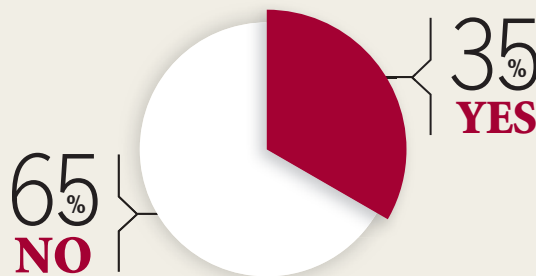
Lisa H. Fish, MD
President, Endocrine Society

“We have huge signs in my office that ask people if they are taking biotin — in each exam room, over the phlebotomy chair, and at the front desk. We had all these nice pictures on our walls, but the biotin thing alarmed us so much that we don’t care about our decorations in our office anymore.”

— CAROL GREENLEE, MD, ON WHY IT'S IMPORTANT THAT HER PATIENTS KNOW THE POSSIBLE SIDE EFFECTS OF THE DIETARY SUPPLEMENT BIOTIN (BEWARE OF BIOTIN, P. 12)

15% of primary care physicians have used telemedicine technology within the past year. Almost **90%** would start using it if they got reimbursed for their time. — SOURCE: ANTHEM/AMERICAN ACADEMY OF FAMILY PHYSICIANS SURVEY

Will diabetes be cured in the next 25 years?



— SOURCE: ENDOCRINE NEWS.ORG ONLINE SURVEY

12%

of all healthcare expenditures is spent on people with diabetes.

— SOURCE: STEVEN KAHN, MB, CHB/INTERNATIONAL DIABETES FEDERATION

51

Average age of a woman when she has her last menstrual period.

— SOURCE: NATIONAL INSTITUTES OF HEALTH



“I had to co-pay for the bagel.”

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A Father's Influence

BY VIN TANGPRICHA, MD, PHD, Associate Professor of Medicine, Division of Endocrinology, Metabolism and Lipids, Emory University School of Medicine, Atlanta, Ga.

I was born during my father's pediatric endocrinology fellowship at Charity Hospital in New Orleans. However, as a child I had no idea about the field of endocrinology. My father's textbooks in his study on disorders of metabolism and growth were very foreign to me.

I didn't get a true appreciation for endocrinology until my elective rotation in endocrinology as a fourth-year medical student at Tufts University School of Medicine in Boston.

I spent four weeks serving as an apprentice under Burritt Haag, MD, at Baystate Medical Center in Springfield, Mass. I was surprised to see that the rare conditions that we studied as a first- and second-year medical student actually existed. I was fascinated with the diagnostic testing for these endocrinology conditions and loved to solve these interesting mysteries.

I entered residency at Boston University with the idea that I was going to be an endocrinologist. Fortunately for me, as an intern I could practice endocrinology every day on the wards. I would make daily insulin adjustments for my ward patients much to the chagrin of my senior residents. I would perform dynamic endocrine testing on patients that I suspected had endocrine disease. I filled my continuity clinic during residency with very interesting endocrine patients that I had cared for during their inpatient hospitalizations, which ranged from the simple endocrine disease like Hashimoto's thyroiditis to the more complex adrenal disorders.


My experiences during residency further solidified my desire to become an endocrinologist. However, I craved an opportunity to learn more about endocrinology research. During my second year of residency, I cashed in all of my elective time for a chance to work on basic vitamin D research in the laboratory of Michael

Holick, PhD, MD. I was intrigued how vitamin D was actually a hormone and could have so many actions on human cells. My positive clinical and research experiences during medical school and residency further solidified my desire to pursue endocrinology.

During my fellowship, I had the opportunity to further develop as a clinical/translational physician-scientist in the field of

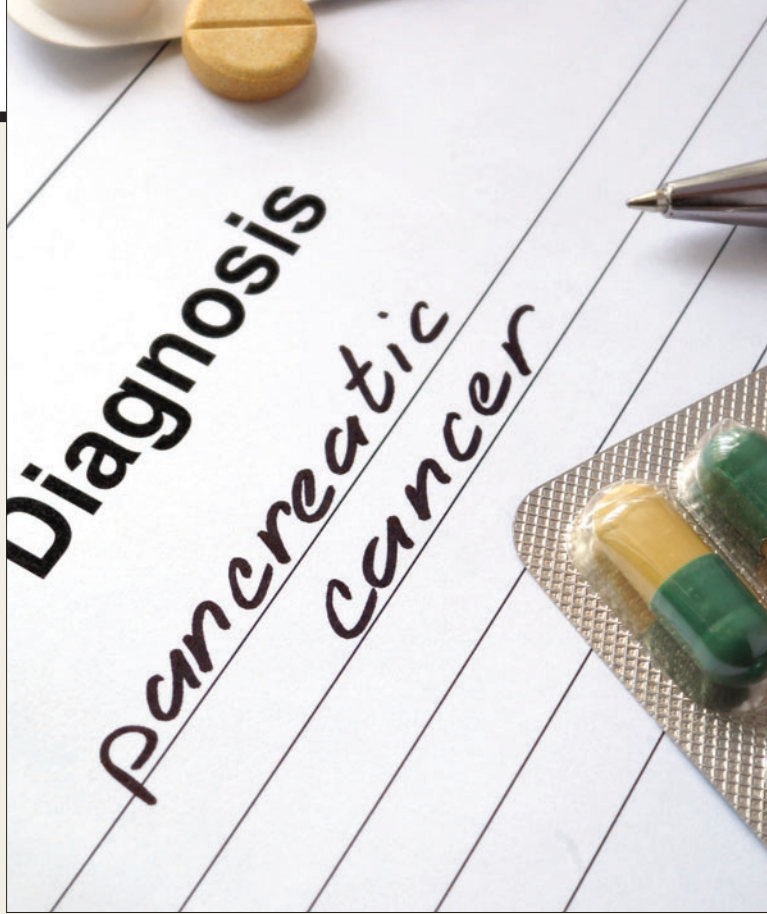
endocrinology. My mentor, Dr. Holick, impressed upon me that you can care for more patients when you make important scientific discoveries. My scientific training after fellowship cumulated in a PhD degree in Molecular Medicine studying the mechanisms by which the vitamin D hormone decreases colon cancer proliferation *in vitro* and *in vivo*. I was also involved in several clinical studies describing the prevalence of vitamin D deficiency in the young and healthy ambulatory population.

I attended my first Endocrine Society Annual Conference in 2001 and presented my findings of a high prevalence of vitamin D deficiency in healthy individuals, which led to one of my first manuscripts. In my early career, I had several opportunities to present my research at ENDO. These meetings were an important part of my training as a trainee and early career faculty member.

I have been fortunate to have many other mentors and role models that shaped me as an endocrinologist today including my father, Vithavas Tangpricha, MD, Stuart Chipkin, MD, Tai Chen, MD, and Joshua Safer, MD. Finally, my endocrinology chief during fellowship, Lewis Braverman, MD, further cultivated and supported my early endocrinology training to ensure that my dream of being an academic endocrinologist was fulfilled. 

“
I was surprised to see that the rare conditions that we studied as a first- and second-year medical student actually existed. I was fascinated with the diagnostic testing for these endocrinology conditions and loved to solve these interesting mysteries.
”

To celebrate 100 years of the Endocrine Society, throughout 2016 *Endocrine News* is running a “Why Endocrinology?” column in each issue. If you'd like to share your story with our readers contact Mark A. Newman at mnewman@endocrine.org.



Diagnosis Pancreatic cancer

Pancreatic Cancer Risk Increases in Recent Starters of Incretin Agents, but Drops over Time

BY DEREK BAGLEY

Researchers in the Netherlands have found that while there is an increased risk of pancreatic cancer in recent starters of incretin agents, that risk drops with long-term use, according to a study recently published in *Diabetes, Obesity and Metabolism*.

The team, led by Frank de Vries, PhD, of Maastricht University Medical Centre and Utrecht University, pointed out that incretins have been associated with pancreatic cancer, but there is limited data connecting the two. “Therefore,” they write, “the aim of this study was to investigate the association between the use of incretin agents and the risk of pancreatic cancer.”

The researchers used data from the Clinical Practice Research Datalink — the world’s largest primary care database, representative for 7% of the total UK population — for a retrospective population-based cohort study of 182,428 patients taking at least one non-insulin antidiabetic drug (NIAD), matched to control patients without diabetes. The team also estimated the hazard ratio of pancreatic cancer in 28,370 incretin users compared with non-diabetics and other NIAD-treated patients, using Multivariable Cox proportional hazards models and a new user design.

They found that current NIAD use was associated with a four-fold increased risk of pancreatic cancer, and that risk almost doubled in current incretin users, compared to controls. Pancreatic cancer was not associated with incretin use when compared to diabetic controls, but the new user design did implicate incretin use in pancreatic cancer. “In both cohorts with prevalent and incident users of anti-diabetic drugs,” the authors write, “the risk of pancreatic cancer almost doubled in recent starters of incretins (up to 7 prescriptions), whereas this elevated risk dropped to baseline levels with prolonged use.”

Findings: de Vries and team conclude that incretin use is not associated with pancreatic cancer after adjusting for the severity of type 2 diabetes. “The elevated risk of pancreatic cancer in recent starters of incretin agents is likely to be caused by protopathic bias or other types of unknown distortion,” they write. “The presence of considerable confounding by disease severity and the lack of duration of use relationship do not support a causal explanation for the association between incretin agents and pancreatic cancer.”

Viagra Improves Insulin Sensitivity in Individuals at Risk for Diabetes

Sildenafil — usually marketed as Viagra — improves insulin sensitivity in individuals with prediabetes and reduces a biological marker that signals heightened risk of kidney and heart disease, according to a new study published in *The Journal of Clinical Endocrinology & Metabolism*.

Researchers led by Nancy J. Brown, MD, of Vanderbilt University School of Medicine in Nashville, Tenn., point out that “weight loss and increased activity reduce progression from prediabetes to diabetes but are difficult to maintain. Metformin and thiazolidinediones also reduce incident diabetes, but the use of thiazolidinediones has been limited by concerns regarding adverse effects.”

“We need additional strategies to help slow the progression from prediabetes to diabetes,” Brown says. “Weight loss and exercise regimens can be difficult to maintain, and some current medications have been limited by concerns about adverse effects. Sildenafil and related drugs could offer a potential avenue for addressing the rising number of diabetes diagnoses.”

Sildenafil, which is known for treating erectile dysfunction, works by inhibiting phosphodiesterase 5 (PDE5), an enzyme that breaks down a natural blood vessel-relaxing chemical called cGMP. Other drugs also are in development that would increase levels of cGMP in the body.

In this study, researchers randomized 51 overweight individuals with prediabetes to treatment with sildenafil or matching placebo for three months. Study participants underwent a hyperglycemic clamp prior to and at the end of treatment to assess glucose-stimulated insulin secretion and estimate insulin sensitivity. Urine samples were also collected for measurement of albumin and creatinine, indicators of heart and renal health.

Among the 42 participants who completed the study, researchers found those who were treated with sildenafil were more sensitive to the effects of insulin. Participants who took sildenafil also had lower levels of albumin in the urine than those who took placebo.



Findings: The authors conclude that chronic PDE5 inhibition improves insulin sensitivity, fibrinolytic balance, and albuminuria in subjects with prediabetes. “Because existing drug therapies to prevent type 2 diabetes can have negative effects on the heart or be of limited use in patients with kidney disease, strategies to prevent diabetes without adversely affecting the risk of kidney and heart disease could have a large impact on public health,” Brown says. “Further studies will be needed to determine whether long-term treatment with drugs like sildenafil can prevent the onset of diabetes in high-risk patients.”

“ The present findings reporting neurocognitive effects reminiscent of those often associated with developmental disorders such as ADHD and autism should highlight the need for additional research on the potential effects in children and contribute to the assessment of the benefits versus the potential risks of synthetic progestin administration in pregnant women.”

Exposure to Progestin During Development Linked to Impaired Cognitive Function

The results of an animal study recently published in *Endocrinology* show that exposure to synthetic progestin, 17 alpha-hydroxyprogesterone caproate (17-OHPC) during development could impair brain function later in life. This study comes at a time when 17-OHPC is increasingly administered to women at risk for premature delivery.

Researchers Jari Willing, PhD, of the University of Illinois at Urbana-Champaign, and Christine K. Wagner, PhD, of the University of Albany, note that there is little information regarding the potential effects of 17-OHPC on the developing brain, and yet the drug is prescribed during the late-second and third trimesters and can be detected in maternal and fetal plasma long after injection. They write that this suggests “that fetuses may be exposed to 17-OHPC during critical periods of cortical development, particularly during the maturation of the mesocortical dopamine pathway, a neural circuit important for executive function.”

So Willing and Wagner used a rodent model to test the effects of 17-OHPC during development on cognitive flexibility — “the ability of change strategy in light of shifting environmental contingencies” — a process which they point out is highly dependent on dopaminergic activity. Rats were trained to run a maze to find a food reward (rule #1), and then the maze was shifted, so the rats had to adapt to learn how to find the food reward again (rule #2). They found that the rats exposed to 17-OHPC during development had significantly more perseveration errors than their control counterparts. What’s more, males seemed to have a harder time, suggesting that sex differences in exposure to the drug may exist.

Findings: The authors conclude that 17-OHPC exposure impaired cognitive flexibility in adulthood, since the 17-OHPC-treated rats were slower to make a cognitive switch to a new rule and continued to perseverate on the old rule longer than controls. They write: “The present findings reporting neurocognitive effects reminiscent of those often associated with developmental disorders such as ADHD and autism should highlight the need for additional research on the potential effects in children and contribute to the assessment of the benefits versus the potential risks of synthetic progestin administration in pregnant women.”

Low Selenium Linked to Increased Thyroid Disease Risk




Selenium-rich foods



Researchers in China have found a link between low population selenium (Se) and an increased prevalence of thyroid disease, according to a study recently published in *The Journal of Clinical Endocrinology & Metabolism*.

The team, led by Professor Bingyin Shi, of the First Affiliated Hospital of Xi'an Jiaotong University Health Science Center in Xi'an in China, noted that epidemiological studies show adequate Se intake is essential for thyroid gland function. In Shaanxi Province, Western China, there are very different Se levels in soil and foodstuffs, which has led to Se-deficiency diseases and selenosis. The researchers chose two counties in this province for their large-scale, population-based, cross-sectional investigation. They write, “[W]e defined Ziyang County as ‘adequate Se’ and Ningshan County as ‘low Se’ for the purposes of this study, in line with earlier findings on Se status in different locations within Shaanxi Province.”

The researchers analyzed 6,152 participants, who completed demographic and dietary questionnaires and underwent physical and thyroid ultrasound examinations. They compared the Se levels among the residents from the two different counties — 3,038 from the adequate-Se county and 3,114 from the low-Se county. They found that the prevalence of pathological thyroid conditions such as hypothyroidism, subclinical hypothyroidism, autoimmune thyroiditis, and enlarged thyroid, was significantly higher in the low-Se population.

Findings: The authors conclude that low selenium status is associated with increased risk of thyroid disease, and they go on to say that increased selenium intake may reduce the risk in areas of low selenium intake that exist not only in China but also in many other parts of the world. “However,” they write, “because this was a cross-sectional study, we cannot say that low Se was the cause of this higher disease rate, although we have described mechanisms that provide a rationale for causality.” 

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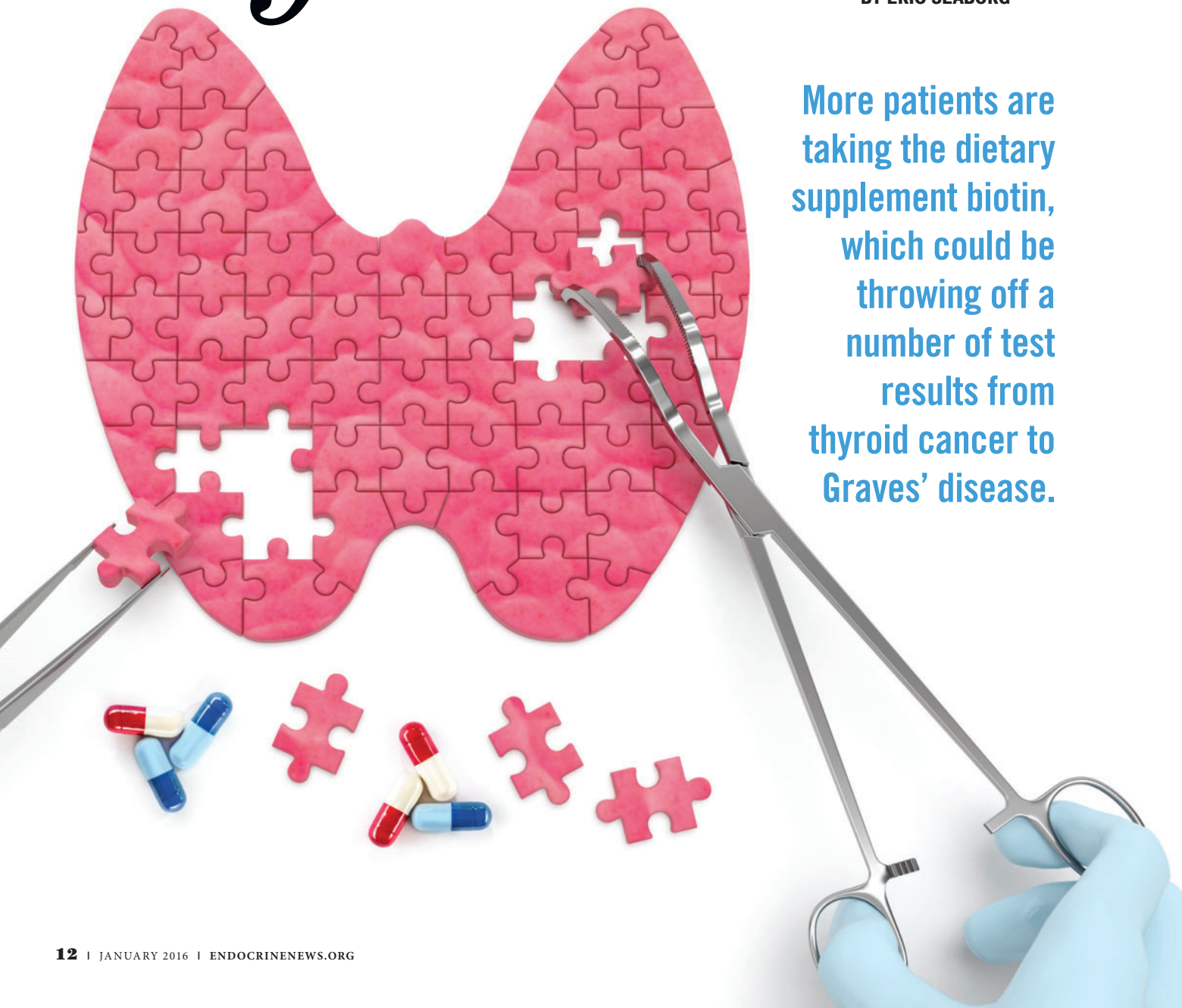
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Beware *of* Biotin

BY ERIC SEABORG

More patients are taking the dietary supplement biotin, which could be throwing off a number of test results from thyroid cancer to Graves' disease.



THE THYROID TEST RESULTS MADE NO SENSE,

so the patient's primary care physician sought help from an endocrinologist. The physician had been treating the patient's hypothyroidism successfully with levothyroxine for some time, when suddenly her free T4 levels spiked despite a normal thyroid stimulating hormone (TSH) level.

Biotin is marketed under a number of names, including vitamin B7, vitamin H, and coenzyme R, and sometimes may be listed only as an unnamed supplement to improve hair and nails.



The physician referred the patient to Cary N. Mariash, MD, professor of clinical medicine at Indiana University in Indianapolis, where additional laboratory tests had inconsistent results: Her free T4 and total T3 were elevated, but her total T4, T4 index, and TSH were normal.

Fortunately, Mariash could clear up the confusion by asking the patient a simple question: "Are you taking biotin?"

Yes, she replied, she had recently started taking 10 mg a day in hopes of improving her hair and nails. Her tests returned to normal when she stopped taking biotin. The problem had nothing to do with the patient's thyroid — the biotin was interfering with the tests.

Mariash presented this case at the recent International Thyroid Congress because he has recently encountered several patients whose abnormal thyroid test results were caused by taking biotin and "most endocrinologists don't know about this problem."

Carol Greenlee, MD, an endocrinologist practicing in Grand Junction, Colo., concurs that she is encountering an increasing number of confounding lab results caused by patients taking large doses of biotin.

"I saw somebody just yesterday who has had an extensive workup for hyperthyroidism. A lot of her tests look like she has Graves', but she is taking massive doses of biotin. She probably doesn't have any thyroid problem. We could be treating people for Graves' disease who don't have it, and that's really scary," Greenlee says.



“When your lab results don’t make sense in terms of the clinical picture, or in terms of the constellation of lab results you have received, **you should always think first of an assay interference** — one of which is biotin — before you think of really exotic reasons for this to have happened, such as TSH-secreting pituitary tumors.”

— STEFAN K. GREBE, MD, PHD, PROFESSOR,
LABORATORY MEDICINE & PATHOLOGY;
CO-DIRECTOR, ENDOCRINE LABORATORY,
MAYO CLINIC, ROCHESTER, MINN.



AN UNREGULATED SUPPLEMENT

Many people have begun taking biotin mainly in the belief that it is a key contributor to keratin, and therefore can improve hair, nails, and skin. It is marketed under a number of names, including vitamin B7, vitamin H, and coenzyme R, and sometimes may be listed only as an unnamed supplement to improve hair and nails.

It is a B vitamin, and the Institute of Medicine recommends a daily intake of 30 mcg. That’s what a multivitamin such as Centrum Silver contains. But some patients, like the one Mariash treated, are taking milligram amounts and might not consider it a medication, so not worth mentioning. It is marketed over the Internet, and Mariash recently saw a television advertisement for it, so its popularity could continue to grow.

AN ISSUE WITH ASSAYS

The problem is that almost all immunoassays today contain biotin because they rely on the biotin–streptavidin attraction to either anchor the assay’s antibodies to a capture surface or capture them once they have reacted with a patient sample, according to Stefan K. Grebe, MD, PhD, professor of laboratory medicine & pathology and co-director of the endocrine laboratory at the Mayo Clinic in Rochester, Minn.

Large amounts of biotin in a patient sample can interfere with this process. However, the effects can be confusing because, depending on the particular assay, biotin can skew the results to be either falsely high or falsely low. In the case of competitive immunoassays — usually used for low molecular weight targets (such as T4, T3, and cortisol) — biotin interference causes a falsely high result. In immunometric (sandwich) assays, it gives a falsely low result.

Other characteristics of the assay can also make a difference. For instance, a longer incubation time increases the opportunity for interference. Different assays for various analytes, even from the same manufacturer, can therefore vary in their susceptibility to biotin interference.

At the laboratory Mariash uses, the free T4 and total T3 assays use a biotin–streptavidin fluorescent detection system, so biotin can cause falsely elevated results, but the TSH and total T4 assays are not affected. In contrast, at Greenlee’s lab, biotin can lead to falsely low TSH results, but free T3 and free T4 tests are not affected. Biotin can also cause her lab’s assay for thyrotropin receptor antibodies (TRAb) to be falsely positive, which could lead to a misdiagnosis of Graves disease.



The patient's tests returned to normal when she stopped taking biotin. The problem had nothing to do with the patient's thyroid — the biotin was interfering with the tests.

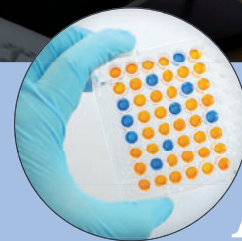
Mariash says that even though he suspected what was causing the questionable results, getting to the bottom of the problem was not easy: “I had to make a lot of phone calls to our laboratory. Finally a supervisor told me what platform they were using. Then I called the test manufacturer to get additional details, and they gave me enough information to know what was going on. But, of course, they don't give you every detail because some of it is proprietary.” Mariash's laboratory director was unaware that biotin could be a problem.

Grebe says it may fall to the physician ordering the test to be vigilant: “When your lab results don't make sense in terms of the clinical picture, or in terms of the constellation of lab results you have received, you should always think first of an assay interference — one of which is biotin — before you think of really exotic reasons for this to have happened, such as TSH-secreting pituitary tumors.”

PUZZLING TESTS AND A REVELATION

Greenlee had an example of these confusing results when a patient was referred to be evaluated for a possible diagnosis of adrenal carcinoma. The patient had presented complaining of fluid retention and weight gain. Her face was red and she was growing hair on her face while losing hair on top of her head. Her cortisol and testosterone test results were elevated off the charts. Her thyroid tests were also confusing, with low TSH but normal T4 and T3.

A normal adrenal CT scan ruled out cancer. Greenlee asked the woman to come back the next morning for fasting blood tests. This time her tests were normal.



AT A GLANCE

- ▶ Many patients are taking megadoses of biotin that can cause falsely high and falsely low results in a variety of laboratory tests, including thyroid tests.
- ▶ Patients are taking these supplements mainly to improve their hair, skin, and nails — and might not consider them medications to report on their list.
- ▶ Biotin interference with lab tests could be causing misdiagnoses — and even mistreatment — in an unknown number of patients.



“ I saw somebody just yesterday who has had an extensive workup for hyperthyroidism. A lot of her tests look like she has Graves, but she is taking massive doses of biotin. She probably doesn't have any thyroid problem. **We could be treating people for Graves' disease who don't have it, and that's really scary.** ”

— CAROL GREENLEE, MD, ENDOCRINOLOGIST,
GRAND JUNCTION, COLO.

Greenlee thought that perhaps there was some mix-up at the lab, and the original tests were not this patient's.

The solution to the mystery only emerged over time. The patient's problems stemmed from her home remedies for her hair loss — minoxidil and biotin. Not knowing her hair loss was not unusual for an older woman, and despite warnings that it should not be used by women, she was putting minoxidil on the top of her head — resulting in a red, hairy face.

The final piece of the puzzle fell into place when Greenlee was preparing a talk and came across a reference to biotin interfering with a parathyroid hormone assay. Her research following up this clue led her to literature reports of other biotin interferences. In the case of this patient, because she had been told to fast before she was tested again, she had not taken biotin, so those results reflected her true status. The biotin interference contributed to her out-of-kilter cortisol, testosterone, and TSH results. In unraveling the mystery, Greenlee consulted with Grebe to learn more about the ins and outs of immunoassays and worked closely with her lab — making them aware of the potential interference.


BIOTIN VIGILANCE

Greenlee is now making sure her practice identifies any patients taking the supplement: “We have huge signs in my office that ask people if they are taking biotin — in each exam room, over the phlebotomy chair, and at the front desk. We had all these nice pictures on our walls, but the biotin thing alarmed us so much that we don't care about our decorations in our office anymore.”

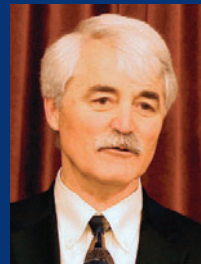
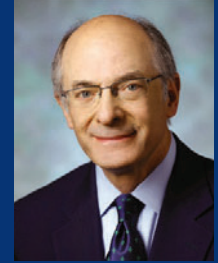
“It can be dangerous not to recognize it,” Mariash agrees. He also notes that clinicians need to be vigilant because laboratories can change the test platform without notice.

For the interference to occur, the patient's biotin level needs to be high — at least three times the upper limit of the healthy adult reference range, according to Grebe. But that level is easy to achieve with the megadoses many are taking.

Grebe suggests that a clinician can ask the lab to try using another manufacturer's test, but an easier route is to ask the patient to stop the biotin then get retested. Biotin is water soluble, so it washes out of the body quickly — even a single day can make a big difference in the test results.

And although literature reports mostly focus on problems with parathyroid and thyroid hormone tests, biotin interference could be considered as a potential contributor to almost any suspicious immunoassay result. 

SEABORG IS A FREELANCE WRITER BASED IN CHARLOTTESVILLE, VA. HE WROTE ABOUT EXPANDING THE DEFINITION OF OSTEOPOROSIS IN THE DECEMBER ISSUE.



THE ENDOCRINE SOCIETY 2016 LAUREATE AWARD WINNERS

For more than 70 years, the Endocrine Society has recognized the achievements of endocrinologists worldwide. Valued at more than \$66,000, the Laureate Awards recognize endocrinologists for seminal research, meritorious service, leadership and mentorship, innovation, international contributions, education, translation of science to practice, and lifetime achievement.

The distinguished recipients on the following pages join a prestigious list of past award recipients, all of whom have advanced scientific breakthroughs, medical practice, and human health around the world. Award categories honor the achievements of endocrinologists at all stages of their careers, recognizing those at the pinnacle of the field as well as young endocrinologists who are making a mark.

The dedication, commitment, and achievements of current and past award recipients have earned each a place in Endocrine Society history as well as the history of the practice and science of endocrinology.



Outstanding Educator Award

Steven Anderson, PhD
University of Colorado

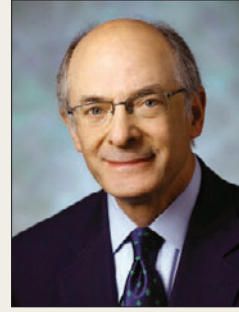
An outstanding educator facilitates learning, takes pride in the success of others, is a dedicated mentor, and an energetic advocate. Steven Anderson, PhD, the James C. Todd Professor of Experimental Pathology at the University of Colorado, displays all of these characteristics and is this year's Endocrine Society's Distinguished Educator Award winner.

Steve is truly an *outstanding* educator: He is committed to learning, career development, and mentorship; he is a champion of diversity; and he is an indefatigable campaigner for student and trainee success. Steve is the first to volunteer for Society initiatives such as the Minority Affairs Committee, Short Courses at minority institutions, the Task Force on Recruiting Minorities to Research Careers, the Early Career and Future Leaders Advancing Research in Endocrinology workshops, and the Minority Mentoring Reception. With Dr. Mark Lawson, he has been PI of the Minority Access Program (MAP) supported by a NIH T36 Award. He has served on the Minority Affairs Committee, the Training Development Committee, and the Advocacy and Public Outreach Core Committee.

Steve works selflessly in critical areas of Society work that have relatively low public profiles yet have the highest impacts on the future of our discipline. Look carefully at Steve's picture. Even if you do not know him, it is likely that you have seen his commitment to education in action. After each ENDO plenary, he is corralling students, many of whom are at a scientific meeting for the first time. He sits with them to discuss the session and how it relates to *their career goals*. He helps them plan to get the most out of the meeting and to schedule further interactions with him later that day.

Steve, your colleagues, your students, and your mentees all thank you and congratulate you on this most deserved honor.

— SIMON RHODES



Outstanding Scholarly Physician Award

David S. Cooper, MD
Johns Hopkins University
School of Medicine

David S. Cooper, MD, professor of medicine and radiology at the Johns Hopkins University School of Medicine, is the winner of the Endocrine Society's Outstanding Scholarly Physician Award for 2016. This annual award recognizes outstanding contributions to the practice of clinical endocrinology in an academic setting.

Dr. Cooper is internationally known in the thyroid and endocrine community for his work treating Graves' disease and subclinical thyroid disease, and various aspects of the diagnosis and management of thyroid cancer. He was the Chair of the American Thyroid Association Guideline Committee on Thyroid Nodules and Thyroid Cancer in 2009, which has become one of the most highly cited recent publications in endocrinology. He is the former chairman of the Endocrinology, Diabetes, and Metabolism Subspecialty Board of the American Board of Internal Medicine. He has served as a contributing editor at the *Journal of the American Medical Association*, deputy editor of *The Journal of Clinical Endocrinology & Metabolism*, and he is currently endocrine editor-in-chief for *Up-to-Date*, and the endocrine board review chair for the Society's Clinical Endocrinology Update.

Most recently, along with Lewis Braverman, MD, David became the newest editor of the iconic thyroid text, Werner's *The Thyroid*. David is perhaps best known as a clear thinker, a lucid lecturer and educator, and a scholarly clinician. He is one of those rare physicians who has successfully crossed back and forth on a daily basis between his patient care responsibilities and his commitment to the medical education of residents, fellows in endocrinology, and his colleagues and peers. David could just as readily deserve an award in education on the basis of his years of selfless dedication to medical education, and his deep involvement in development of educational tools and self-assessment. His numerous publications as author or co-author are highly cited, many of which are classics in the field. It is easy to acknowledge that David's long history of scholarly pursuits and accomplishments have rendered him the consummate clinician-scholar, a true role model for both his peers and his trainees, and highly deserving of the Society's Outstanding Scholarly Physician Award.

— LEONARD WARTOFSKY



Outstanding Clinical Investigator Award

Robert H. Eckel, MD
University of Colorado

Robert H. Eckel, MD, is an amazing physician-scientist who has performed outstanding clinical and translational research for over 30 years. Bob is one of the very few endocrinologists who has been president of the American Heart Association, which reflects not only his exemplary leadership skills but also his clinical and research expertise in lipid homeostasis, nutrition, obesity, and cardiovascular risk prevention.

Bob was among the first clinical investigators to use the euglycemic clamp to address lipid and lipoprotein metabolism in humans. He demonstrated that lipoprotein lipase (LPL) activity (which is critical for the uptake of lipoprotein derived fatty acids into tissues) was regulated by insulin in humans. He has been one of the world leaders in understanding LPL biology and pathophysiology. In a series of studies, his research group elegantly showed that LPL plays a critical role in response to weight loss in the adipose tissue and skeletal muscle which can lead to weight regain. Bob's research group next designed genetically modified mice to determine the mechanisms by which alterations in LPL in specific tissues affects insulin action and energy balance. More recently, his group made mice with neuron-specific deletion of LPL and demonstrated that this results in major induction of the orexigenic neuropeptide, AgRP, in the hypothalamus and in obesity. This has opened the door to understanding how lipid sensing in the central nervous system participates in regulating energy balance and body weight.

On a personal note, I am in academic endocrinology because of Bob Eckel. During my residency, I was exposed to Bob's keen intellect, compassion for patients, and infectious enthusiasm for academic endocrinology. He has been a tremendous role model for so many in our field. I am thrilled that Robert H. Eckel is being recognized as the Outstanding Clinical Investigator Laureate.

— BRYAN HAUGEN



International Excellence in Endocrinology Award

Ghada El-Hajj Fuleihan, MD
American University of Beirut
Medical Center

El-Hajj Fuleihan obtained her MD degree from the American University of Beirut (AUB), Lebanon. She completed her residency and fellowship at the New England Deaconess and Brigham and Women's Hospitals (BWH), Harvard Medical School, with a subspecialty in metabolic bone diseases under the mentorship of Edward Brown. She pursued a Master in Public Health, Clinical Effectiveness concentration, from the Harvard School of Public Health. Post-training, she directed the Calcium Metabolism Research Unit at BWH prior to moving back to her alma mater in 1997. Despite limited resources and major challenges in the region, Dr. El-Hajj Fuleihan has since, and continues to, relentlessly spearhead major capacity-building initiatives to advance research, education, and care in the region. Her program is the nucleus for the conduct of original research projects, on osteoporosis and hypovitaminosis D, of major relevance to the Middle East, and it holds a rich publication record. It is home to many post-doc trainees, several of whom followed a similar path, and currently hold junior positions in major academic centers in the U.S. and the region.

Dr. El-Hajj Fuleihan led the IOF Middle East Africa osteoporosis audit, spearheads the National Task Force for Metabolic Bone Disorders, the FRAX Lebanon calculator, and leads/partakes in national and international osteoporosis guidelines. She directed the development and finalization of the blueprint, governance structure, and policies for the University's Human Research Protection Program, and its Clinical Research Institute. Dr. El-Hajj Fuleihan was awarded a five-year grant to launch the Scholars in HeAlth Research Program (SHARP). SHARP allows trainees enrolled from Lebanon and the region to pursue an intense summer certificate and a master degree in quantitative methods in health research in non-communicable diseases. Dr. El-Hajj Fuleihan received prestigious awards and is a member of the Alpha Omega Alpha medical honor society.

— SUSAN MANDEL



Outstanding Clinical Practitioner Award

M. Carol Greenlee, MD
Western Slope Endo

Carol Greenlee, MD, is truly deserving of the 2016 Endocrine Society Clinical Practitioner Award. She is a busy clinical endocrinologist in solo practice serving a rural community in Grand Junction, Colo. At the same time, she has devoted countless hours to improving medical care for all patients and clinicians through her policy work at the Endocrine Society and the American College of Physicians (ACP).

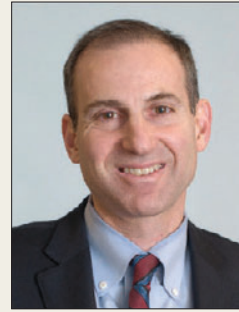
For the Endocrine Society, she recently served on Council with past service on the Annual Meeting Steering Committee and the Clinical Affairs Core Committee. She has provided past or ongoing service on many Society task forces, including the pediatric-to-adult care transition project and chairing the development of the Accurate Insulin Decisions shared-decision-making tools. In 2011, Carol was awarded the Endocrine Society Volunteer of the Year Award.

Additionally, Carol has devoted her energy to improving interdisciplinary care through the development of programs that encourage better communication between clinicians promoting more effective care delivery. Since 2007, Carol has worked at the ACP enhancing care coordination by co-chairing the Patient Centered Medical Home-Neighbor (PCMH-N) workgroup, co-authoring the policy paper that espoused the “medical neighborhood” and chairing the multi-specialty workgroups on High Value Care Coordination and Pediatric-to-Adult Transition tools.

She has continued to advance patient-centered care and the PCMH-N model by working with several organizations, including the National Committee for Quality Assurance, the American Medical Association, regional physician organizations, and her own local Independent Physician Association. Her practice is recognized as a tier 3 Patient-Centered Specialty Practice.

As a clinician, Carol has a passion for her patients’ care. Her policy work will have an impact on the lives of all patients through her dedicated work with clinicians to encourage them to communicate effectively and work collaboratively, ultimately decreasing the burden and increasing the joy of practice.

—STEPHANIE FISH



Gerald D. Aurbach Award for Outstanding Translational Research

Steven Grinspoon, MD
Massachusetts General Hospital

Steven Grinspoon, MD, is the Endocrine Society’s selection for the 2016 Gerald D. Aurbach Award for Outstanding Translational Research. After graduating from Cornell University, Dr. Grinspoon attended the University of Rochester School of Medicine and completed his residency in internal medicine at Columbia-Presbyterian Hospital. He then did an endocrinology fellowship at Massachusetts General Hospital (MGH), focusing on neuroendocrinology with his mentor Anne Klibanski. Dr. Grinspoon is currently professor of medicine at Harvard Medical School and director, Program in Nutritional Metabolism at MGH.

Dr. Grinspoon’s long-standing focus has been to understand the neuroendocrine regulation of body composition in HIV, with a focus on how it relates to the growth hormone (GH) axis. His work in HIV lipodystrophy started with a clinical finding. In his clinic, Dr. Grinspoon was impressed with altered fat distribution in several patients with HIV infection. Further investigation led to the seminal work in characterizing lipodystrophy in such patients. He hypothesized that augmentation of GH pulse amplitude with GHRH would reduce visceral fat and improve metabolic abnormalities in HIV lipodystrophy. His work led the FDA to approve Tesamorelin for HIV lipodystrophy in 2010. In follow-up studies, he has shown that Tesamorelin significantly reduces hepatic fat by 40% as assessed by spectroscopy among HIV-infected patients with lipodystrophy. Indeed, the use of Tesamorelin is the first strategy shown to reduce hepatic fat in the HIV population.

These studies demonstrate Dr. Grinspoon’s ability to take a finding from bedside to bench, and back to bedside. In addition to his clinical research successes, he has been an active educator and mentor in clinical investigation; he has mentored over 25 trainees who have gone on to academic careers, the majority of whom are actively involved in clinical investigation. This demonstrates Steve’s dedication to training and mentorship.

—LAURENCE KATZNELSON



Outstanding Innovation Award

Richard Heyman, PhD
Metacrine, Inc.

Richard Heyman has spent the majority of his career in the biotech sector focused on integrating approaches in molecular endocrinology to the discovery and development of novel therapeutics that target nuclear receptors.

Rich received a PhD in pharmacology from the University of Minnesota and a BS in chemistry from the University of Connecticut. He was an NIH post-doctoral fellow at the Salk Institute, working with Ronald Evans. Following his post-doctoral training, he joined Ligand Pharmaceuticals, where he served as project leader, leading to the successful identification and development of agonists (called rexinoids) that bind to the retinoid X receptors (RXRs). Two of these drugs, Panretin® (i.e., 9-cis retinoic acid) and Targretin® are approved by the FDA for the treatment of cancer.

In the early 2000s, he co-founded and served as chief scientific officer of X-Cepto Therapeutics, which focused on the treatment of metabolic diseases. In 2009, he became CEO of Aragon Pharmaceuticals, where he successfully developed a new generation of therapeutics for hormone-dependent prostate cancer based on insights into molecular mechanisms of resistance. In 2013, Johnson & Johnson purchased Aragon and simultaneously to the acquisition, Rich helped spin out a new company, Seragon Pharmaceuticals, and served as the CEO. At Seragon, Rich developed a novel class of compounds that degrade estrogen receptors (ER) and are now in clinical trials for treating ER+ cancers.

The unprecedented success of Seragon led to its acquisition by Genentech/Roche in 2014. For these achievements, Rich recently received the San Diego Regional Entrepreneur of the Year Award in the biotech industry. He is the author of more than 120 publications and patents. Rich's latest venture is serving as executive chairman and co-founder of Metacrine, Inc., a new biotech start up developing therapeutics for the treatment of diabetes and fatty liver diseases. He also serves on the board of trustees of the Salk Institute and is a board member of Receptos, Inc., Organovo, Inc., BIOCROM, and serves on the Executive Committee of the UCSD Moores Cancer Center.

— DAVID MANGELSDORF



Roy O. Greep Award for Outstanding Research

Gerard Karsenty, MD, PhD
Columbia University
Medical Center

Gerard Karsenty, MD, PhD, is professor and chair, Department of Genetics and Development at Columbia School of Medicine. He is being recognized for his outstanding work on the biology of bone and how bone interacts with whole body physiology.

With a longstanding interest in bone differentiation, Dr. Karsenty identified Runx2 as the master transcription factor of osteoblast differentiation and showed that haploinsufficiency of Runx2 caused cleidocranial dysplasia. Subsequently, he identified ATF4 as a transcription factor downstream of Runx2 and linked it to Coffin-Lowry Syndrome and neurofibromatosis. He also demonstrated mutations in the parathyroid transcription factor Gcm2 in patients with congenital hypoparathyroidism.

Based on evolutionary and clinical arguments, Dr. Karsenty hypothesized that there must be coordinated endocrine control of bone growth, energy metabolism, and reproduction. In the last 15 years, his laboratory has tested this hypothesis in both mice and humans. He showed that mice and humans lacking leptin despite being hypogonadal, have a high bone mass caused by the absence of leptin signaling in brain. Dr. Karsenty has also shown that bone itself is an endocrine organ regulating energy metabolism and reproduction through production of the osteoblast-specific molecule osteocalcin. He found that osteocalcin binds to β -cells in pancreatic islets, enhances proliferation of islets and insulin secretion, and that osteocalcin also promotes glucose uptake in peripheral tissues. In the testis, osteocalcin binds to Leydig cells and enhances testosterone synthesis. This occurs through binding to its cognate receptor, GPCR6A. Loss-of-function mutation in GPCR6A in men causes a syndrome of peripheral testicular failure. More recently, Dr. Karsenty has shown that osteocalcin crosses the blood-brain barrier and enhances neurogenesis and the synthesis of monoamine neurotransmitters. Consequently, osteocalcin signaling in the brain can affect anxiety, depression, and regulate some cognitive functions.

Taken together, the work of Gerard Karsenty has profoundly advanced our understanding of bone as an endocrine organ. The therapeutic potential of these pathways may lead to new treatments of disease.

— C. RONALD KAHN

Fred Conrad Koch Lifetime Achievement Award

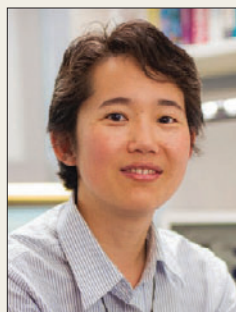


Benita Katzenellenbogen, PhD, and John Katzenellenbogen, PhD, University of Illinois

Dr. Benita S. Katzenellenbogen, MD, Swanlund Professor of Physiology and Cell Biology, and Dr. John A. Katzenellenbogen, MD, Swanlund Professor of Chemistry, both at the University of Illinois, are jointly recognized for their enormous contributions — spanning more than four decades — that have greatly advanced our understanding of the broad actions of steroid hormones and their receptors in diverse target tissues in health and disease. Their pioneering work on estrogens and estrogen receptors has defined the multifaceted modes by which these receptors are regulated and act in distinctive and biomedically significant ways. Their seminal contributions have also highlighted novel approaches for the diagnosis and treatment of hormone-responsive cancers and beneficial modes of tissue-selective estrogen action for managing various disorders including endometriosis and multiple sclerosis.

Benita's work has elucidated fundamental aspects of structure-function relationships and mechanisms of action of ER α and ER β , and demonstrated the remarkably broad spectrum of estrogen actions on gene expression and cell signaling networks. Her extensive research has provided the framework for our current understanding of the basis for the actions of selective estrogen receptor modulators (SERMs) such as tamoxifen and raloxifene, and for the development of anti-hormonal therapies used in breast cancer treatment and prevention. John has studied important aspects of diverse estrogen ligands in various analytical and biomedical applications. He synthesized and characterized many estrogens with novel structures and biological activities, including the most selective agonists and antagonists for ER α and ER β , and selective regulators of the non-genomic actions of ER. John's laboratory has also been a world leader in the development of agents for imaging steroid receptors in endocrine-responsive cancers by positron emission tomography (PET), including [^{18}F]FES and [^{18}F]FDHT, for breast and prostate cancer. Both have been exemplary role models in service to their professions and in training over 250 graduate students and post-doctoral and MD fellows.

— GEOFFREY GREENE



Richard E. Weitzman Outstanding Early Career Investigator Award

X. Shirley Liu, PhD
Harvard University

X. Shirley Liu received her PhD in biomedical informatics and computer science from Stanford University in 2002. She is now professor of biostatistics and computational biology at the Harvard T.H. Chan School of Public Health and director of the Center for Functional Cancer Epigenetics at the Dana-Farber Cancer Institute.

Her research focuses on algorithm development and integrative modeling of high throughput genomic data to understand the specificity and function of factors that regulate gene expression, such as transcription factors, chromatin regulators, RNA-binding proteins, lncRNAs, and kinases in tumor progression and therapeutic responses. In the computational biology realm, her group developed very widely used algorithms for transcription factor motif finding, ChIP-chip, ChIP-seq, MNase-seq, DNase-seq, and CRISPR screen data analysis. She developed the concept of the “cistrome,” the set of cis-acting targets of a trans-acting factor across the genome. Her computational methods to analyse the cistrome have enabled the endocrinology community to identify nuclear receptor cistromes, collaborating transcription factors, and target genes.

In epigenetics, she and her colleagues identified the chromatin signature of embryonic pluripotency and were the pioneers in the use of dynamics of nucleosomes, histone marks, and DNase hypersensitivity to predict driving transcription factors and cis-elements in biological processes. In cancer biology, she and her colleagues identified novel functions of ESR1, AR, FOXA1, EZH2, and NOTCH1 in various cancers, discovered many cancer-related long non-coding RNAs, and reported novel associations of tumor immunity with patient clinical features and outcome. Her work is extremely highly cited and she has already mentored a number of trainees who have established successful independent academic careers. She received the Sloan Research Fellowship in 2008 and was named a Yangtze River Scholar and 1000 Talent Scholar in China in 2012 and 2013.

— MYLES BROWN



Outstanding Leadership in Endocrinology Award

Anthony Means, PhD
Baylor College of Medicine
and Duke University

The Endocrine Society honors Anthony Ross Means, PhD, with the 2016 Outstanding Leadership in Endocrinology Award. Dr. Means is professor of molecular and cell biology at Baylor College of Medicine and the Nanaline H. Duke Professor Emeritus of Pharmacology and Cancer Biology at Duke University. He is being recognized for his innovative, thoughtful, and effective leadership in moving forward countless initiatives that have significantly influenced the science as well as the professional development of generations of scientists in the discipline of endocrinology. His remarkable and prestigious career has been recognized with numerous honors from the Endocrine Society including The Edwin B. Astwood Award (1980), The Fred Conrad Koch Lifetime Achievement Award (1998), editor-in-chief, *Molecular Endocrinology* (1998 – 2003), and president (2004).

A tireless scientific innovator, Dr. Means opened a new field of molecular signaling with his groundbreaking studies defining the intracellular calcium receptor, calmodulin, and its associated kinases. The elucidation of calmodulin's structure, function, and multi-signaling complexes paved the way for novel insight into its actions in oncogenesis, metabolic regulation, reproduction, neurobiology, stem cell biology, and immunology. His scientific reach and stature in the endocrine field and beyond is reflected in the more than 450 highly cited publications and more than 300 national and international invited lectureships to date.

Dr. Means is a highly respected and valued mentor to more than 200 scientists who trained with him. The many mentees who continue to successfully pursue endocrine-related research as independent investigators are a powerful testament to his influence on the profession, effectively achieved by modeling critical thinking, dispensing the right dose of advice, and providing a conducive environment for self-exploration.

For his capacity to lead, inspire, and serve with vision, Dr. Means is truly deserving of the Endocrine Society's Outstanding Leadership in Endocrinology Award.

— ROSALIA SIMMEN



Outstanding Mentor Award

Nanette Santoro, MD
University of Colorado
School of Medicine

As one of the many beneficiaries of her dedication to mentoring, I am truly honored to present Nanette Santoro, MD, with the Endocrine Society 2016 Outstanding Mentor Award. Dr. Santoro is an exemplary mentor, an innovative scientist and educator, and a national leader in the endocrinology of women's health. She is most deserving of this distinguished Endocrine Society Award.

Dr. Santoro has generously committed more than 25 years to mentoring, education, and research. She crafted and implemented key studies that significantly influenced how clinicians and scientists understand the action of menopausal hormone therapy and (Women's Health Initiative and Kronos Early Estrogen Prevention Study) how socioeconomic factors, race/ethnicity, and BMI influence the menopausal transition (Study of Women Across the Nation-SWAN and multiple R01s). She has co-authored more than 200 original manuscripts on these topics with mentees.

Dr. Santoro has mentored a cadre of mentees from diverse academic backgrounds to achieve their maximal potential. Her dedication to mentoring has resulted in a legacy of clinical and educational excellence and a force of educators and researchers committed to the advancement of women's health and mentoring of the next generation of academicians. The fruits of her efforts are evident in the number of grants received by mentees (>25 NIH and foundation grants) and by the leadership positions held by her mentees (associate dean, department chairs, vice chairs, division chiefs, fellowship and resident program directors, and directors of department research) throughout the U.S. and abroad.

Dr. Santoro is the Endocrine Society mentor archetype. She is an agent of change and creates opportunities for excellence in mentoring whenever possible. She embodies all of the attributes that define the Endocrine Society's Mentoring Award.

— GENEVIEVE NEAL-PERRY

Sidney H. Ingbar Award for Distinguished Service



Dolores Shoback, MD
UCSF/VA Medical Center

The Sidney H. Ingbar award recognizes distinguished service to the Endocrine Society and to the field of endocrinology, and I am pleased to present this year's award to Dolores Shoback, MD. Shoback is a scientist and educator who has tirelessly served the Endocrine Society. As Annual Meeting Program Chair, an associate editor for *The Journal of Clinical Endocrinology & Metabolism*, and a member of Council, her contributions have had a major impact on many of our core programs. Her judgement, can-do attitude, and leadership skills have led to multiple important assignments to the development, scientific, and educational programs, and Nominating, Annual Meeting, and Publications Committees. She has developed and supervised multiple postgraduate education programs and helped the Society design innovative educational programs for students and fellows. In all of her activities she continues to be a strong advocate for trainees and junior investigators. As a highly respected clinician and scientist, she has encouraged and developed collaboration among clinicians and clinical and basic investigators.

In addition to recognizing service to the Society, the Ingbar Award honors an individual who has contributed to the field of endocrinology. Dr. Shoback is internationally recognized for her work on the pathogenesis of calcium-sensing disorders, and her research continues to enhance our understanding of calcium metabolism and metabolic bone disease.

— JANET SCHLECHTE

Outstanding Public Service Award




Jean Pierre Bourguignon, MD, PhD, University of Liege
Andrea Gore, PhD, University of Texas
J. Pete Myers, PhD, Environmental Health Sciences
Thomas Zoeller, PhD, University of Massachusetts

For Outstanding Public Service, the Endocrine Society recognizes Drs. Andrea Gore, R. Thomas Zoeller, John Peterson (Pete) Myers, and Jean-Pierre Bourguignon for their citizenship, outreach, and scientific leadership in the area of endocrine-disrupting chemicals (EDCs).

These four individuals have worked tirelessly with the endocrine community to communicate to the public, scientists, healthcare professionals, and global governments about the role and impacts of EDCs on normal physiology, and how EDCs challenge long-used approaches in identifying toxic substances. Among the varied contributions of these individuals are co-authorship of the 2009 Scientific Statement on EDCs, integration of the topic into the Endocrine Society's scientific offerings, and expansion of the Society's advocacy beyond the U.S. borders. They have represented the Society to the U.S. Congress, U.S. EPA, EU Parliament, and the EU Commission, traveling around the globe to ensure that the best science is considered when environmental standards are created. In the process, they have been tremendous stewards for the field of endocrinology.

In addition to these collective advances, each of these individuals has contributed enormously in the following ways. In establishing the Environmental Health Network, Pete Myers changed the relationship between scientists and the press, and improved the accuracy of scientific reporting. In 2005 and again in 2009, Andrea Gore and Tom Zoeller organized the Endocrine Society's Forums on Endocrine Disrupting Chemicals and played key roles in developing the Endocrine Society Scientific Statement on EDCs in 2009, which was updated in 2015 under Dr. Gore's leadership. Drs. Bourguignon and Zoeller founded and co-chaired task forces dedicated to the Society's global work on EDCs, and, in 2012, Zoeller led the Endocrine Society Statement of Principles for Policymakers. Dr. Bourguignon was particularly crucial to engaging the European community on EDC science and policy.

In 2014, all of these individuals signed onto the Endocrine Principles in EDC Policy, which has led the world in thinking about EDC science and health implications. For their public service to the field of endocrinology through their work in EDCs the Endocrine Society recognizes and thanks Drs. Andrea Gore, R. Thomas Zoeller, John Peterson (Pete) Myers, and Jean-Pierre Bourguignon. 

— TERESA WOODRUFF

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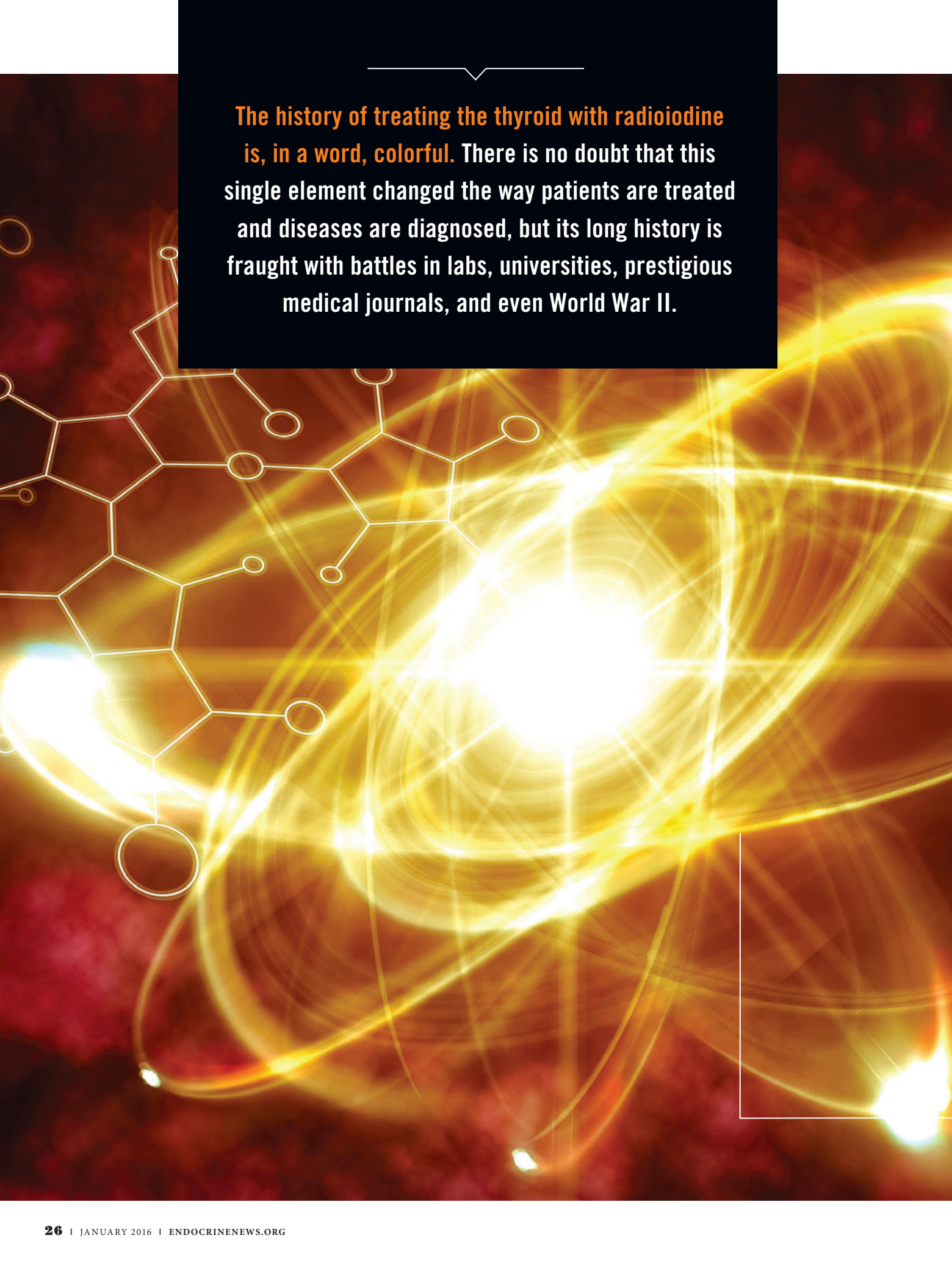
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The history of treating the thyroid with radioiodine is, in a word, colorful. There is no doubt that this single element changed the way patients are treated and diseases are diagnosed, but its long history is fraught with battles in labs, universities, prestigious medical journals, and even World War II.

CLASH OF THE Titans:

THE SAGA OF RADIOIODINE THERAPY

BY DEREK BAGLEY

In November 1936, Saul Hertz, the director of the Thyroid Clinic (1931 – 1943) at Massachusetts General Hospital (MGH) in Boston, sat across town in a luncheon meeting at Harvard Medical School, listening to Massachusetts Institute of Technology (MIT) president Karl Compton describe “What Physics Can Do for Biology and Medicine.” Hertz, who had been studying iodine’s effects on the thyroid, spontaneously asked Compton whether iodine could be made radioactive, his goal being to use this theoretical radioactive iodine to treat hyperthyroidism. Compton responded about a month later by letter, writing that iodine could indeed be made radioactive.

In order for this to work, it would take the combined efforts of physicians and physicists, so Hertz and his boss at MGH, J. Howard Means, teamed up with MIT physicists Robley Evans and Arthur Roberts, and by 1938 Hertz and Roberts began conducting studies with iodine 128 (I-128) on rabbits, showing that the rabbits’ thyroid glands rapidly took up I-128, and thus a tracer was born. However, as Clark T. Sawin and David V. Becker wrote in their paper “Radioiodine and the Treatment of Hyperthyroidism: The Early History,” published in the journal *Thyroid* in 1997, there was no hope of using I-128 as a treatment for hyperthyroidism because of I-128’s 25-minute half-life.

Around this time, across the country at the University of California, Berkeley, Joseph Hamilton and Mayo Soley, who were also conducting rabbit studies using radioiodine (the Boston and Berkeley groups shared their findings with each other), were able to create I-130 and then I-131 using a cyclotron, with half-lives of 12 hours and eight days, respectively. In 1940, the Berkeley group confirmed that the human thyroid gland took up radioiodine, and the next year, the Boston group (with their brand-new cyclotron) was able to create these new radioactive iodines and used a mixture of I-130 and I-131 to treat patients with hyperthyroidism. Hertz administered this therapeutic treatment to the first human patient at MGH in January of 1941, making this year the 75th anniversary of using a radioactive material to treat a patient — the birth of nuclear medicine.

Radioactive iodine is, of course, one of the great medical advancements of the past century. It’s used to not only treat hyperthyroidism due to hyperfunctioning thyroid nodules, but Graves’ disease and thyroid cancer as well.



Dr. Saul Hertz (1905 – 1950) discovered radioactive iodine as a diagnostic tool and therapy for Graves disease and thyroid cancer.

“Tens of thousands of patients have been treated satisfactorily for hyperthyroidism since Hertz’s discovery. It’s a very important therapy. **It’s avoided a lot of surgery, and a lot of the complications from those surgeries have been avoided.**”

— LEONARD WARTOFSKY, MD, MACP, PROFESSOR OF MEDICINE, GEORGETOWN UNIVERSITY; EDITOR-IN-CHIEF, ENDOCRINE REVIEWS

“A COMPLICATED BIT OF HISTORY”

Radioactive iodine is, of course, one of the great medical advancements of the past century. It’s used to not only treat hyperthyroidism due to hyperfunctioning thyroid nodules, but Graves’ disease and thyroid cancer as well. “Tens of thousands of patients have been treated satisfactorily for hyperthyroidism since Hertz’s discovery,” says Leonard Wartofsky, MD, MACP, a professor of medicine at Georgetown University, editor-in-chief of *Endocrine Reviews*, and an expert on the thyroid. “It’s a very important therapy,” he says. “It’s avoided a lot of surgery, and a lot of the complications from those surgeries have been avoided.”

Radioactive iodine is also a useful diagnostic tool for scanning and measuring the function of the thyroid. It can tell physicians how well the gland is functioning or to show them the anatomy and structure of the thyroid, and whether there are nodules present. Radioiodine is even used at the bench; chemists use it to develop radioimmunoassays.

Tens of thousands of thyroid cancer patients have been treated using Hertz’s brainchild. M. Sara Rosenthal, PhD, a professor of bioethics at the University of Kentucky, founder of endocrineethicsblog.org, and a thyroid cancer survivor, says that Hertz’s original inquiry into the uses of radioactive iodine led to a novel, well-tolerated, unique systemic treatment for iodine-avid thyroid cancer. “Generally the side effects are low,” she says. “Overall, radioactive iodine therapy is less risky than taking Aspirin.”

And yet, while the discovery of radioactive iodine and the subsequent therapies born out of Hertz’s seminal question to Compton 80 years ago have helped thousands of patients suffering from thyroid diseases, the full story is anything but simple and rosy, and it leads to the falling out of two of the major players involved.

“It was a very complicated bit of history,” Wartofsky says.

FROM BENCH TO BATTLESHIP

By 1941, Hertz had advanced his research, and he was administering I-130 to patients at MGH to treat hyperthyroid patients, and over time, he gathered a series of almost 30 patients. Meanwhile, Hitler was advancing through Europe, so Hertz joined the Navy and was shipped off to World War II in 1943.

Hertz was working with a physician named Earle M. Chapman at this time, a private practice doctor who treated Beacon Hill-style, affluent patients, but still managed to carry on clinical research, and worked part-time at MGH. Chapman was ineligible for military duty because of an injury he had sustained in high school, so before Hertz shipped out, he asked Chapman to continue his research.

IN THIS ISSUE	PAGE
Advocate Award	1
Classified Advertising	23
Dale Clearance Calendar	2
Editorial	3
Feature Section	13-15
Jewish Education	15
Resorts	20-22
Synagogue Services	6
Theatres—Amusements	22
Weddings—Engagements	16-19
Why? Because	15
Women's News; League Calendar	16-17

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Vol. 97, No. 17

THURSDAY, MAY 23, 1946

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DR. SAUL HERTZ
Commander (MC) USNR



DR. SAUL HERTZ
Commander (MC) USNR

By SHIRLEY I. CIBLEY
(Advocate Staff Writer)

In 1936, the field of radioactive isotopes and their possible uses to extend and test medical theories and biochemical processes was just coming to the forefront of medical research. In that same year, Dr. Saul Hertz, of Brookline, attended a Harvard Medical School conference and was particularly inspired by a speech delivered by Dr. Karl T. Compton, in which the President of Massachusetts Institute of Technology made a plea for medical men to become interested in the application of the newer physiological methods which were then becoming available through technological studies.

Thus was born the germ of an idea with which Dr. Hertz has worked, studied and experimented, and which today has resulted in his revolutionary discovery of a new treatment for Graves' disease (popularly referred to as pop-eyed goitre) through the application of radioactive iodine.

(Continued on Page 11)

UN Commission In Report on Human Rights

NEW YORK (JTA)—The United Nations Commission on Human Rights today issued its first report on the situation of human rights in the world.

Spotting the News

(World News Services Feature)
By ABRAHAM J. ARNOLD

HAGANA WARNING—The transfer of British military bases from Syria, Lebanon and Egypt to Palestine will not be tolerated, warned the Voice of Israel, underground radio of the Hagana resistance movement. Having agreed to remove their troops from Egypt and other countries in the Middle East, Britain is interested in maintaining the mandate at all costs and later taking over the trusteeship of Palestine. She wants this not in the interests of the Jewish people but to maintain her own power in the Middle East, the underground radio pointed out.

THE "HOLY WAR" IS OFF—Latest statements by Arab League leaders and spokesmen for the Arab Higher Committee in Palestine finally reveal that the call for a "Holy War" in Palestine was nothing but a first-class hoax. Dr. Izzat Tannous, spokesman for the Arab Higher Committee, said this week that the use of force was not being considered and they were not prepared for a clash. It is also reported that the Arab attitude to-

Article from *The Jewish Advocate* May 23, 1946: "Local Researchist Discovers Cure for Goitre Through A-Bomb By-Product." Image used by permission of *The Jewish Advocate*. All rights reserved.

"[Chapman] was probably honored to get involved in some clinical research and take on these patients," Wartofsky says. "But when Hertz came back from the Navy two years later, it looks like he didn't want to give it up, and they had a lot of arguments, and they had a rift and weren't really talking to each other."

Their argument, it seems, stemmed from their disagreement over the correct course of treatment with radioiodine therapy. Hertz used lower doses and followed it with stable iodine, while Chapman was more aggressive, using higher doses without stable iodine. Sawin and Becker also write that they disagreed over "who was in charge" and it "led to their falling out."

"After Hertz's release from the Navy he was not permitted to return to the MGH and became quite bitter," Sawin and Becker write. "Chapman stayed on at the MGH. After the war was over, both had acquired a sufficient number of patients — there was then no such thing as a controlled trial — and wrote up the results for publication."

GETTING THE SCOOP

Here's where the plot thickens. Chapman wrote his paper first, and sent it to the *Journal of the American Medical Association (JAMA)* to be published. But the paper was too long and was sent back to Chapman for revisions. Hertz got wind of this, and he rushed to finish his paper. "Although the editor of *JAMA* was puzzled by two papers on the same topic from the same institution," Sawin and Becker write, "both papers appeared in the same issue of *JAMA* on May 11, 1964, and announced the new therapy was effective treatment for hyperthyroidism."

Radioactive iodine is also a useful diagnostic tool for scanning and measuring the function of the thyroid. It can tell physicians how well the gland is functioning or to show them the anatomy and structure of the thyroid, and whether there are nodules present.



PROFOUND AND LASTING LEGACY

Saul Hertz, sadly, had a relatively short career. He died at age 45 and did not have much time to teach students and pass his findings and techniques on to them.

His daughter, Barbara Hertz, has been on a mission to bring more awareness to her father's story and legacy. "You have to think of the courage and the fortitude that my dad must have had to move this forward and to make this a reality," she says.

Hertz was instrumental in getting her father's work displayed at the Endocrine Society's 85th annual meeting in Philadelphia in 2003. His patient data charts were featured as part of Adolph Friedman and Chip Ridgway's Society history project. "That was the beginning of my exposure of the significance of his work," Hertz says.

More recently, in 2012 on the 75th anniversary of Hertz's groundbreaking question, Barbara was able to display and celebrate her father's work in Vanderbilt Hall at Harvard Medical School, the very building where that spontaneous, seminal idea occurred to him. She's also worked with physicians and researchers from MIT, MGH, Beth Israel Hospital, and others to launch the website saulhertzmd.com.

Hertz says that the main thing she wants people to know is that her father had these challenges, but he went on and did what he needed to do for medical science. "The product of his research has had a profound and lasting legacy," she says.



Dr. Hertz uses a multicounter to measure the amount of radioactive iodine absorbed by the thyroid gland. Early 1940s. Courtesy of saulhertzmd.com

This is a tale that is, unfortunately, not all that uncommon in medicine. "The Hertz story is a medical history 'archetype' that is far more universal than unique," Rosenthal says.

"People have big egos," Wartofsky says. "They want to publish first; they want to get the credit for stuff. And if they can scoop someone else who's working on the same thing, by all means they will."

Wartofsky, who previously was also the editor-in-chief of *the Journal of Clinical Endocrinology & Metabolism*, tells of how during his tenure on that journal, he received two papers on the same topic at almost the same time. The first one made it through the review process quickly and went to publication while the second one required revisions. The author of the second one was angered, withdrew his paper from consideration, and sent it to another journal that had a quicker turnaround time to get it in print. So actually, his paper came out first, and now, when the topic of the two papers is mentioned, he cites his work as having shown it first.

"That's the side of investigation that's not very flattering," Wartofsky says.

Unflattering and, again, uncommon. The old saying goes that nothing great ever comes easy, and it holds true for this story as well. Despite the egos and arguments, the alleged backstabbing and betrayals, Hitler and World War II, radioactive iodine has become the gold standard in thyroid disease diagnosis and treatment. Radioactive iodine has saved millions of lives and qualities of lives, and it's all due to a single question from a promising young physician. **EN**

BAGLEY IS THE ASSOCIATE EDITOR OF *ENDOCRINE NEWS*. HE WROTE ABOUT TREATING DIABETES IN HIV+ PATIENTS IN THE NOVEMBER ISSUE.

Back *to* School BY DEREK BAGLEY



Endocrine News takes a look at how one lab at the University of Minnesota took mentorship to a new level by recruiting both grad students and a high school student.

In the summer of 2013, Hannah Ahrendt, about to be a junior in high school, first set foot in Carol Lange's lab at the University of Minnesota to study the biology of steroid receptors in breast cancer. The summer before, Ahrendt had attended a summer course at Brown University about DNA technologies and the methods used in DNA research. She enjoyed the course so much that the next summer she looked for an opportunity to learn more about research and find a lab to work in.

“**You never know where the best scientists are going to come from, and why should age be a barrier?**”

— CAROL LANGE, PHD, PROFESSOR IN THE DEPARTMENTS OF MEDICINE AND PHARMACOLOGY AT THE UNIVERSITY OF MINNEAPOLIS IN MINNEAPOLIS



Hannah Ahrendt (left) and Caroline Diep (above)

Ahrendt's mother, a physician and Lange's doctor, broached the subject of her daughter's interest with Lange and asked whether it would be possible for Hannah to work part time in Lange's lab. Lange, PhD, a professor in the Departments of Medicine and Pharmacology at the University of Minnesota in Minneapolis, says she wasn't particularly looking for a high school student to volunteer in her lab. "But I just felt like, how can you say no to your doctor?" she says.

Ahrendt interviewed and started working in the lab 10 hours a week. Lange paired Ahrendt with Caroline Diep, a graduate student at the time, who Lange says was very strict with the new volunteer: "She was like, 'Do it this way, no, do it that way,'" and I thought, 'What have I done? I've created a monster here!' But it actually worked really well," Lange says. "We learned our lesson that there's this source of bright, excited, young people out there at the high school level."

CHAIN OF MENTORSHIP

What made this work was the chain of mentorship in the lab, from Lange to Diep to Ahrendt. When someone new comes into the lab, Lange has them work on basic biochemical techniques (assays, cell cultures, etc.), learning how to do them from the more senior people, a hands-on training experience by shadowing someone, until they're ready to do these techniques by themselves. Lange made it a point not to treat Ahrendt any differently because she was a high school student. Lange compares it to joining a really good basketball team and having to rise to that level. "When these young people come into the lab, don't give them easy stuff to do," she says, "give them hard stuff to do."

Diep had already worked as a research technician at the Translational Genomics Research Institute (TGen) in Phoenix, Ariz., for four years as a post-baccalaureate. Every summer, TGen hosted an internship program in biomedical research for students of all levels, including high school students. Diep says she learned a lot about mentoring, since she had great mentors and also got the chance to pass some of those skills along as a mentor to summer interns. So when she was applying for a graduate school, she asked around about other great mentors, and two of her colleagues recommended Lange. Diep has been working in Lange's lab for four years now.

"As a mentor," Diep says, "[Lange's] really good for me, knowing when to leave me alone and let me do the experiments I need to do based on the experience that I've had, and also keep an open door for me if I have questions or get stuck."

Diep says that Lange has taught her a wide range of things, from how to write manuscripts to how to think about science critically and on a bigger level, and that helped shape her own style, which influenced how she mentored Ahrendt. When Ahrendt first arrived, Diep asked her whether she really wanted to be there, worried that Ahrendt may have just been caving to parental pressure to spend her summer in a lab, when she'd rather be out doing typical teenage things. "I just wanted to make sure she was there for the right reasons," Diep says.

"I wanted to be there," Ahrendt says. "I really wanted to learn and experience the research. It was a really cool experience for me, for the future as well."

Ahrendt helped with Diep's experiments and worked on a project that set out to understand how cells sense progesterone; Lange's lab discovered that when cells, including cancer cells, see high levels of progesterone, they start making more progesterone receptors. "The cell adapts to its environment," Lange says. "If it sees a hormone, it'll start making whatever pathway proteins it needs to sense that hormone."

Ahrendt measured RNA and protein levels in breast cancer cells and will be the second author on an upcoming paper on which Diep is the lead author, since the former was assisting with the direct measuring assays, planning, and setting up her experiments in order to treat the cells with hormones and then measuring the RNA and protein levels. "Which is pretty much what a postdoc would be doing," Lange says. "She was doing work on par with a routine day in the lab on her own."

"I made myself useful enough that I got to stay," Ahrendt says, laughing, "which made me really happy."

LAB DIVERSITY

Lange says that there are programs for young people to get into labs, but they're usually reserved for undergraduates, and Lange herself says that in the past, she would have balked at the idea of a high school student in her lab. "But I was proved quite wrong with Hannah," she says. "It's opened my mind to the possibility, and I'm probably going to have younger people in my lab now."

She stresses the importance of lab diversity and how that has guaranteed that her mentees have all gone on to do great things. "No one is flipping burgers," she says.

Diep defended in August 2015 and is starting the next phase of her career this month, as a post-doctoral fellow in the lab of Michael A. White, PhD, at UT Southwestern in Dallas. She will be working with White to look for new molecular targets in cancer types. "That has been a favorite subject of mine that I've kept consistent throughout my research career," Diep says, "when I was a tech, then as a graduate student, and now as a postdoc."




Caroline Diep (left) joins Carol Lange, PhD (right) as she receives the 2013 Mentor of the Year Award.

Diep says she looks forward to continuing the chain of mentorship, first with a graduate student, but she's open to the idea of bringing high school students into the lab.

Ahrendt is now a freshman at Duke University, on track to become a doctor. She says she's especially interested in chemistry, and she wants to look into different types of labs to explore her options.

"Hannah and Caroline are going to go far in their careers," Lange says. "Hopefully, I was a good mentor to them." She says she looks at the people in her lab like family, just as she saw her PhD mentor (Alvin M. Malkinson, PhD) as a "science dad" during her thesis studies at the University of Colorado, Boulder. Malkinson remained a mentor and close friend throughout Lange's early career.

Lange says that when donors and other researchers visit her lab, they're surprised to learn she has high school students working there, but again she says diversity is the secret to success. "You never know where the best scientists are going to come from," she says, "and why should age be a barrier?" 



*WHO
LET
THE
DOGS
OUT?*

BY GLENDA FAUNTLEROY

MUCH CHEAPER, LESS INVASIVE, AND A WHOLE LOT CUTER THAN A FINE-NEEDLE ASPIRATION BIOPSY, THYROID CANCER-SNIFFING DOGS HAVE A REMARKABLE SUCCESS RATE. But will the medical community — as well as patients — accept these canine diagnosticians?



They spotted him wandering around the parking lot of local shopping center. The stray German Shepherd mix was in poor health and searching for food when Arny Ferrando, PhD, and his wife enticed him with a treat to jump in their opened car door.

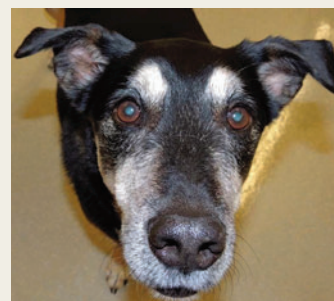
But Ferrando, a professor at the Center for Translational Research in Aging and Longevity at the University of Arkansas for Medical Sciences (UAMS) in Little Rock, says that he, not “Frankie,” was the lucky one that day.

“I was quite fortunate because I just bonded with him, and he turned out to be a wonderful working dog,” he says, after utilizing Frankie as a search and rescue dog. Fast forward five years and Frankie, now about eight, is the first dog trained to detect thyroid cancer with a sniff of his nose.

“Being a search and rescue dog meant that he already understood looking for a scent and signaling when he found it,” Ferrando says. “It was just a matter of changing the scent for him. So training to signal for thyroid cancer just took a few months.”

Ferrando and his colleagues at UAMS presented their pilot study at **ENDO 2015** in San Diego that showcased Frankie’s diagnostic skills.

Before the pilot test, Frankie was imprinted with urine, blood, and thyroid tissue obtained from several different patients with metastatic thyroid carcinoma. He was then trained over six months to decipher between urine from thyroid cancer patients and those without cancer. Then, in a first-of-its-kind project, he was asked to “diagnose” the presence or absence of cancer in the urine of 34 patients who initially presented to UAMS with ≥ 1 thyroid nodule(s).



Meet FRANKIE

AGE: 8 (approximate)

BREED: German Shepherd mix

OCCUPATION: Canine Thyroid Cancer Detection Specialist

HOBBY: One-hour morning walks with Dad and my two pack siblings, Sophie and Angel

FAVORITE MEAL: The homemade gourmet feast of salmon dog kibble, cooked turkey, shredded cheese or eggs, topped off with beef broth

BEST PART OF THE DAY: Going to work at UAMS with Dad (“It’s the best deal going. All I have to do is sniff human urine and tell him if I find the cancer smell, and he gives me a treat!”)

FUTURE PLANS: Retirement.

To learn more about the potential of scent-trained dogs or to become a contributor, visit www.thefrankiefoundation.org.

Frankie's cues were simple: Lay down if it's cancer. Turn away if it's benign.

He matched 30 out of 34 samples (88.2% accuracy, two false negatives, two false positives). The sensitivity was 86.7% with a specificity of 89.5%.

The use of dogs like Frankie to detect thyroid cancer could make a big impact on the medical community by relieving patients of the burden of uncomfortable and expensive diagnostic tests, Ferrando says.

Elizabeth Pearce, MD, a thyroid specialist at Boston Medical Center, agreed with the potential. "This study is highly novel, and the concept of a noninvasive, rapid, inexpensive test is quite appealing and might be of particular use on low-resource settings," she says.

"The reported sensitivity and specificity are fairly robust relative to fine-needle aspiration biopsy," she adds. "We routinely make use of dog's olfactory prowess in other potentially life-and-death situations, for example, bomb-sniffing, so I don't think that the eventual use of this testing is beyond the realm of possibility."

THE STANDARD DIAGNOSIS

Cancer of the thyroid starts as a nodule on the gland. When a nodule is detected, fine-needle aspiration biopsy is typically done to rule out cancer. Sometimes the nodule is removed during surgery and then tested. And although thyroid nodules are very common, only about 5% are cancerous, according to the Endocrine Society.

"By 2020, thyroid cancer will be one of the four leading cancers in the country, but it's very hard to diagnose for a whole number of reasons," Ferrando says. "This is why (co-researcher) Dr. [Donald] Bodenner [director, Thyroid Center, UAMS] had the intestinal fortitude to say let's give this a shot."

"Dr. Bodenner has been at this for 25 years, and no matter how good he is, he's sometimes stuck telling his patients 'look, we

don't really have a diagnosis but you have 5% chance of cancer."

"Now I would take the 95% and run with it," Ferrando continues. "But a lot of people don't see it that way and schedule surgery, and for of all those people who elect to have the surgery, 90% of them didn't need it. And that's all because of the methodologies and our inability to accurately diagnose."

Pearce cautions, though, that there are a number of obstacles to implementing dogs to diagnose the disease.

“We routinely make use of dog’s olfactory prowess in other potentially life-and-death situations, for example, bomb-sniffing, so I don’t think that the eventual use of this testing is beyond the realm of possibility.”

— ELIZABETH PEARCE, MD, THYROID SPECIALIST, BOSTON MEDICAL CENTER, BOSTON, MASS.

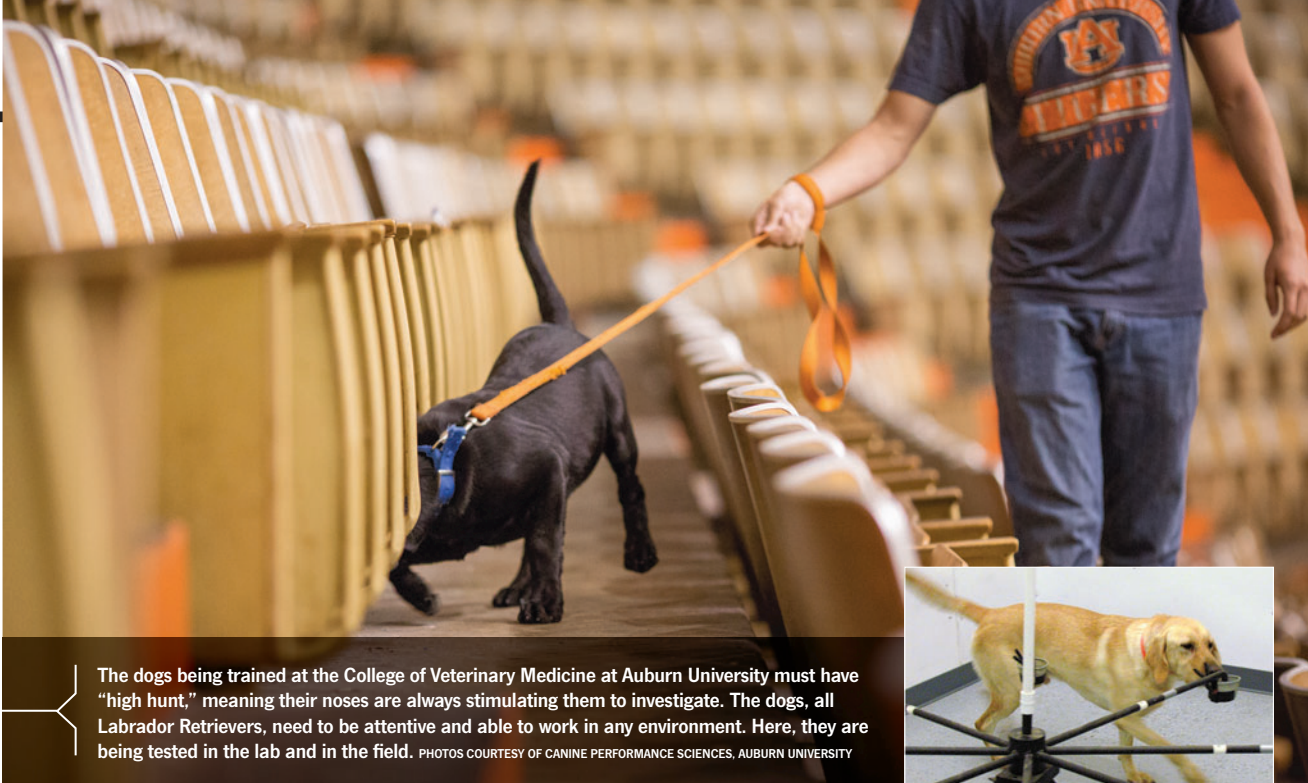
"First, larger studies are needed," she explains. "In order to scale this up to make it widely available, many dogs would need to be trained and standardization might be a challenge. We also don't know what substance the dog is actually detecting, and in the absence of a mechanistic understanding it is unclear whether this would work to detect non-papillary thyroid malignancies, and whether the presence of non-thyroidal cancers or other conditions would interfere with results."

Enter the College of Veterinary Medicine at Auburn University, Auburn, Ala., and a partnership with the team led by Paul Waggoner, MD, co-director of the Canine Performance Sciences Program.

Auburn's program focuses on enhancing the use of dogs for detection. It breeds what's called the Vapor Wake dog — a patented technology of Auburn.

"Our dogs traditionally have been for things like explosives and other hazardous substances, but we've also ventured into detection of different biological agents, also hazardous substances and chemical substances, and specific viruses," Waggoner explains.

The partnership with UAMS is the program's first venture into the detection of cancer. Three more dogs, all Labrador Retrievers, have been trained and are now doing blind testing with Ferrando's lab.



The dogs being trained at the College of Veterinary Medicine at Auburn University must have “high hunt,” meaning their noses are always stimulating them to investigate. The dogs, all Labrador Retrievers, need to be attentive and able to work in any environment. Here, they are being tested in the lab and in the field. PHOTOS COURTESY OF CANINE PERFORMANCE SCIENCES, AUBURN UNIVERSITY

“Dr. Ferrando will send us samples that we have no idea what their origin is and then the dogs will be tested on those samples,” Waggoner says. “Then Ferrando will tell us whether or not the dogs alerted to the ones that were cancer and did not alert to the ones that were benign.”

“To be sure the dogs are doing what you say they can do, this multisite kind of approach is useful because it’s unlikely that we would essentially be fooled into something else that the dogs are under control of, and we have no idea. We didn’t collect the samples, we didn’t mess with them, it would just be sent to us from some independent place,” he continues.

A WHIFF OF MORE THAN THYROID CANCER

While Frankie was the first dog to detect thyroid cancer, other canines have long been at work detecting a myriad of other cancers and diseases.

A team of French researchers published work in 2011 in *European Urology* about their Belgian Malinois shepherd who correctly designated prostate cancer samples in 30 of 33 cases. Of the three wrongly classified as cancer, one patient was re-biopsied and prostate cancer was diagnosed. The sensitivity and specificity were both 91%.

“This approach has surprised and challenged the medical community,” says co-author Geraldine Cancel-Tassin, PhD, of

Hôpital Pitié-Salpêtrière in Paris. “But since the publication of our study, other teams have confirmed this experimentation and dogs were shown to be able to detect several other cancers such as bladder, lung, melanoma, and ovarian using urine or breath from patients and controls.”

So exactly what do the dogs smell?

The human body emits hundreds of volatile organic compounds (VOCs), and the main sources are breath, blood, skin, and urine. The components of VOCs usually reflect a person’s metabolic condition and are now being used as diagnostic olfactory biomarkers. Past research has shown, for example, that the breath of a person with diabetes has a rotten apple or acetone-like odor.

Waggoner says the work of analyzing VOCs in urine is ongoing. “In a diseased state, we have to understand what happens at the cellular level that is producing these organic compounds that are emitted,” he says. “Then the dog can be used in conjunction with other instrumentation to try to figure out the unique characteristics of cancer or any disease.”

As the research continues, Pearce points to another hurdle to canine diagnosis: patient acceptance. “I can’t quite envision saying ‘Fido here will have a sniff and we’ll get back to you,’ given the novelty of this testing approach.” **EN**

FAUNTLEROY IS A FREELANCE WRITER BASED IN CARMEL, IND. SHE WROTE ABOUT PAY DISPARITIES BETWEEN MALE AND FEMALE ENDOCRINOLOGISTS IN THE SEPTEMBER 2015 ISSUE.

Society Applauds USPSTF Recommendations for Women's Health Research Priorities



The U.S. Preventive Services Task Force (USPSTF) posted its “Fifth Annual Report to Congress on High-Priority Evidence Gaps for Clinical Preventive Services.” This year’s report identifies evidence gaps related to preventive services for women and highlights several endocrine-related services such as screening for thyroid dysfunction, vitamin D deficiency, and osteoporosis.

The Society joins the USPSTF in calling for increased research due to evidence gaps related to preventive services for women. The report further highlights several endocrine-related services such as screening for thyroid dysfunction, vitamin D deficiency, and osteoporosis.

The recommendations in the USPSTF’s “Fifth Annual Report to Congress on High-Priority Evidence Gaps for Clinical Preventive Services” illustrates the need for Congress to provide increased biomedical research funding so we can advance cures, improve treatments, and prevent disease. The Society urges Congress to provide at least \$32 billion for the National Institutes of Health in Fiscal Year 2016.

The Patient Protection and Affordable Care Act of 2010 charges the USPSTF with making an annual report to Congress that identifies gaps in the evidence base and recommends priority areas that deserve further examination. In its previous reports to Congress, the Task Force identified screening tests, behavioral interventions, and preventive medications with significant evidence gaps deserving further research.

The Society supports the specific focus on women’s health and further recommends including females and males in all phases of biomedical research. Ensuring that preclinical and clinical research studies can be analyzed by sex will help address the evidence gaps listed in the USPSTF report and ensure that

other gaps in women’s health research are promptly identified. The Endocrine Society has advocated for the appropriate consideration of sex as a critical biological variable and established journal policies that require reporting of the sex of research subjects.

Thyroid conditions, which disproportionately affect women, are an important area the USPSTF flagged for additional research. Thyroid function testing is normal practice in caring for patients who have symptoms or signs suggestive of hypothyroidism or hyperthyroidism, or goiter, or a history of thyroid irradiation. Because of this, the Society does not recommend universal screening for thyroid disorders. The Society strongly supports screening for thyroid dysfunction in specific situations, especially in relation to pregnancy.

Because of the significant incidence of thyroid disorders among pregnant women and the known adverse effects on pregnancy, the Society strongly supports testing all pregnant women for elevated TSH concentrations by the ninth week or at the time of their first visit before and during pregnancy, or at a minimum, aggressive case finding to identify and test high-risk women.

The Society also supports the USPSTF recommendation to prioritize addressing the evidence gaps for vitamin D deficiency screening. Vitamin D helps the body absorb calcium and plays an important role in bone health. As a member of the Partnership for the Accurate Testing of Hormones (PATH), the Endocrine Society acknowledges that inaccurate and unreliable lab tests for vitamin D can potentially lead to large numbers of women being misdiagnosed. Through PATH, the Society supports coordinated efforts by federal agencies and other stakeholders to improve and ensure the accuracy of vitamin D testing in patient care and clinical research.



Congress Reaches Compromise on FY 2016 Funding; Provides \$2 Billion for NIH

After much debate and negotiation, Congress reached a compromise on the fiscal year (FY) 2016 appropriations bill that will finalize the budgets for the National Institutes of Health (NIH) and other research agencies through September. The bill includes \$32 billion for NIH (a \$2 billion increase), the amount recommended by the Endocrine Society. The omnibus provides an overall discretionary funding level of \$1.067 trillion, reflecting the \$50 billion in additional spending that was included in the Bipartisan Budget Act of 2015 (Public Law 114-74) approved by Congress in late October.

Providing an increase for biomedical research was the Society's top priority. We visited Congress, conducted multiple researcher Hill Days, sent letters, and held briefings throughout the year urging Congress to support NIH. Our members actively participated in our online advocacy campaigns, including supporting passage of the omnibus spending bill before Congress left for its Christmas recess. For details about spending levels included in the funding bill, please visit the Advocacy page on the Society's website www.endocrine.org.

Policy Makers Begin Exploring Rising Drug Costs




Rising costs of insulin and other drugs have been noted among policy makers in recent years, culminating in a hearing by the Senate Finance Committee last month to explore the causes for the price escalation. Committee members specifically addressed increases in costs by four pharmaceutical companies: Turing Pharmaceuticals, Valeant Pharmaceuticals, Retrophin, Inc., and Rodelis Therapeutics.

The Endocrine Society has been monitoring this issue, recently holding a call with industry to specifically discuss the rising costs of insulin. The price of insulin has increased two- to threefold over the past 10 years — a pace difficult for many patients and physicians to understand. The Society conveyed to industry that this is a growing problem that is impeding access to needed therapies for some patients. We requested that industry provide assurances to patients that these costs would not continue to increase. We also requested the expansion and simplification of assistance programs for low-income individuals to help address the affordability of these drugs and offered the Society's assistance in their development. The Society will continue to relay its concerns to industry about this issue. If you are encountering these issues, please contact Meredith Dyer, mdyer@endocrine.org.

The Continual Evolution of Maintenance of Certification

The American Board of Internal Medicine (ABIM) Maintenance of Certification (MOC) requirements continue to evolve.

In September 2015, ABIM released "A Vision for Certification in Internal Medicine in 2020," outlining potential changes to its MOC examinations. The Society raised significant objections to several of the recommendations in the report and proposed a model for developing exam content. The Society's major criticism of ABIM's MOC system has been the complexity and cost to the physician and called on the ABIM to ensure that any changes made to the program not result in increased cost to the physician or cumbersome requirements that are difficult to understand and navigate.

In December, ABIM announced an additional two-year deferment for its Practice Assessment, Patient Voice and Patient Safety, extending the deferral through December 31, 2018. At **ENDO 2016**, join your colleagues at the "MOC Update" session and earn ABIM Medical Knowledge (aka MOC Part 2) points throughout the meeting. 

Society Releases Scientific Statement on Polycystic Ovary Syndrome

The Scientific Statement on polycystic ovary syndrome (PCOS) recently issued by the Endocrine Society states that more research is needed to better understand this leading cause of infertility that may affect as many as 5 million women nationwide, according to the U.S. Department of Health and Human Services' Office on Women's Health.

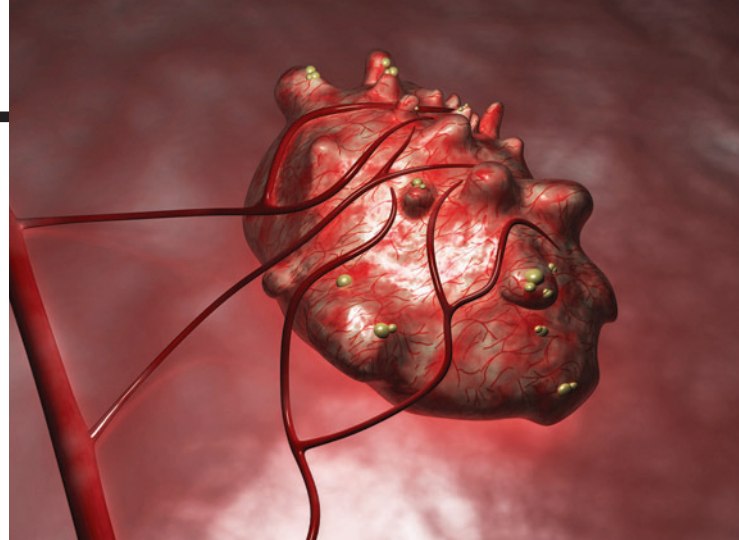
Although PCOS is the most common hormonal disorder among women in their reproductive years, many aspects of the condition are not fully understood. Because PCOS causes diverse symptoms that can vary among individual women, the definition and even the name PCOS have been subject to debate. In its Clinical Practice Guideline, the Society recommended that a diagnosis be made if adult women exhibited two of the three cardinal features of the condition:

- ▶ Excess production of male hormones called androgens.
- ▶ Anovulation, a condition where the ovary does not release a mature egg each month. This causes irregular menstrual cycles.
- ▶ The formation of clusters of pearl-size cysts containing immature eggs in the ovaries, which is called polycystic ovaries.

Many women who have PCOS struggle with infertility. The condition also has been linked to an increased risk of developing diabetes and other metabolic problems, cardiovascular disease, and mental health disorders such as depression.

"PCOS disproportionately affects certain ethnic groups, and individual women who have the condition can experience a variety of symptoms," says Richard S. Legro, MD, vice chair of research in the Department of Obstetrics and Gynecology and professor of obstetrics and gynecology and public health sciences at Penn State College of Medicine, as well as chair of the task force that developed the statement. "Researching the genetic and environmental factors that contribute to these variations could lead to the development of precision treatments personalized for women who have PCOS."

Normal development of the ovaries during adolescence can mimic the appearance of ovarian cysts, which makes it challenging to diagnose PCOS in teenage girls. Establishing diagnostic criteria for



adolescents would make it possible to track how PCOS develops throughout childhood and into the reproductive years. The statement calls for more research in this area.

Earlier diagnoses could pave the way for longitudinal studies to better evaluate interventions to target PCOS and the reproductive, metabolic, and psychological conditions tied to it.

"If healthcare providers were armed with better strategies for diagnosing PCOS in teenage girls, they would be able to intervene sooner to address risk factors for diabetes and cardiovascular disease," Legro says. "Earlier diagnosis is crucial for gaining a better understanding of the long-term effects of PCOS."

In the statement, the Society also calls for:

- ▶ More cell and animal models of PCOS to improve understanding of the condition's origins.
- ▶ Research into how molecular mechanisms interact to control function of the ovaries. A better understanding of this could help identify ways to address the development of cysts and other reproductive problems.
- ▶ Scientific studies of genes that may contribute to the development of PCOS and its symptoms.

Other authors of the Scientific Statement include: Daniel A. Dumesic of the David Geffen School of Medicine at UCLA in Los Angeles, Calif.; Sharon E. Oberfield of Children's Hospital of New York-Presbyterian and Columbia University College of Physicians and Surgeons in New York; Elisabet Stener-Victorin of Karolinska Institutet in Stockholm, Sweden; John C. Marshall of the University of Virginia Health System in Charlottesville, Va.; and Joop S. Laven of Erasmus Medical Center in Rotterdam, the Netherlands.

"Scientific Statement on the Diagnostic Criteria, Epidemiology, Pathophysiology, and Molecular Genetics of Polycystic Ovary Syndrome," was published in *Endocrine Reviews*, available at <http://press.endocrine.org/doi/10.1210/er.2015-1018>.



Clinical trials and late-breaking data take center stage

Lead investigators who anticipate having clinical trial data for presentation at **ENDO 2016** may submit late-breaking abstracts that outline the trial design and rationale, inclusion criteria, primary clinical endpoints, and any preliminary data.

Authors may indicate during initial abstract submission that they would like to withdraw their abstract if it is not eventually selected for an oral presentation at **ENDO 2016**. Authors may also choose to embargo their abstract until the time of the meeting.

A centennial celebration means special attention to time — and there's still plenty of time to submit your new research for special attention of its own at **ENDO**.

Earn recognition by submitting your late-breaking abstracts that explore high-impact data. Submission for clinical trial and late-breaking abstracts opens January 19, 2016 and closes February 17, 2016.

With sessions dedicated to late-breaking abstracts and potential media coverage by *The New York Times*, *ABC News*, *The Boston Globe*, *U.S. News & World Report*, among others, there's no better way to put your research in front of your peers and the public.

A CENTURY OF THE ENDOCRINE SOCIETY: Celebrating 100 Years of Progress

ENDO 2016

This year marks the Endocrine Society's 100th year of serving its members and the profession — and that calls for a celebration! We're spending all of 2016 celebrating advancements in the field, honoring an illustrative past of scientific breakthroughs, and looking forward to a future full of innovation treating endocrine disorders.

Each month will be devoted to an area of expertise within endocrinology. Our centennial website will feature focused educational content, including facts and figures, histories, articles, trivia, and more.

And various portions of **ENDO 2016** will be dedicated to the Society's centennial:

- ▶ All seven plenary sessions will celebrate Nobel Prize-winning breakthroughs in endocrine research.
- ▶ Twelve symposia and many of the Meet-the-Proffessor speakers will present historical perspectives on session topics.
- ▶ The Sawin Memorial Lecture will explore a full century of endocrinology exploration.
- ▶ A debate on the safety of growth hormone therapy in children will begin with an enlightening contextual retrospective.
- ▶ A special historical display in the Society's booth and a new "History Wall" will highlight the field's evolution and most significant events.

Stem cell therapy in diabetes, bionic pancreases, big data analysis, novel disease treatments, and other innovations headline this year's can't-miss plenary slate.

GET THE ATTENTION YOUR RESEARCH DESERVES

Submit your **late-breaking abstract** between January 19 and February 17, 2016. Visit endo2016.org for more information. We'll see you at **ENDO!**

Lisa M. Wyatt Named Endocrine Society's Chief Communications Officer



Lisa M. Wyatt, MS, APR, has joined the Endocrine Society as chief communications and marketing officer. She is responsible for developing and implementing a forward-looking, comprehensive communications and marketing strategy that will result in a cohesive and coherent communications platform across all media, connecting all content and products, and engaging members and friends.

“Lisa’s deep experience in communication and marketing in healthcare will prove invaluable as she develops the Endocrine Society’s overall communications and marketing strategies to execute coherent and integrated initiatives that serve internal clients and promote the key products of the Society — Publications, Meetings, and Continuing Education and Certification,” says Society CEO Barbara Byrd Keenan. “We are fortunate to have Lisa be the Society’s chief digital strategist, storyteller, the proprietor of the voice of the Society and its members, and the language of the Endocrine Society’s external-facing persona. We are confident she will ensure that all Society initiatives serve to efficiently and measurably enhance and grow the Society’s membership, value proposition, and brand reputation.”

Most recently, Wyatt served as vice president and chief communications and marketing officer at Wake Forest Baptist Medical Center, one of the country’s premier academic medical centers. Prior to that role, she served as senior vice president of public affairs and marketing, overseeing the function in MedStar Health’s Washington, D.C., metro region. At the American Nurses Association she served as its deputy executive director. She also served as director of public affairs at the American Psychological Association and director of corporate communications at the American Institutes for Research.

“Joining the Endocrine Society represents a great opportunity to be at the heart of some of the biggest public health challenges such as obesity, diabetes, infertility, and endocrine-disrupting chemicals that could be impacting our environment,” Wyatt says. “The world’s clinical endocrinologists, scientists, and researchers are at the front lines of some of the most significant national and global health challenges, so I am thrilled to join a great team and the Society’s members in tackling this important work both at home and abroad.”

Meeghan De Cagna Named Chief Strategic Partnerships Officer

Meeghan De Cagna, MS, CAE, has joined the Endocrine Society as chief strategic partnerships officer in late November and will lead the Development and Strategic Partnerships Department (formerly Corporate Relations).

According to Society CEO Barbara Byrd Keenan, De Cagna will head up strategic growth through the development of programs and key relationships with Society supporters such as corporations, foundations, government, and institutions, among others. “Meeghan’s deep, diverse cross-functional experience will be a tremendous asset to the Society, and I know you will welcome her warmly to the team,” Keenan says.

Prior to joining the Society, De Cagna worked at the American Academy of Physician Assistants (AAPA), where she served as the vice president for student engagement and director of leadership for AAPA’s Center for Healthcare Leadership and Management. She also spent 18 years working in nonprofit and for-profit marketing roles, including 10 years as chief marketing officer of a \$100 million privately held educational enterprise she helped to build and interim executive director of the American Medical Student Association. De Cagna, a member of the American Society of Association Executives, is a volunteer leader on the Health Care Community Committee, is a Foundation Associate of WBL – Women Business Leaders of US Health Care, and is also a member of the National Public Health Information Coalition. She serves as a peer reviewer for the *Journal of Communication in Health Care*.

“I’m thrilled to be joining the Endocrine Society staff and can’t think of a more exciting time as the organization celebrates its 100th anniversary,” De Cagna says. “The extraordinary history of the Society serves as an excellent



foundation for a very dynamic and prosperous future for our members and the patients they ultimately serve. I look forward to forging new relationships with key partners that join us in the service of our mission.”

A graduate with a Master of Science in Health Communication from Boston University, De Cagna holds an executive certificate from Georgetown University McDonough School of Business and three executive certificates in marketing strategy, branding, and international marketing from the Thunderbird School of International Management.

Title Changes for Society’s Senior Staff

With the addition of Lisa Wyatt as Chief Communications Officer and Meeghan De Cagna as Chief Strategic Partnerships Officer, the Society has modified the titles of its existing senior leadership team for parallel alignment.

The new naming convention is contemporary and has been instrumental in attracting top talent. Members are familiar with the senior team; only their titles have changed:

- **Robert Bartel**, *Chief Innovation Officer*
- **Mila Becker, Esq.**, *Chief Policy Officer*
- **Paul Hedrick, CPA**, *Chief Financial Officer*
- **Wanda Johnson, CMP, CAE**, *Chief Programs Officer*
- **Richard O’Grady, PhD, CAE**, *Chief Publications Officer*
- **Amanda Perl**, *Chief Strategy Officer*

SEAN PAVONE / SHUTTERSTOCK.COM



New York Times Op-Ed Highlights Society’s EDC Position

The Endocrine Society’s second Scientific Statement on endocrine-disrupting chemicals (EDCs) was highlighted in an opinion piece written by *New York Times* columnist Nicholas Kristof, which was published Saturday November 28.

Kristof quoted the Society’s position that links EDCs to diabetes and obesity, which is one of the many citations in the statement that was published in the October issue of *Endocrine Reviews*. Society members Andrea Gore, PhD, editor-in-chief of *Endocrinology*, and Tracey J. Woodruff, PhD, at the University of California – San Francisco were both quoted by Kristof.

Woodruff was quick to point out that people assume that if chemicals are available then they have been approved by the U.S. government and that they are safe. “It’s frustrating to see the same story over and over,” she tells Kristof. “Animal studies, in vitro tests, or early human studies show that chemical A causes adverse effects. The chemical industry says, ‘Those are bad studies, show me the human evidence.’ The human evidence takes years and requires that people get sick. We should not have to use the public as guinea pigs.”

Gore compared the influence of the chemical industry with another industry that also had significant sway in Congress: “There are almost endless parallels with the tobacco industry,” she tells Kristof.

“The chemical lobby spent the equivalent of \$121,000 per member of Congress last year,” Kristof writes, “so expect chemical companies to enjoy strong quarterly profits, more boys to be born with hypospadias, and more women to die unnecessarily of breast cancer.”

Read the stories: <http://press.endocrine.org/doi/10.1210/er.2015-1093>

http://www.nytimes.com/2015/11/29/opinion/sunday/contaminating-our-bodies-with-everyday-products.html?smid=tw-share&_r=1

Dimensions in Diabetes Launched in India

The Society launched its new Dimensions in Diabetes program in Chennai, India, on Saturday November 20 and Sunday November 21 as part of Diabetes Awareness month activities.

Eight Society members contributed to this curriculum that covered the basics of diabetes management like diet, nutrition, and motivational interviewing, managing special patient populations, including pregnant patients and those with hypoglycemia, and emerging areas such as use of new classes of drugs, and leading-edge diabetes technology. The annual program has educational support from Sun Pharmaceuticals.



Andrew Ahrman, MD, lights the ceremonial “flame of knowledge” to kick off Diabetes Awareness Month at the launch of Dimensions in Diabetes in Chennai, India.

Serving as the inaugural program faculty were Vice President Clinical Science, Anthony McCall, MD, PhD, Council-elect member, Carol Wysham, MD, Andrew Ahmann, MD, Ian Blumer, MD, Jack Leahy, MD, Janet McGill, MD, MA, Jane Reusch, MD, PhD, and Steven Russell, MD, PhD. Luckily, the terrible monsoon rains paused long enough for our faculty and 370 attendees to travel in and out of Chennai safely.



Society Hosts Inaugural Twitter Chats


The Endocrine Society hosted its first three Twitter chats this fall to generate awareness of new Society publications and other resources.

Twitter chats are live events where the social media platform’s users are invited to engage in a moderated discussion on a specific topic. The Society’s three events were designed to highlight the newly released Scientific Statement on endocrine-disrupting

chemicals, the *Treatment of Symptoms of the Menopause Practice Guideline*, and the launch of the Hormone Health Network’s D.A.I.L.Y. platform for people with type 2 diabetes. Society members Andrea Gore, PhD; Cynthia Stuenkel, MD; and Robert Lash, MD, provided guidance and input as expert moderators. The expert moderators approved scripts developed by Society staff and then coordinated with staff members to respond to questions during the Twitter chats.

The three events successfully engaged more than 200 participants including key healthcare influencers and consumers. The discussions collectively generated 3.5 million impressions on Twitter (how many times a Twitter user had the opportunity to view a post from one of the chats). Invited

participants included the American Congress of Obstetricians and Gynecologists, the National Institute of Environmental Health Sciences, the NIH Office of Research on Women’s Health, and the American Diabetes Association. In addition, influential bloggers such as Kelly Close of “Close Concerns” and Barbara Younger of “Friend for the Ride” took part in the conversations.

Our primary Twitter account, **@TheEndoSociety**, now has nearly 7,000 followers receiving updates and announcements. To build on the success of the Twitter chats, the staff plans to host additional live events as part of the Centennial. If you are interested in serving as an expert moderator, please contact Danielle Whalen at dwhalen@endocrine.org. 

Endocrinology

Live Better.
Work Better.

Elliot Endocrinology Associates in southern New Hampshire is seeking an additional BC/BE Endocrinologist to join our team. Located on the Elliot Hospital campus, our busy practice provides full spectrum endocrinology care to include diabetes, thyroid and parathyroid conditions, osteoporosis, pituitary and adrenal disorders, PCOS, and other hormone conditions. We are co-located with a fully staffed, ADA-recognized center for diabetes education and medical nutrition therapy. We are fully equipped for office based ultrasound procedures, with specialty trained cytopathology consultation available in house.

Elliot Health System (EHS) is the largest provider of comprehensive healthcare services in Southern New Hampshire. The cornerstone of EHS is Elliot Hospital, a 264-bed acute care facility and Level II Trauma Center.

Elliot Hospital is one of the 'Top 100 Most Wired Hospitals' in the country with a fully integrated EMR system utilized across the primary care and multispecialty network. We offer competitive compensation, signing bonus and an exceptional benefits package. New Hampshire, enjoys NO STATE INCOME or SALES TAX!

The Manchester, New Hampshire, area is a thriving metropolitan community, located within an hour's drive of Boston, the seacoast, lakes, and White Mountains region of New Hampshire.

For more information to apply please visit:

www.elliotphysicians.org



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[@ElliotPhysician](https://twitter.com/ElliotPhysician)

Elliot Health System

We are an equal opportunity employer embracing the strength that diversity brings to the workplace. We provide a welcoming and supportive environment for employees of all ethnic backgrounds, cultures, ages, lifestyles and physical abilities.



POSITION AVAILABLE FOR ENDOCRINOLOGIST

Lehigh Valley Health Network (LVHN) in eastern Pennsylvania seeks a BC/BE endocrinologist to join a large network practice. Our new associate will join 10 other endocrinologists and fill a position being vacated by one of the practice providers who has recently announced his plans to retire in 2016. We are happy to consider 2016 grads or practicing endocrinologists who could join our team a little earlier than next July. The position offers the opportunity to teach residents/medical students as well as eligibility for faculty appointment at the University of South Florida, the network's academic affiliate. The collegial group enjoys a favorable call schedule and the benefits of working for the area's largest employer.

LVHN is a community health network in eastern Pennsylvania, just 60 miles north of Philadelphia and 90 miles west of NYC. The physicians, together with 5 NPs, do consults at the 800-bed main campus and the 188-bed Muhlenberg campus, just 20 minutes apart. They also see patients in outpatient offices on these hospital campuses and are planning to expand the outpatient access to strategic growth areas of the community.

The Lehigh Valley area is anchored by the city of Allentown, the fastest growing city in the state. Urban redevelopment that includes new businesses, sophisticated metropolitan-style housing, four-star restaurants and entertainment venues are credited with the city's growth. Within 10 minutes of the downtown are beautiful suburban neighborhoods, city parks, bike trails, ski areas and more. The academic opportunities in the area include excellent public schools, highly regarded private schools plus 10 colleges and universities. More than 700,000 people live, work, learn and play in the greater Lehigh Valley.

If interested in this opportunity, please email your CV to:

Patricia.Adams@LVHN.org or call 484-862-3202

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THYROID CANCER

WHAT YOU NEED TO KNOW

Thyroid cancer is the most common form of cancer in the endocrine system, which includes the glands that produce hormones in your body. Cancer occurs when lumps, or nodules, grow in the thyroid gland. These nodules are not usually cancerous, but if they are, they can be treated effectively. Rarely, they can be life threatening.

Visit hormone.org for more information.



The thyroid gland is a butterfly shaped gland at the front of the neck. It uses iodine, a mineral found in some foods and in iodized salt, to make hormones that help your body. The thyroid hormones control your metabolism and affect your weight and your brain function as well as maintaining your heart, skin, hair, and intestines.



THYROID NODULES

— CELLS IN THE THYROID THAT FORM A TUMOR

- More than 90% are not harmful, but some can be cancerous
- Fewer than 1 in 10 nodules is cancerous
- Signs of thyroid cancer include a swelling or lump in the neck
- Your doctor can detect nodules with a “neck check.” Cancer is confirmed with a fine needle biopsy or by testing a nodule removed by surgery.



THYROID CANCER DOESN'T ALWAYS HAVE SYMPTOMS

See your doctor if you notice:

- a lump or swelling in your neck
- a hoarse voice
- difficulty swallowing
- neck or throat pain
- a swollen lymph node in your neck



CANCER DIAGNOSIS

Tests that examine the thyroid, neck, and blood are used to detect (find) and diagnose thyroid cancer.

TYPES OF THYROID CANCERS

- **Papillary:** the most common (80% of cases); slow growing; may develop in one or both lobes of the thyroid gland; and may spread to lymph nodes in the neck.
- **Follicular:** the 2nd most common; found more in countries with lack of iodine; grows slowly and is highly treatable.
- **Medullary:** less common; more likely to run in families; more likely to spread to lymph nodes and other organs.
- **Anaplastic:** very rare and very aggressive; quickly spreads to other parts of the neck and body.

THYROID CANCER IS THE #1 FASTEST GROWING CANCER IN THE U.S.

(IN BOTH MEN AND WOMEN)

New cases per year: 62,450



Women
47,230

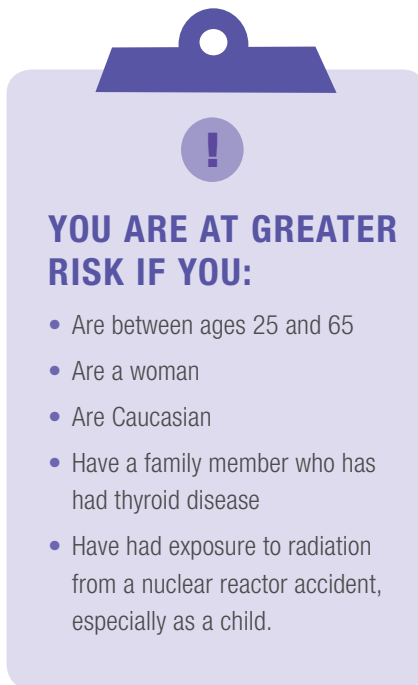


Men
15,220

Occurs nearly 3 times more often in women than in men. Can occur at any age (including in children). Seen most often in women in their 40s and 50s and men in their 60s and 70s.

2 out of 3 cases occur in people younger than age 55.

...Age, gender, and exposure to radiation can affect the risk.



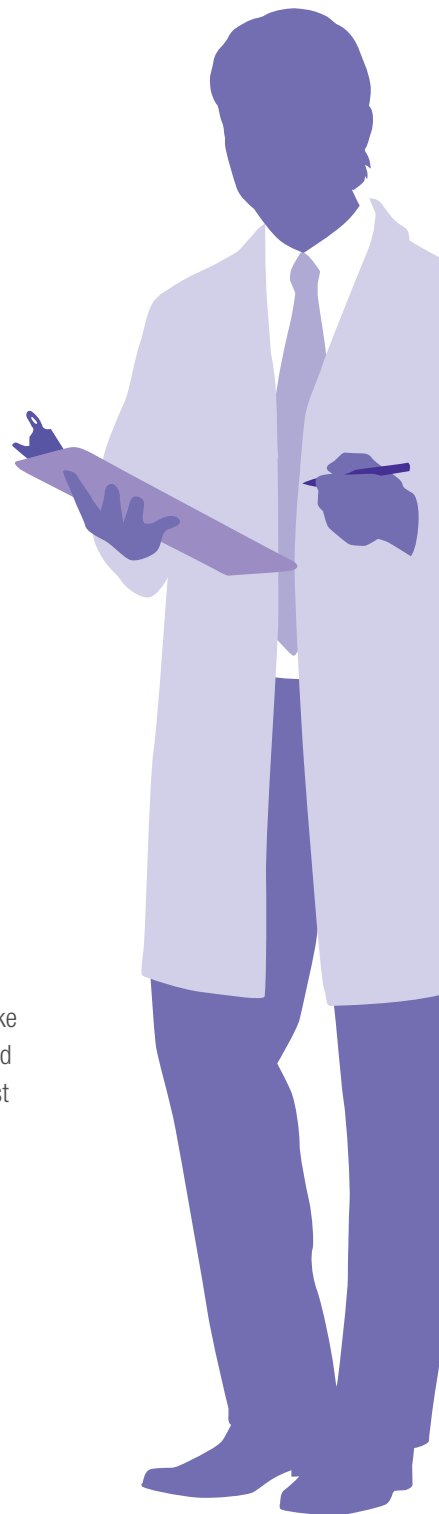
YOU ARE AT GREATER RISK IF YOU:

- Are between ages 25 and 65
- Are a woman
- Are Caucasian
- Have a family member who has had thyroid disease
- Have had exposure to radiation from a nuclear reactor accident, especially as a child.

TREATMENT

Doctors remove the thyroid gland and the nodules within it with a surgical operation. Your doctor may also provide a one-time treatment with a radioactive iodine pill that you swallow. This is a single dose and not like radiation used in other cancers. You will need to be on thyroid hormone therapy for the rest of your life. If your cancer is quite advanced (less than 5% of patients), your doctor may provide chemo therapy.

With any cancer diagnosis, look to your family, friends, and healthcare providers for more support.



Patients have questions. We have answers.

The Hormone Health Network is your trusted source for endocrine patient education. Our free, online resources are available at hormone.org.



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FROM THE ENDOCRINE SOCIETY

THE ENDOCRINE SOCIETY IS PLEASED TO ANNOUNCE THE

2016 LAUREATE AWARDS WINNERS

FRED CONRAD KOCH LIFETIME ACHIEVEMENT AWARD

Benita S. Katzenellenbogen, PhD and John A. Katzenellenbogen, PhD

GERALD D. AURBACH AWARD FOR OUTSTANDING TRANSLATIONAL RESEARCH

Steven K. Grinspoon, MD

INTERNATIONAL EXCELLENCE IN ENDOCRINOLOGY AWARD

Ghada El-Hajj Fuleihan, MD, MPH

OUTSTANDING CLINICAL INVESTIGATOR AWARD

Robert H. Eckel, MD

OUTSTANDING CLINICAL PRACTITIONER AWARD

M. Carol Greenlee, MD

OUTSTANDING EDUCATOR AWARD

Steven M. Anderson, PhD

OUTSTANDING INNOVATION AWARD

Richard A. Heyman, PhD

OUTSTANDING LEADERSHIP IN ENDOCRINOLOGY AWARD

Anthony R. Means, PhD

OUTSTANDING MENTOR AWARD

Nanette F. Santoro, MD

OUTSTANDING PUBLIC SERVICE AWARD

Andrea C. Gore, PhD; Jean Pierre Bourguignon, MD, PhD; John Peterson Myers, PhD; and R. Thomas Zoeller, MS, PhD

OUTSTANDING SCHOLARLY PHYSICIAN AWARD

David S. Cooper, MD

RICHARD E. WEITZMAN OUTSTANDING EARLY CAREER INVESTIGATOR AWARD

X. Shirley Liu, PhD

ROY O. GREEP AWARD FOR OUTSTANDING RESEARCH

Gerard Karsenty, MD, PhD

SIDNEY H. INGBAR AWARD FOR DISTINGUISHED SERVICE

Dolores M. Shoback, MD

Awards will be presented at ENDO 2016: The 98th Annual Meeting & Expo in Boston, MA, April 1-4, 2016.



ENDO2016

THE ENDOCRINE SOCIETY'S 98TH ANNUAL MEETING & EXPO

APRIL 1-4, 2016 BOSTON, MASSACHUSETTS
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KEY DATES

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JANUARY 13

LATE-BREAKING
ABSTRACT SUBMISSION PERIOD
JANUARY 19 – FEBRUARY 17



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