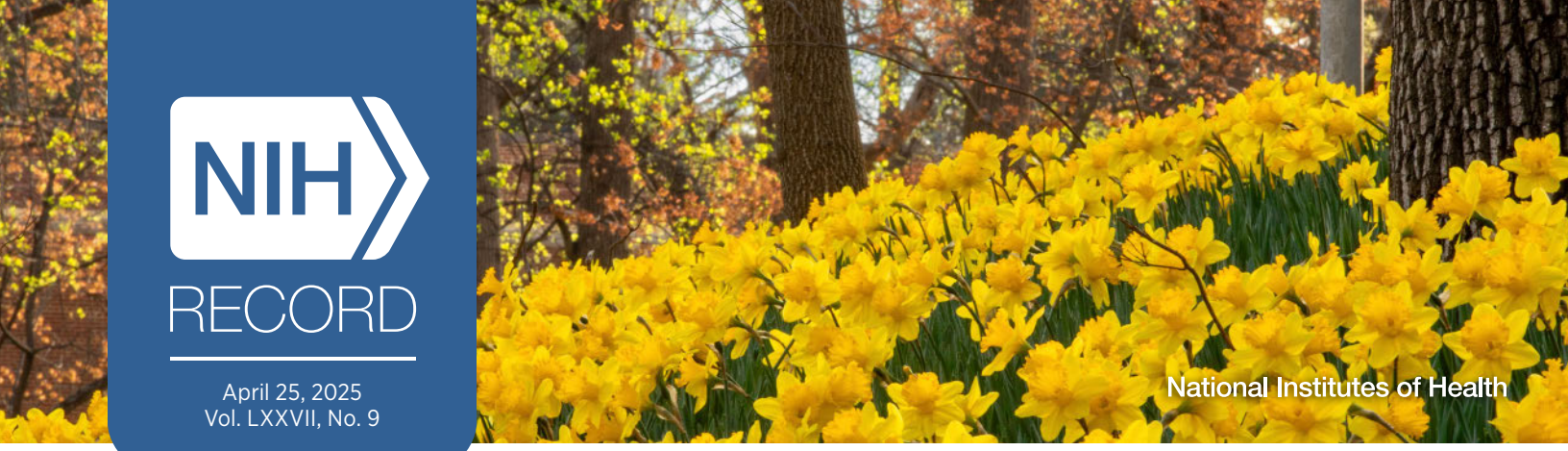
NIH RECORD

April 25, 2025
Vol. LXXVII, No. 9




## HHS's Plescia Tours NIH Labs, Meets with NIH Leaders

BY DANA TALESNIK

In March, Deputy Assistant Secretary of Health Dr. Marcus Plescia spent the day at NIH getting an up-close view of some of the groundbreaking research taking place in NIH labs. Throughout the day, he visited pediatric cancer, metabolic and vaccine research labs and met with NIH senior leaders to discuss NIH's role in addressing chronic diseases, obesity and other Administration health priorities.

Plescia—a family medicine doctor who has served in multiple public health roles—is also director of the Office of Science and Medicine in the Office of the Assistant Secretary of Health (OASH) at the Department of Health and Human Services (HHS). He arrived eager to learn more about cutting-edge studies and see some of the innovative work firsthand.

From l, NIAID Principal Deputy Director Dr. Sarah Read, VRC Director Dr. Ted Pierson and HHS Deputy Assistant Secretary for Health Dr. Marcus Plescia
PHOTO: DANA TALESNIK

### Pediatric Oncology

Several investigators from NIH's National Cancer Institute (NCI) discussed advances in diagnostics and therapies for childhood cancer. One long-term challenge has been how to address tumor complexity. Dr. Jack Shern, a physician-scientist in NCI's Pediatric Oncology Branch (POB), is addressing this challenge head-on using single-cell sequencing.

"Now we can do things like look at every cell type in the tumor," he said, noting the technique can distinguish among tumor, immune and vascular cells and study them in depth. "That's one way we're solving the heterogeneity."

Dr. Andrea Gross, a POB assistant research physician, described a benign tumor type, plexiform neurofibroma, that causes significant complications as it grows

SEE **PLESCIA**, PAGE 4

NIH Director Dr. Jay Bhattacharya tours the Bethesda campus. See p. 2.
PHOTO: CHIA-CHI CHARLIE CHANG

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## *All of Us* Research Program Ready to Address Chronic Disease, Nutrition

BY ERIC BOCK

Dr. Josh Denny

NIH's *All of Us* Research Program is positioned to accelerate research on how chronic conditions are defined, diagnosed and treated, said Dr. Joshua Denny, the program's CEO.

For several years, *All of Us* has worked to build one of the largest health databases in the world. Denny said, "We have participants from all 50 states and most U.S. territories and the data is accessible to more than 16,000 researchers."

The information generated will accelerate health research and medical breakthroughs, enabling personalized medicine, which is "how we treat each patient the best way for themselves." Denny said he wants to make medicine as precise as getting prescription glasses—"it should be the same thing for screening, preventive care and disease treatment."

The *All of Us* dataset includes participant-provided information, including data from surveys, wearables, physical measurements taken at the time of participant enrollment and electronic health records. This thorough approach helps researchers get a more complete picture of factors that affect health and disease.

"We have about 3.2 billion base pairs in our genome. We've observed about half a billion variants that have never been seen before," Denny said. "This knowledge will help people understand their genetic tests and influence their treatment in the future."

The program is also conducting the

SEE **ALL OF US**, PAGE 6

## Kipnis to Discuss Neuroimmunology at Next WALS

**Apr. 30**

The NIH Director's Wednesday Afternoon Lecture Series (WALS) will feature Dr. Jonathan Kipnis on April 30 at 2 p.m. ET in the Clinical Center's Lipsett Amphitheater. The lecture will also be videocast at https://videocast.nih.gov/. His talk is titled, "Navigating Uncharted (Neuroimmune) Waters."

Dr. Jonathan Kipnis

Kipnis is a neuroscientist, immunologist and professor of pathology and immunology at the Washington University School of Medicine. He is best known for his lab's discovery of meningeal lymphatic vessels in humans and mice, which has impacted research on neurodegenerative diseases such as Alzheimer's disease and multiple sclerosis, neuropsychiatric disorders, such as anxiety, and neurodevelopmental disorders such as autism and Rett syndrome.

The Kipnis lab investigates how the nervous and immune systems talk to each other in health and disease. They have discovered lymphatic vessels in the tissues surrounding the brain, a finding that has challenged some of the previous dogmas in the field of neuro-immunology and increased our knowledge and understanding of how the immune system impacts neurological diseases.

Their goal is to elucidate the cellular and molecular mechanisms underlying nervous and immune system interactions in neurodegenerative, neurodevelopmental and mental disorders as well as in physiology (as in healthy aging).

To view the current WALS season schedule, visit: https://oir.nih.gov/wals/2024-2025-wals-season.

## Learn Tips to Manage Stress

BY JAN TORTARELLA


April is Stress Awareness Month, a time to pay attention with intention to how we are managing and coping with the challenges, changes and expectations of our daily lives. Wellness@NIH has many resources to support you, including the new Staff Resources for Stress Relief Toolkit: https://go.nih.gov/WLCRDcX. This central repository of prerecorded webinars and resources offers staff an opportunity to address stress, utilize one or more resources as an icebreaker during team meetings and encourage brain breaks in the work day.

For additional stress management resources, visit: https://go.nih.gov/UNCzaiS.

## Bhattacharya Tours NIH's Bethesda Campus

NIH Director Dr. Jay Bhattacharya and other senior staff toured campus on April 9.

In the Clinical Center, they met with Dr. Steven Rosenberg, chief of the National Cancer Institute's (NCI) surgery branch, to learn more about his groundbreaking immunotherapy research. They also were briefed by investigators in NCI's Pediatric Oncology Branch. Then, after peering into the Clinical Center's playroom and learning more about NIH's bench-to-bedside work, the group headed to the Children's Inn for a tour.

Dr. Jay Bhattacharya checks out the interstitial space at the CC.

Above, Bhattacharya (l) meets with NCI's Dr. Steven Rosenberg in his office. For more on Rosenberg's immunotherapy research, see p. 3. Below, Bhattacharya (r) visits the Pediatric Oncology Branch (POB) to learn the latest in childhood cancer research: from l, Drs. Andrea Gross, Taylor Sundby, Jack Shern and Douglas Lowy. For more on the POB, see pp. 1, 4.

NIH leaders then boarded a campus shuttle where they saw the new Surgery, Radiology, and Laboratory Medicine wing under construction, the Cloisters, the Safra Family Lodge, the Vaccine Research Center, the Porter Neuroscience Research Center, the water tanks and the Central Utility Plant.

Bhattacharya also stopped by NIH's Division of Fire and Rescue Services to meet NIH first responders and toured the Center for Alzheimer's Disease and Related Dementias.

From l, John Burklow, former NIH chief of staff; Bhattacharya; Dr. Alfred Johnson, NIH deputy director for management; Inn patient Cyrus with his mom; Eric Schnabel, COO of the senior executive service, Inn CEO Jennie Lucca; Brian Kelly, Inn secretary of the board and Seana Cranston, NIH chief of staff, pose with Zilly, the Inn's chief of emotional support and engagement. PHOTOS: CHIA CHI CHARLIE CHANG

## Combination Immunotherapy Shrank Metastatic Gastrointestinal Cancers

A new form of tumor infiltrating lymphocyte (TIL) therapy, a form of personalized cancer immunotherapy, dramatically improved the treatment's effectiveness in patients with metastatic gastrointestinal cancers, according to results of a clinical trial led by NIH researchers.

The findings, published in *Nature Medicine,* offer hope that this therapy could be used to treat a variety of solid tumors, which has so far eluded researchers developing cell-based therapies.

This form of therapy involves identifying and selecting immune cells (TILs) that are found in the tumor that specifically recognize and attack a patient's tumor cells. Next, scientists grow those TILs into large quantities in the laboratory before they are finally administered to the patient.

Patients in the clinical trial, who had a variety of gastrointestinal tumors, also received the immune checkpoint inhibitor pembrolizumab (Keytruda) to help further boost their immune response. The result was nearly 24% of patients treated with selected TILs plus pembrolizumab had a substantial reduction in the size of their tumors, compared with 7.7% of patients who received selected TILs without pembrolizumab. Patients treated with TILs that had not been selected for anti-tumor activity had no tumor shrinkage.

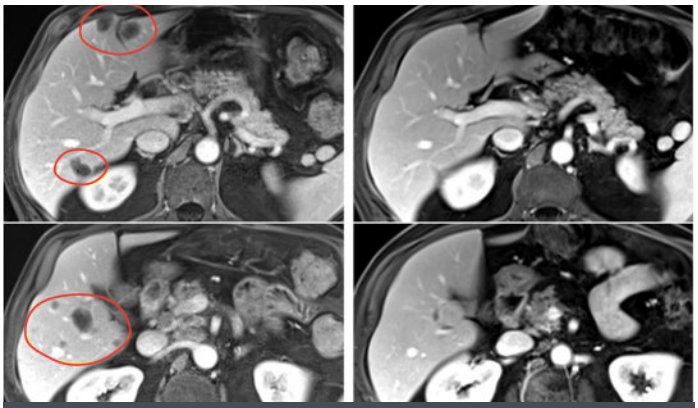
Dr. Steven Rosenberg
**PHOTO: RHODA BAER / NCI**

"We're seeing the first extension of cellular therapy with TILs into the common solid cancers," said Dr. Steven Rosenberg, the study's lead investigator at NIH's National Cancer Institute. "We see a little crack in the solid wall of cancer by using cell-based immunotherapy for the common solid cancers, and we think we have ways to open that crack even further."

The clinical trial included 91 patients with metastatic gastrointestinal cancers—including esophageal, stomach, pancreatic, colon and rectal cancers—that had worsened despite a median of four prior treatment regimens. In the pilot phase of the trial, 18 patients were treated with TILs that had not been selected for anti-tumor activity. In the second phase, 39 patients were treated with selected TIL therapy.

In the third phase, 34 patients received pembrolizumab immediately before selected TIL therapy to prevent the newly introduced immune cells from becoming inactivated by the patient's own immune system. This group had the best response.

In the trial's second and third phases, objective responses were seen in multiple types of gastrointestinal cancers, including cancers of the colon, rectum, pancreas and bile duct. Responses lasted between 8 months and more than 5.8 years in the group that received selected TIL therapy alone, and between 4 months and 3.5 years in the group that received selected TIL therapy and pembrolizumab. Serious side effects occurred in 30% of patients treated with selected TILs.



Ten months after treatment with selected TIL therapy and pembrolizumab, a patient with rectal cancer had substantial shrinkage of multiple liver metastases (left scans, circled in red). **IMAGE: NCI**

The researchers are now developing methods to identify TILs that recognize multiple, specific proteins within a tumor, known as neoantigens, to help increase the number of patients who respond to selected TIL therapy with pembrolizumab.

TIL therapy, developed in the late 1980s by Rosenberg and his colleagues at NIH, uses an individual's own TILs to fight their tumor cells. Last year, the Food and Drug Administration approved the first TIL therapy for a solid cancer, lifileucel (Amtagvi), for treating advanced melanoma.

The new study was co-led by Rosenberg and NCI investigators Dr. Frank Lowery and Dr. Stephanie Goff. R

ON THE COVER: Daffodils spring forth at the intersection of South and Center Drive on NIH's Bethesda campus in April.
**IMAGE: DUSTIN HAYS**


### The NIH Record

Since 1949, the *NIH Record* has been published biweekly by the Staff News and Public Inquiries Branch, Office of Communications and Public Liaison, National Institutes of Health, Department of Health and Human Services. For editorial policies, email nihrecord@nih.gov.

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Plescia (l) learns about the phases of Clinical Center (CC) expansion from acting CC CEO Pius Aiyelawo.

## Plescia

CONTINUED FROM PAGE 1

including pain, disfigurement and breathing difficulties. Another complication, Shern noted, is that part of the plexiform can become cancerous, making it difficult to target and treat.

Gross is part of Dr. Brigitte Widemann's lab, which studies neurofibromatosis type 1 (NF1), a genetic disease that causes tumors, neurocognitive difficulties and bone abnormalities. One of her patients, Philip Moss, was visiting the Clinical Center for a checkup, and stopped by the lab to greet Plescia.

Moss is 1 of 50 patients from a NF1 trial that began a decade ago. At age 8, Moss had a growing tumor on his neck. He recounted being scared coming to NIH as a child. "Now that I'm older, I appreciate the medical care and the culture here," Moss said. "I'm eternally grateful to [my NIH doctors]. Without them, I wouldn't be here today."

Results from that study led to the first FDA-approved medication for NF1, a treatment that is now available in more than 50 countries. "Now patients around the world have treatment options," Gross said. "We're excited about this but we're not stopping there."

Gross noted the need to find treatments for the 10-15% of NF1 patients who develop aggressive cancers with poor survival for whom there are currently no good treatment options. The team continues to develop and test treatments and ways to detect tumors earlier, while they're small and localized.

One such diagnostic tool involves measuring cell-free DNA—which is shed from regular cells and cancer cells—from a simple blood draw. There's evidence that this test may detect malignancies earlier than imaging scans.

"It might not only be useful for diagnostics," said Dr. Taylor Sundby, an assistant research physician in Shern's lab, "but also to help figure out whether we need to escalate or de-escalate care."

Genomics research, started at NIH decades ago, is further transforming the field and enabling what's becoming possible.

Patient Philip Moss (c) and his mom tell Plescia (r) they're grateful for NIH's life-saving treatment.

**PHOTOS: MARIA MASLENNIKOV**

## Metabolic Unit

In the Metabolic Clinical Research Unit, researchers study diabetes, obesity, liver disease, cancer, neuromuscular, cardiovascular and other chronic diseases.

"It's a unique facility offering specialized studies in metabolism, which provides value and insights into many conditions that are affecting so many people," Dr. Griffin Rodgers, director of NIH's NIDDK, told Plescia.

Senior Investigator and co-director of the metabolic unit Dr. Kong Chen took Plescia inside one of NIH's metabolic chambers—an open-circuit and air-tight space that allows for non-invasive studies related to whole-body energy expenditure and fuel utilization while monitoring changes in heart rate, movements, body temperature and other physiological measurements. The environmentally controlled room, which is supplied by medical air and has a bed and toilet, houses the patient during their hours- or days-long study.

Shern sets up a microfluidic chip for Plescia to view under the microscope, as NCI Principal Deputy Director Dr. Douglas Lowy and POB Chief Dr. Brigitte Widemann look on.

"One of the real strengths of these metabolic chambers is the ability to accurately and precisely measure changes in physiology or pathophysiology," Chen said. "For example, food intake changes of even a few percent matter chronically, as do small metabolic changes if such changes are not compensated by each other."

The studies range from understanding metabolic adaptations to common weight loss and weight regain to finding causes and treatments for rare conditions in which, for example, people cannot digest proteins or fats.

Obesity is a staggering problem in this country and one that HHS has a keen interest in tackling. Rodgers noted NIH clinical researchers aim to find precise strategies to help address it.

## Vaccine Research

Plescia headed from the Clinical Center to the Dale and Betty Bumpers Vaccine Research Center (VRC), where VRC Director Dr. Ted Pierson and VRC investigators described the critical research done there.

At the VRC, researchers perform basic and translational research on infectious causes of acute and chronic illness to promote health through disease prevention. Central to their unique approach is the translation of fundamental discoveries into experimental medicine by developing novel biologicals to test in first-in-human clinical trials. VRC researchers study the biology of pathogens—how they work, their physical structure, why they cause disease and how they evolve and interact with the immune system.

Achieving these goals often involves developing state-of-the-art analytic tools and technologies. One example is an exceptionally rapid method to identify and clone antigen-specific antibodies from individual

Dr. Kong Chen (c) takes Plescia (l) inside one of NIH's four metabolic chambers and describes its features and the types of studies conducted there. Dr. Stephanie Chung (r) looks on.

B cells. The antibodies guide the discovery of vaccines and can be candidates for new therapeutics.

"We're discovering around a thousand new monoclonal antibodies a week," noted Pierson.

The VRC's efforts contribute to addressing unmet public health needs, the government's biosecurity objectives and NIH responses to public health emergencies, Pierson told Plescia. Its investigators have made significant contributions to vaccine science for HIV, influenza, RSV, Ebola and COVID, to name a few, leading to vaccines which have been deployed around the world.

During his tour, Plescia visited two VRC labs. Dr. Tongqing Zhou, chief of the structural virology and vaccinology section, described how he and colleagues pioneered strategies to stabilize viral proteins to advance vaccine design.

In describing how viruses such as HIV-1 engage with human receptors, Zhou said, "I call it the initial handshake that triggers a big bear hug. Then they begin the infection process." Because some viral proteins change shape, he noted, they become moving targets, making them more difficult for the immune system to attack.

Using tools like an electron microscope that can magnify proteins over 100,000 times , along with artificial intelligence (AI), Zhou's lab is deciphering the mechanisms of viral immune evasion and antibodies function, applying that knowledge to design new therapeutics. He called AI a game-changer in accelerating scientific discoveries.

Plescia also learned about novel influenza studies. Dr. Sarah Andrews, chief of the B cell immunobiology section, is studying how preexisting immunity—from prior flu infections dating back to childhood—is helping or interfering with the body's response to flu infection or vaccination decades later. She described a clinical trial where they studied the response to a particular flu strain in participants who, because of the timeframe when they were born, did or did not have prior exposure to that flu strain. The trial results highlighted the lifelong impact of flu exposure early in life and are informing further studies.

Andrews also discussed pandemic preparedness efforts. In one study, they pulled samples from the freezer from people who were vaccinated with a bird flu vaccine in 2010 to find antibodies that could bind to the bird flu strain currently infecting birds and cows. Doing high-throughput screening, they found five antibodies that were broad and potently neutralizing against many bird flu strains, which suggests they could be effective at protecting against current and future bird flu strains. "We're pursuing these for therapeutic purposes in the event of a pandemic," she said.

It's a collaborative effort, noted Andrews. She's an immunologist and relies on the expertise of a flu research team that includes virologists, structural biologists, and viral sequencing and technology experts. "What has kept me at the VRC is the ability to collaborate with all of these different people with different areas of specialty," she said. "I think that's the power of our work at the VRC."

Pierson also underscored the importance of multidisciplinary teams in discovery science. "Most of what we do is basic science," he told Plescia, "and that's done in this building [Bldg. 40]. All of that work leans into solving problems that address unmet public health needs. Some of those discoveries create opportunities for experimental medicine."

The integration of all the specialized expertise to quickly turn ideas into translational concepts within a single organization is what makes the VRC unique.


At the VRC, Dr. Tongqing Zhou (above l) and Dr. Sarah Andrews (above r) describe for Plescia their cutting-edge vaccine research. **PHOTOS: DANA TALESNIK**

## All of Us

CONTINUED FROM PAGE 1

world's largest precision nutrition study, he said. They are developing algorithms that predict individual responses to food and dietary patterns. It will build on recent advances in biomedical science including artificial intelligence (AI) and microbiome research. These advances provide unprecedented opportunities to generate new data that provides insight into personalized nutrition.

"I became a physician before I knew the story of personalized medicine," Denny said. "I saw patients and their care didn't go like I'd expected. For instance, some patients had heart attacks at young ages. I can't tell you what a horrible feeling it is when a patient dies even though you followed the treatment guidelines perfectly."

Denny (r), CEO of NIH's *All of Us* Research Program, talks with a prospective partner in research.

That feeling left him as he learned how genetics and other factors like diet and exercise could predict a patient's health outcomes more accurately.

Denny's personal experience with disease inspired him to become a doctor. His grandparents had four children who died from cystic fibrosis, a once-fatal genetic disorder that causes serious damage to the lungs. In 1989, scientists identified the gene variant that causes the disease and, by 2013, researchers discovered the first drug to treat it. At that time, patients lived into their 30's or 40's. Today, 90 percent of all cystic fibrosis cases are treatable.

"That's part of why I got into medicine," he said. "Why can't we do what we did for cystic fibrosis for cancer, heart disease, high blood pressure or diabetes?"

Many of these chronic diseases are composed of different subtypes. Knowing the specific type can help doctors screen for disease and better treat disease when it happens. For example, certain populations have a three-to-four-fold increased risk of developing kidney disease; 70% of that risk is due to a genetic variant.

"Our data helped identify a way to treat kidney disease patients with that genetic variant. Clinical trials are underway to test the drug," Denny said. "We can help better understand chronic disease, learn how to treat it and develop new therapies."

Growing up, Denny built computers and wrote software programs as a hobby. During his third year of medical school, he combined his interest in computer programming and medicine. He realized computers could help doctors treat patients more effectively.

Before he came to *All of Us*, Denny was a practicing physician and held several leadership positions at Vanderbilt University Medical Center. While there, Denny and his colleagues created an AI-based tool that predicted a patient's probability of needing certain medications based on their medical history and recommended genomic testing if the future probability was high enough. If a patient developed high cholesterol or had a heart attack, for example, the tool could accurately predict which drug a patient needed to take.

Before this tool, there was no way a provider could consider a patient's genetic data and prescribe the best medication. "A computer needs to do that," he said. "We can't keep all that genetic information in our heads and accurately adjust the dosage."

Denny believes AI has a role in helping care get better. These AI models will need large datasets that can be securely analyzed.

"*All of Us* is filling gaps that have never been filled before," Denny concluded. "We're an incredible resource. Our impact is on an exponential curve. We're very excited to carry this momentum into the future."

## FEEDBACK

A crosswalk on NIH's Bethesda campus

**PHOTO: ERIC BOCK**

### NIH'er Urges Vigilance

With Return-To-Office occurring and more drivers and pedestrians on campus and at our off-campus facilities, it's a good time to remind both drivers and pedestrians to be vigilant and follow traffic laws. Drivers should drive the speed limit, stop at stop signs and crosswalks with pedestrians, and keep an eye out for pedestrians in general, especially in parking lots and garages.

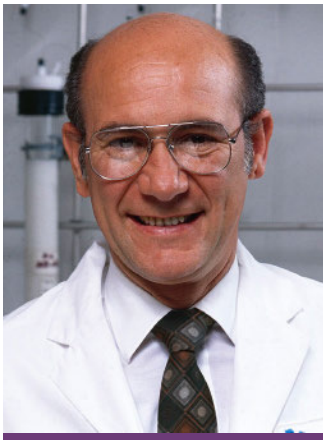
Parking lots and garages are not the place to test out your NASCAR skills. Personally, I've nearly been run down by drivers in the Bldg. 10 parking garage by drivers in too much of a hurry.

Pedestrians should put their phones away, not jaywalk, use the crosswalks, and look before crossing. As a driver, I've had many pedestrians walking along a sidewalk either turn and step off the sidewalk where there is no crosswalk or abruptly turn and enter a crosswalk without making sure I've seen them. Since pedestrians do not have turn signals, I can't read your mind that you're going to turn and suddenly enter the crosswalk when I'm mere feet from it.

We've already had at least one death from a car/pedestrian incident on campus in recent years; we don't need another tragedy. Be careful out there. **—Anonymous**

## NIH Remembers a Giant of Pharmacology

BY CHRISTOPHER WANJEK



Dr. Pedro Cuatrecasas

The science community has lost one of the giants of pharmacology with the passing of Dr. Pedro Cuatrecasas, who died on March 19 at the age of 88. During his relatively short tenure at NIH, from 1964 to 1970, he co-invented affinity chromatography with fellow NIH'er Dr. Meir Wilchek, an accomplishment for which they were recognized with the prestigious Wolf Prize in Medicine.

Born in Madrid, Spain, Cuatrecasas moved to the United States in the 1950s to pursue an undergraduate and then medical degree. He worked at the National Institute of Arthritis and Metabolic Diseases under the mentorship of Dr. Christian Anfinsen, who would be a co-recipient of the 1972 Nobel Prize in Chemistry. Among his most significant work at NIH, circa 1969, was the use of radio-labeled insulin and the discovery that this hormone binds reversibly to cell surfaces, arguably launching the modern field of endocrinology.

"What he had demonstrated with experimental data was that reversible binding of hormones to cell surface receptors was the major way in which hormones exerted their effects on cells and organs," said Dr. Alan Schechter of NIDDK, who worked with both Cuatrecasas and Anfinsen during this time.

Cuatrecasas remained close to his NIH colleagues and collaborated frequently after his departure, moving first to Johns Hopkins University School of Medicine in 1970, where he further refined his studies in developing ligand binding technology to identify insulin receptors. In 1975, he began his career in industry at Burroughs Wellcome and then Glaxo, Warner-Lambert and Parke-Davis, before returning to academia in 1997 as adjunct professor of pharmacology and medicine at the University of California San Diego School of Medicine.

Cuatrecasas had an illustrious career and played an active role in the discovery and development of more than 40 medicines — from atorvastatin (Lipitor) to zidovudine (for HIV/AIDS) and many other impactful therapeutics in between, such as permethrin (Rid, for head and body lice).

Information about his family life—how he loved the water!—can be found at bit.ly/3R93Ery.

## Blood Pressure Patterns in Early Pregnancy Tied to Later Hypertension Risk

PETROVICH NATALIYA/SHUTTERSTOCK

Blood pressure patterns observed in the first half of pregnancy, even among women without hypertensive disorders of pregnancy (HDP), can identify women at greater risk of developing hypertension up to 14 years after giving birth. The new findings, which appeared in the journal *Hypertension*, come from a large observational study supported by NIH.

High blood pressure is a risk factor for heart disease, the leading cause of death. This study identified a new, previously undefined risk group of postpartum women who are not currently recognized as being at high risk for future hypertension and cardiovascular disease because they did not develop HDP during pregnancy.

HDP includes serious complications such as preeclampsia and gestational hypertension during pregnancy and are known to increase the risk of heart disease later in life. When the history of HDP was combined with women's early pregnancy blood pressure patterns, these data together provide a new and improved tool for risk assessment.

The study followed 174,774 women who received prenatal care at Kaiser Permanente Northern California between 2009 and 2019. None of these women had hypertension, kidney, liver or heart disease, or a history of preeclampsia before pregnancy. Researchers tracked their health records up to 14 years after delivery to identify new cases of hypertension.

The research found that women who showed certain blood pressure patterns during the first 20 weeks of pregnancy were more likely to develop hypertension later in life. Six distinct risk groups of blood pressure trajectory were identified, ranging from ultra-low to elevated-stable patterns. Women with elevated-stable blood pressure patterns were at the highest risk.

This study shows that blood pressure trajectories during early pregnancy can stratify this risk, even for women without HDP. By identifying women at higher risk, healthcare providers can offer targeted surveillance and early interventions, potentially preventing future heart problems.

## Midlife Eating Patterns Tied to Health Decades Later

Eating patterns can affect risk of chronic diseases.

BEARFOTOS/SHUTTERSTOCK

As the U.S. population ages, there's growing interest in protecting physical, mental and cognitive health in later years. There's a need for research that examines the links between dietary patterns and healthy aging, including the long-term impact of midlife food choices.

A research team examined data gathered in two long-term studies of health and lifestyle. They assessed participant data every four years beginning in 1986 for up to 30 years. Participants were excluded if they had a serious chronic disease at the start. The final study population included about 70,000 women and 35,000 men. Results appeared in *Nature Medicine.*

Researchers first examined how closely each participant's self-reported eating patterns adhered to eight different healthy diet patterns. Among these were the Alternative Healthy Eating Index, the NIH-supported DASH diet, the MIND diet, the Planetary Health Diet Index and a Mediterranean diet.

The scientists also considered consumption of ultra-processed foods, which typically contain industrially manufactured ingredients like high-fructose corn syrup, flavoring agents, unhealthy fats and emulsifiers.

The team then assessed the associations between adherence to each diet and healthy aging at age 70 or older. They found that over 9% of participants had achieved healthy aging, meaning they were free of major chronic disease and had positive measures of cognitive, physical and mental health.

The participants who had most closely followed the Alternative Healthy Eating Index were most likely to have healthy aging by age 70. Participants who followed any of the other healthy eating patterns also boosted their odds of healthy aging.

Regardless of diet, people who ate more fruits, vegetables, whole grains, unsaturated fats, nuts, legumes and low-fat dairy were more likely to have healthy aging. Healthy aging was less likely in those who ate more trans fats, salt, sugary drinks and red or processed meats. Eating more ultra-processed foods reduced chances of healthy aging by 32%. —adapted from *NIH Research Matters*

## Blossoms Spring Forth Across NIH in April

Above, Viburnum and Eastern redbuds west of the Clinical Center; below, redbud branches west of the CC

**PHOTOS: MIHAELA FRINCU**

Above, crab apple trees in bloom in front of the Stone House


Above, cherry blossoms surround the NCI-Shady Grove campus; below, blossoms adorn Bldgs. 50 and 1 on the Bethesda campus.

**PHOTOS: DANA TALESNIK**