IN HER HAY-DAY

Meet Meredith Hay: physiologist, entrepreneur, proud Texan and 92nd president of APS.

BY MEEGHAN DE CAGNA, MSc, CAE

In April 2019, Meredith Hay, PhD, FAPS, became the 92nd president of the American Physiological Society. Hailing from Houston, Hay currently calls Tucson, Ariz., home. She is a professor of physiology at the Evelyn F. McKnight Brain Institute at the University of Arizona Health Sciences, where she oversees her named lab—the Hay Laboratory of Cardiovascular Neurobiology and Biophysics.

APS Chief Engagement and Partnerships Officer Meeghan De Cagna sat down with Hay to share her journey, goals she has as APS president, and a little about her big horse, Pakuna.

Photo, facing page, by Chuck Fazio

MD: How did you become interested in science?
MH: I've always loved nature and learning about how things worked. Some of my earliest childhood memories were of time spent with my dad. He passed away when I was 10, but when I was six, he taught me how to fix my bicycle, taking things apart, then using tools to solve the problem and put the bike back together. I liked doing that. That lesson was a memory that stayed with me forever.

MD: Why did you choose physiology as a career choice?
MH: I fell in love with learning about how the brain works. I remember being fascinated when I saw a picture of a neuronal action potential. It wasn't until I started my PhD program that I became enamored with how the brain was involved in regulating blood pressure and whole-body functions—physiology!

MD: What area of physiology are you working in today and why?
MH: My current interests are focused around understanding how systemic inflammatory diseases such as heart failure, hypertension or diabetes affect cognitive health. About 12 years ago, my mother suffered from undiagnosed heart failure following a breast cancer diagnosis and chemotherapy treatment. As her heart failure progressed, she developed significant cognitive impairment and ultimately vascular dementia. Her cardiologist told us there was nothing they could do to help her memory loss.

While my mom survived the cancer, the chemotherapy had damaged her heart, which ultimately led to dementia. I knew then that we had to find a way for the cardiovascular experts to connect with the neuroscientists to help patients.

To me, this is the soul of physiology and why I work in the discipline today. The essential question is how can we apply what we know about how the different organ systems work together to affect health and disease.

About five years ago, a colleague, Dr. Carol Barnes, was describing her work on understanding how our brain and memory change as a normal part of the aging process. I remember asking her how many of the older adults she studies also have some kind of cardiovascular disease and how much of that disease affects memory in older adults. As it turns out, approximately 65 percent of older adults have some kind of cardiovascular disease or hypertension. That's when we began to develop novel therapeutics to treat inflammation-related brain dysfunction and cognitive impairment.

MD: Can you tell me more about the work of your lab?
MH: Our lab is working to develop novel peptide therapies for traumatic brain injury, chronic pain and vascular dementia. We're also running clinical trials to test Ang-(1-7) on cognitive impairment in cardiac surgery patients.

Top: Hay, on the left, with her friend, Donna Hanson, fly-fishes near her cabin in the mountains of northern New Mexico. Bottom: One of Hay's five dogs, a rescued standard poodle named Remington. Facing page: Hay spends several mornings a week learning dressage with her horse, Pakuna, after spending most of her life riding Western.

We're collaborating with scientists from across the University of Arizona system and across the U.S.—from chemists, psychologists and neuroscientists to biophysicists and

All photos, other than page 18, courtesy Meredith Hay, PhD, FAPS

cardiologists—all on behalf of bringing new therapies to help patients achieve better health outcomes.

MD: In addition to your university roles, you are also an entrepreneur, having founded and now serving as chief science officer of ProNeurogen Inc. Can you describe what your entrepreneurial journey has been like?
MH: Starting our own company to develop novel therapeutics for inflammation-related memory loss and pain has been, without a doubt, the most rewarding and the hardest endeavor I have ever undertaken. And I have had my share of big jobs! I joined the University of Arizona in 2008 as the executive vice president and provost in the middle of a financial crisis. And while that job was certainly challenging, starting up and developing a biotech company has been thrilling. Taking an idea, testing it in animal models and then seeing it help patients has been an opportunity of a lifetime.

MD: ProNeurogen has a robust pipeline portfolio. Over the next few years what are you hoping to accomplish?
MH: Currently, we have three therapeutics in development. We are working to raise non-dilutive funding to advance the novel therapeutics into phase 2 clinical trials. Then we hope to find a pharmaceutical partner who can help advance the therapeutics to the marketplace to help patients just like my mom.

MD: What has being an entrepreneur taught you about yourself?
MH: I've learned never to give up. Persistence, persistence, persistence. I remind myself to just keep swimming!

MD: Do you see other physiology colleagues becoming more interested in entrepreneurship or product development? What advice would you give others just starting out?
MH: I hope so. Many bench scientists believe they cannot take their ideas forward to clinic. Not true. My advice is to believe anything is possible, find the right clinical partner and create a mutually shared vision.

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MD: You've been a member of APS since 1987. Why did you initially join, and what has being a member and volunteer leader meant to you?
MH: I was fortunate to have my mentor, former APS President Vernon Bishop, encourage me to join when I was a student. I took his advice, and APS has been my professional home ever since. Throughout my time as a member and Society leader, I've cultivated valuable relationships both personally and professionally with very dear friends and colleagues with whom I have worked over the years.

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MD: As president, what are some of your aspirations to advance and expand the APS community?
MH: This is an exciting time to be involved with APS. With our new executive director, Scott Steen, we are preparing for the next decade to come. Modernizing our value position to our members, advancing our journals and creating opportunities for physiologists to succeed is our focus. That means broadening our membership base, ensuring that our meetings offer the best and most relevant science on the planet, championing young scientists, supporting educators, serving members at all stages of their careers and leading national conversations around science policy and funding. This collective work is why I ran for the president role. Our efforts will position APS for the next decade, and I'm committed to working together with APS membership, the Executive Cabinet and APS Council to ensure success. Exciting times indeed!

MD: Speaking of early-career trainees, what can you, as president, and APS do to prepare young investigators for great success?
MH: I believe mentoring is important. We need to help early-career members understand that success in science is not only about success in the lab. Rather, it is also about successful networking and getting to know the leaders in the field. I want young scientists to get involved in APS. I encourage trainees to engage through our meetings, committee service or manuscript reviews to name a few. Their voice is vital to our future.

MD: What do you think are the most important issues facing the discipline today?
MH: APS must stay at the forefront of the creation of new ideas and new knowledge that advances humankind and all living things. We cannot be complacent. APS must continue the process we've already begun—evolving, changing, adapting—to be the global leader in the physiological sciences.

MD: APS is launching a new open access journal called *Function* that will feature translational research. Why do you think it's important for our members to be involved in translational work?
MH: I believe it's important for our members to be involved in translational work because when diseases need understanding, we turn to basic scientists for new ideas from the bench—ideas that will advance life on the planet. Translational medicine—which is a two-way street—is a key component of APS staying relevant and leading the life sciences across the world. APS, our journals and *Function* will feature this most important research.

MD: With a thriving career and so many diverse interests, what is something you are really curious about?
MH: I live in Tucson, Ariz., where we have some of the most incredible evening and night skies. I am always amazed at the true vastness of the universe, the depth and seemingly unlimited galaxies. I'm curious to know if humankind will someday travel the galaxies. I hope so.

MD: When life gets hectic, how do you step away and have a little fun?
MH: As a Texan, I've ridden horses, Western, all my life, but a few days a week I spend the morning with my big Holstein dressage horse named Pakuna. I deeply enjoy learning how to dance with my 17.4 hands tall big mare! I also love to fly-fish near our cabin in the mountains of Angel Fire, N.M. That and our five dogs keep us very busy.

MD: Do you have a bucket list? What's on it?
MH: I've been privileged to travel and have had the blessings of family and great friends, but I do have a few things on my bucket list. I want to visit the base of the seven summits and scuba dive in the seven seas. I'm working on both!

Above: Hay and her niece, Sally Vangness, golfing together. Right: Hay shows off her catch on a recent fishing trip.

FASTFACTS

LEGACY OF APS SERVICE & LEADERSHIP

Membership Committee (1997–2001)
Education Committee (2001–2005)
Finance Committee (2006–2009)
Chair, Finance Committee (2015–2018)
APS Fellow (2017–present)
Editorial Board, *AJP–Heart* (1999–2005)
President-elect (2018)
President (2019)

EDUCATION

PhD, Cardiovascular Pharmacology, 1990, University of Texas Health Science Center, San Antonio

MS, Neurobiology, 1987, University of Texas Health Science Center, San Antonio

BA, Psychology, 1983, University of Colorado, Denver

SEVEN SEAS:

(✳ indicates seas where she's scuba dived)

North Atlantic Ocean
South Atlantic Ocean ✳
Indian Ocean ✳
North Pacific Ocean ✳
South Pacific Ocean ✳
Arctic Ocean
Antarctic Ocean