Neurotransmitter expert is named chair of physiology

In December, Hermes Yeh, Ph.D., will become the first chair of physiology at DMS in more than a century who's neither an alum nor already on the faculty. The last three chairs, for example, were Donald Bartlett, M.D., a DC and DMS graduate who'd taught at DMS for 19 years before becoming chair in 1990; Heinz Valtin, M.D., who'd taught at DMS for 20 years prior to his 1977 appointment;* and Marsh Tenney, M.D., a DC and DMS graduate who was chair from 1956 to 1977.

Build: But although Yeh (pronounced "yay") is new to Dartmouth, the physiology department's strong tradition of research and teaching is part of what drew him to DMS. "I think a chair who comes in would be wise to build on the existing strengths," he says.

Adjusting to new places comes naturally to Yeh, who is currently a neuroscientist at the University of Rochester's Center for Aging and Developmental Biology. The son of a Taiwanese diplomat, he moved often as a child—from Taiwan to Germany; back to Taiwan; then to Beirut, Lebanon; back to Taiwan again; then to Austria and Germany. "When you are a little kid and you go from one country to the next, you have to learn the language, go to school, and everything," says Yeh. Moving from place to place "taught me how to adjust very quickly and adapt to changing environments and situations."

Yeh came to the U.S. in 1972 to study zoology and physical chemistry at DePauw University in Indiana. In 1976, he enrolled at the University of Texas Southwestern, intending to earn a Ph.D. in genetics. But when his advisor took another job, "I was left in Dallas . . . not knowing exactly what to do," he recalls. Then one day he passed by a neurophysiology lab. "I saw these blinking lights," remembers Yeh, "and these sweeping oscilloscopes," instruments that measure electrical signals. "It looked really cool." Soon Yeh was working in the lab, studying neurotransmitters—chemicals that allow or inhibit communication between brain cells—specifically norepinephrine. As a doctoral student, Yeh helped to define norepinephrine as a neuromodulator and to describe how it worked. "As it turns out," he explains, norepinephrine "didn't exactly turn things on or off. . . . It was more of a modulator."

After completing his Ph.D. and a fellowship at the National Institutes of Health (NIH), he spent eight years at the University of Rochester, three at Wake Forest University, five at the University of Connecticut, and another five at Rochester.

Nerve: Throughout his career, Yeh has remained active in both teaching and research, studying how nerve cells in the brain communicate and how they adapt to normal development, aging, and toxic substances, such as alcohol. He is probably best known for developing a way to

FACTS & FIGURES

On the ball

Predicting a pandemic

"It's clear that an influenza pandemic is overdue," declared Kathryn Kirkland, M.D., chair of DHMC's SARS/Influenza/Contagious Respiratory Infection Committee, in July 2005.

Past

20%
Worldwide infection rate from the 1918 "Spanish flu"

20 million to 40 million
Worldwide deaths from the 1918 flu

675,000
U.S. deaths from the 1918 flu (47% of all deaths that year)

September 1918
Boston Red Sox win the World Series

Present

108 / 54
Confirmed cases and deaths worldwide from avian flu, 1997-2005

36,000
U.S. deaths annually from seasonal flu

2 million to 7.4 million
Estimated deaths worldwide if avian flu becomes a pandemic

October 2004
Boston Red Sox win the World Series

Avian flu, Kirkland went on, is "a good candidate to cause a pandemic at this point. It's immunologically a new virus . . . and it is highly virulent to humans. . . . Perhaps most worrisome of all, the Red Sox appear to be on a winning streak."

SOURCES: U.S. CENTERS FOR DISEASE CONTROL AND PREVENTION AND A DHMC GRAND ROUNDS LECTURE BY KIRKLAND ON JULY 22, 2005

* In our print edition, this date was rendered as 1997, due to a typographical error in final production It was, in fact, 1977 when Valtin was named chair of physiology.

record electrophysiological functions and genetic expression at the same time in a single nerve cell. "It represents a very good marriage between two rather different techniques," says Yeh, who created the method in 1992 with a colleague at the University of Pennsylvania.

NIH: Yeh is the principal investigator of three NIH grants, which he will bring with him to DMS. He has also chaired various panels for the National Institute of Neurological Disorders and Stroke and the National Institute of Mental Health.

Yeh accepted the position at DMS because, he says, "Dartmouth had the right mix for me . . . a good academic atmosphere, academic tradition, dedication to teaching, and also the sort of future vision that I felt I could, as a chair, contribute to building.

"Everybody talks about translational research," he continues. But "the issue really is how to go about doing it and where I feel I can do [it] best."

Jennifer Durgin

Yeh will bring three NIH grants to DMS.

IOM panel issues mammography recommendations

Mammography equipment has improved dramatically in the last 20 years, yet questions linger about how accurately mammographic images are interpreted. So says a new report from the national Institute of Medicine (IOM).

"We learned from published studies that the technical aspects of imaging have really come a long way," says DMS cancer researcher Patricia Carney, Ph.D. She was one of 12 experts who drafted the IOM report, commissioned by Congress and titled "Improving Breast Imaging Quality Standards."

"The equipment is much better—it's much more standardized," explains Carney, who has been at Dartmouth since 1980 but in September was to join the faculty at Oregon Health Sciences University. "The film processing is more standardized and of high quality," she adds. "The biggest area left unaddressed is radiologist interpretation."

Despite mammography's popularity as a breast-cancer screening tool, it's a flawed test. Mammography fails to detect one out of four cancers and also has a very high false-positive rate—about 75% of women who have an abnormal mammogram and undergo a biopsy turn out not to have breast cancer. Furthermore, the percentage of woman called back for additional imaging or biopsy varies widely from facility to facility and provider to provider. Several studies, notes the report, "have revealed that recall rates . . . range from 3% to 57% among facilities, and 2% to 13% among individual radiologists."

To help eliminate some of this variability, Carney and her coauthors recommended that mammography centers track at least three measures: 1) the proportion of women recommended for biopsy who are subsequently diagnosed with breast cancer; 2) the number of cancers detected in every 1,000 women; and 3) the proportion of women whose mammogram leads to additional imaging or biopsy.

"Interpreting physicians need to know and understand their current level of performance," says the report, "before they can determine whether and how it could be improved."

Data: Steven Poplack, M.D., codirector of mammography at DHMC, agrees. His department has been tracking its outcomes for over 10 years, and all mammography providers in the Dartmouth-Hitchcock system already collect the data listed in the IOM report. That information is then fed into the New Hampshire Mammography Network, which is housed at DHMC and is one of only seven such registries in the country.

By analyzing this mammography data, Poplack and his team can keep track of long-term outcomes of patients they screen. This helps them know about any patients who had a normal mammogram reading but were later diagnosed with breast cancer. In those cases, "we try to assess whether or not a mistake was made in the imaging," Poplack explains, "and if so, try to learn from it. And if not, get a handle on what [types of] cases [we] are more apt to miss."

JON GILBERT FOX

DMS's Carney served on the IOM panel.

Although the IOM report made several bold recommendations, its release was "incredibly quiet," says Carney. But she expects critics to emerge when the Mammography Quality Standards Act (MQSA) is up for reauthorization in 2007. MQSA was supposed to be reevaluated by Congress this past summer, after the release of the IOM report. Instead Congress reviewed the act in the fall of 2004, several months before the IOM panel completed its analysis. Nevertheless, the report sent a clear message to radiologists and the government: interpretation variability needs to decrease, and for that to happen reimbursement rates need to rise.

Poplack agrees that reimbursements are a major obstacle to better breast imaging. "We have trouble breaking even," he said. "And in this country, if you can't break even . . . you may not be able to offer that service."

Jennifer Durgin