

David H. Wasserman (1958–2024)

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We have lost a distinguished scientist who made indelible contributions to our knowledge of exercise physiology and diabetes and was an advocate for mentoring and transparency in research.

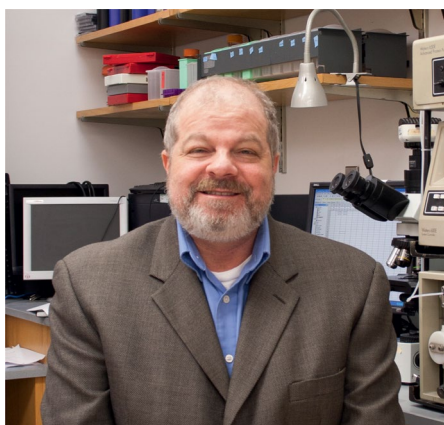
David H. Wasserman passed away on 20 June 2024 at the age of 66. He will be remembered as a scientist, colleague, mentor and friend who we lost too soon. At Vanderbilt University, he was Annie Mary Lyle Professor of Molecular Physiology and Biophysics and founder and director of the Vanderbilt Mouse Metabolic Phenotyping Center. David was elected a fellow of the American Association for the Advancement of Science in 2017. His career was marked not only by groundbreaking research into the role of exercise, insulin and diet in the regulation of metabolic processes but also by his push for rigor and transparency in academic biomedical research.

Academic career

David's interest in physiology was spurred on by his father, Dr. Karlman Wasserman, a highly regarded pulmonary physiologist who used exercise as a means to assess the interactions between cardiovascular, pulmonary and metabolic responses. After earning both bachelor's and master's degrees in kinesiology from the University of California, Los Angeles, David moved to Canada, where he earned a PhD in physiology from the University of Toronto under the mentorship of Dr. Mladen Vranic, another giant in the field of physiology and metabolism. It was during his time in Toronto that David developed a passion for investigating the complex physiology regulating metabolic processes, particularly those relevant to the pathophysiology of diabetes.

A pioneer in the regulation of glucose metabolism

In 1985, David became a postdoctoral fellow in the laboratory of Dr. Alan Cherrington at Vanderbilt University in Tennessee, where he investigated hormonal and neural regulation of hepatic metabolism in response to exercise in dogs. Following this highly productive period, David joined the Vanderbilt faculty in



1988 in the Department of Molecular Physiology and Biophysics, where he continued to develop a research program focusing on the metabolic response of the liver to exercise and also expanded his research interests to investigating metabolic effects of exercise on skeletal muscle. In particular, research in the Wasserman lab examined how various hormonal and neural inputs influence hepatic glucose production and muscle glucose uptake during exercise^{1,2}.

It was during this period that David made a significant pivot toward the use of rodent models to identify control points for glucose metabolism. His first foray into this area involved use of isotopic glucose analogues to assess insulin-stimulated glucose uptake into skeletal muscle in conscious rats, and the results suggested that the control of glucose uptake into skeletal muscle is not limited only by glucose transport but instead distributed across mechanisms that regulate glucose delivery, transport and phosphorylation³. This seminal work formed the foundation for many subsequent high-impact publications combining isotopic tracer techniques with transgenic mouse models to study the mechanisms that maintain glucose homeostasis and how they become dysregulated in the setting of insulin resistance and diabetes. Over the subsequent two decades, the Wasserman lab made significant discoveries on the impact of factors such as cellular redox state, the extracellular matrix and the vasculature on insulin action and glucose regulation^{4,5}.

Across his career, David received a multitude of awards, including the Bowditch Award,

the Solomon Berson Award from the American Physiological Society, a National Institutes of Health (NIH) MERIT Award, the C.R. Park Award for Excellence in Research and the John H. Exton Award for Research Leading to Innovative Biological Concepts. David is especially memorable for his ability to communicate complex ideas in an easily approachable way, thus facilitating the bringing together of many disciplines. In particular, "Four grams of glucose" is a review that used a clear title to capture the small amount of glucose that circulates in the blood of a person weighing 70 kg, and communicates the essential roles of glucagon and insulin for a broad audience⁶.

Mouse Metabolic Phenotyping Center

In 2001, the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) of the NIH established the Mouse Metabolic Phenotyping Center (MMPC) as a consortium of four centres across the United States with a mission to "advance medical and biological research by providing the scientific community with standardized, high quality metabolic and physiologic phenotyping services for mouse models of diabetes, diabetic complications, obesity and related disorders"⁷. With David's leadership, Vanderbilt was awarded one of these centres, and the Vanderbilt Mouse Metabolic Phenotyping Center (VMMPC) has been continuously funded since. For over 20 years, the VMMPC has embodied the mission of the MMPC program by providing state-of-the-art phenotyping services and expertise for mouse models of metabolic diseases.

As director of the VMMPC, David saw this centre as more than a core facility that provided experimental services; he envisioned it as a vehicle for educating the scientific community and improving rigor and transparency in metabolic research. This is best exemplified by a yearly course hosted by the VMMPC called "Glucose Clamping the Conscious Mouse: A Laboratory Course." Since 2006, over 100 academic and industry scientists from around the world have participated in this course and have not only learned how to perform sophisticated metabolic phenotyping tests in mice, but also gained a better appreciation of the importance of accurate and thorough descriptions of methodology and results. Throughout his tenure as director, David's goal for the

VMMPC to be a provider of both experimental and educational services was founded on his guiding principle that “a rising tide lifts all ships.”

Allyship and mentoring

Throughout his time leading the VMMPC and serving as a leader in the fields of physiology and metabolism, David Wasserman was a selfless mentor to people in his lab as well as to countless colleagues throughout the scientific community. His career was marked by a dedication to mentoring and supporting the community, even if it meant sacrificing his personal success. David was generous with his time and knowledge, helping students and faculty navigate challenges throughout their careers. Indeed, a common theme expressed by those who knew him was the way that David was always willing to dedicate time to his colleagues—whether discussing data or issues of career development. He provided invaluable advice, collaboration and personal kindness, always remembering even small details about others’ families and serving as a sounding board for new ideas. David was also a strong advocate for diversity, serving as a constant ally to many trainees from

under-represented groups. This is strongly exemplified by his efforts to develop the Vanderbilt Vibrant program, a program that enhances access to VMMPC services for investigators from under-represented backgrounds and/or from institutions that historically serve under-represented communities.

David also had a unique sense of humour and a certain approachability that made it easy to interact with him. He felt equally at ease talking about the intricacies of glucose regulation and chatting about baseball (or any sport). He would weave in his unique brand of humour for educational purposes. For example, he put together a “Jeopardy” board for both the Molecular Physiology & Biophysics departmental retreat and the Vanderbilt Diabetes Center Diabetes Day that used humour to teach trainees about the history of diabetes research at Vanderbilt.

Although his contributions to physiology and metabolism can be measured by his hundreds of publications, his awards and his success in obtaining funding, David’s most meaningful impact has been in all the effort he dedicated behind the scenes to being a rising tide that would lift the ships around him. His generosity and willingness to always be

there for trainees and colleagues was a unique aspect of his personality that will surely be missed. David’s mentorship will be a lasting memory, filled with shared interests and laughter.

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