Profile

Rhonda Voskuhl: basketball and bedside to bench to bedside

Rhonda Voskuhl

For more on the **Rachel Horne Prize** see https://www.rachelhorneprize.com

"You learn a lot about yourself when you are striving to be good at something. And I learned at an early age that it's great to strive for goals, but in the end, it is about your internal sense of achievement". Rhonda Voskuhl is Professor of Neurology and Director of the Multiple Sclerosis Program at the University of California, Los Angeles (UCLA). She also holds the Jack H Skirball Chair in Multiple Sclerosis and is the neurologist for the UCLA Comprehensive Menopause Care Program. She has achieved national and international acclaim for ground-breaking research in neuroprotective treatments for neurological disability, with a focus on the role of sex hormones and sex chromosomes. Clearly, Voskuhl is a star player in her field; with numerous prestigious awards, international recognition, and more than two decades of continuous research funding, her "internal sense of achievement" has been validated.

As an adolescent, Voskuhl lived and breathed basketball. Growing up in the small farming town of Hennessey (OK, USA), her goal was to play for the All-State team: "I was the fifth leading goal scorer in Oklahoma", and she knew she was good enough. However, when the team was announced in the state newspaper, she had not been selected and she received no honourable mention. The omission was caused by her young high-school coach unintentionally not joining the Oklahoma Coaches Association, making his players ineligible. From that experience, she understood the value of personal triumph: "No one ever knew what happened, it only would have hurt the coach. But…what's important is that I knew I was good enough", she says. This life lesson has shaped her view of failure and success ever since.

During her basketball years, Voskuhl recalls reaching a flow state, described as performing an activity that achieves synergy of body and mind, with absolute focus and perfection of performance in that moment. Perhaps not to the same level, she says, but at times during her career when everything "comes together", it has felt similar to a flow state. You cannot miss Voskuhl's intrinsic strengths: motivation, focus, and turning ideas into solutions. Her bedside-to-bench-to-bedside approach is one way in which it all comes together, she explains: clinical observations in patients are taken into the laboratory, where she "disentangles, asks questions, and is open-minded to all possibilities". When she discovers the mechanism, she returns to the bedside through translation into a clinical trial.

Voskuhl almost fell into medicine: with no initial clear direction, she attended Vanderbilt University School of Medicine (Nashville, TN, USA), "because it was a good school". Neurology immediately appealed to her sense of curiosity and discovery, and she felt a strong connection to research. After her neurology residency at University of Texas Southwestern (TX, USA), and her post-doctoral fellowship at the National Institutes of Health (MD, USA), Voskuhl became fascinated with the "counterintuitive action where the immune system attacked itself". So, drawn to neurology and immunology, Voskuhl developed an interest in multiple sclerosis. She recalls how a visiting professor, neurologist and immunologist Larry Steinman (Stanford Medicine, CA, USA), inadvertently played an influential role in her career: Steinman showed her that it was viable, even preferable, to do both neurology and immunology, combining mouse models and human research. "He was my role model, and he didn't even know it". She started working with an experimental autoimmune encephalomyelitis model of multiple sclerosis, in which female mice are affected more often than males. Focusing on human disease in neuroscience research, Voskuhl's goal is to find new treatments for patients using the bedside-to-bench-to-bedside approach. "Life is too short to spend decades studying something in the lab that ends up not relevant to people's suffering", she explains.

Alongside her research into the effect of sex differences on multiple sclerosis risk and progression, Voskuhl studies cognitive decline in women experiencing the menopause. Multiple sclerosis-related disability increases during the menopause, and this deterioration is not connected to classic systemic immune activation, she says, but rather to neurodegeneration. On a similar trajectory, Voskuhl seeks to identify the neurobiological mechanisms underlying early cognitive decline, to develop interventions for mitigating risk of dementia, specifically Alzheimer's disease.

A recipient of many awards, Voskuhl says the most meaningful is the Rachel Horne Prize for Women's Research in Multiple Sclerosis, which she received in October, 2023, for her work highlighting the understudied effect of menopause on neurodegeneration. "Being the inaugural winner is important to me because this prize will enhance investigation of mechanisms underlying sex-specific effects on disease, leveraging clinical observations of sex differences towards optimal, tailored treatment of women and men. Notably, it has taken women reaching leadership positions in clinics, labs, politics, and journalism for this to be addressed."

Voskuhl does not seem motivated by fame or money, and her view of the world as a scientist is also a transcendental one: "I want spiritual fulfilment from doing something that helps, something unique that no one else has done. If you are forgotten, it doesn't matter, external validation will pass". "Science is a miracle, even if you can explain it", she adds. However achieved, that flow state is always within reach.

Jules Morgan