

Nils Loewen, MD, PhD

It is a misconception that a clinician-scientist must have multiple personalities to fulfill these two roles, which I view more as complementary than competing. Clinical medicine and health science follow a similar process: identify a serious problem, develop a hypothesis of its etiology and/or treatment, test the hypothesis, and improve health. As a clinician-scientist, I feel humbled and privileged to participate in this process by working with a patient or, on a larger scale, by investigating a disease.

Fundamental to a clinician-scientist's success, I believe, is a Zen-like beginner's mindset: an ability to observe without preconceptions and to ask questions. Much of what glaucoma specialists do is driven not by data but by unsubstantiated tradition. The best research grant applications start with a unique observation and/or propose a unique solution. It is otherwise impossible to develop a successful research plan or career.

My research focuses on the root cause of glaucoma: the impairment of aqueous outflow. I investigate the mechanism by which the trabecular meshwork fails, specifically the lack of turnover in this structure that may relate to the unique progenitor cells living along the adjacent Schwalbe line in the insert zone. This embryologically unique tissue forms a reservoir with stem cells from the neural crest that do not exist anywhere else. I also investigate ways of providing outflow alternatives through bioengineering of the outflow tract and novel devices that tap into new, potential spaces such as the suprachoroidal space. I am fascinated by the fusion of man and machine. I am confident that surgeons will one day bypass or substitute failing eyes with a direct link to the visual cortex. Until then, I will focus on using lentiviral vectors to genetically reprogram diseased tissue and stem cells to try to regrow a better outflow system.

When not at work, I seek out new experiences. I was surprised to discover that I have a green thumb and enjoy gardening—a pointless and futile yet exhilarating experience. My daughters and I have started to cook three new recipes each week. Although I used to be drawn to adrenaline-driven activities such as downhill skiing, martial arts, and mountain biking, I realized after reading Steve Jobs' biography that just sitting in strict

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zazen can produce startling insights without the risk to life and limb.

I will close with some insight for the next generation. As a result of changing budgets, institutions that support clinician-scientists with the proper funding and independence are not very common. Junior faculty should not be afraid to make moves early in their careers to find a program that offers a good fit and adequate support. Clinician-scientists often enjoy asking daring and outrageous questions that rattle the establishment. I work with brilliant colleagues and meet international ones several times a year. All of these successful clinician-scientists share my drive to ask important questions and then doggedly chase down the answers. The sense of community and friendship is deeply rewarding. ■

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