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“Garrison Keillor’s Lake Wobegon stories about growing up shy and terrified of standing out are totally true,” says Rick Horwitz, who should know. The Minnesota native now lives outside Charlottesville, where he’s on the faculty of the University of Virginia. “Yet the ‘Minnesota thing’ remains deeply engrained,” says Horwitz, who remembers quitting competitive wrestling in high school because shy people aren’t supposed to win. “That’s a classic Minnesota thing,” says Horwitz. “The last thing you ever want to do is stand out in anything. First place is not an option. Second place is okay, but third place is best for us.” Competitive swimming filled that bill better.

Horwitz’s version of Lake Wobegon was St. Louis Park, a suburb of Minneapolis, which he describes as “this little Jewish community on the Scandinavian tundra.” It was a productive patch of tundra. In the Horwitz family era, St. Louis Park also turned out the comedy writer Al Franken; the movie-making Coen brothers, Joel and Ethan; and *The New York Times* pundit and book author, Thomas Friedman.

“If you take Jewish neurosis and ambition and put that in an environment of Scandinavian reserve, you get someone like me,” says Horwitz.

What you also get, according to Horwitz’s colleagues, collaborators and former students, is a first-rate scientific mind at home in a half dozen fields, combined with a natural talent for collaboration. A case in point is the Cell Migration Consortium. Horwitz first developed the consortium with his University of Virginia colleague Tom Parsons in 2001. It was one of the first “glue grants” funded by the NIH National Institute of General Medical Sciences to encourage cross-disciplinary approaches to problems that no single investigator could tackle. Horwitz and Parsons brought 38 investigators from over a dozen institutions together into several “initiatives.” The plan was to pull together what is known about key migration-related proteins in one accessible location, while developing tools, technologies and ideas to learn more.

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Online databasing, virtual meetings, and full-time scientific manager Nikki Watson have made the glue grant feasible, according to Ken Jacobson of the University of North Carolina, but Rick Horwitz was the human glue.

“I was one of the original people but certainly Rick, along with Tom Parsons, deserves the lion’s share of the credit,” says Jacobson, who works in the Consortium’s Imaging Initiative. “Few people have the motivation or the ability to do this in the way that Rick has. Most of us (in the Consortium) are amazed at how well Rick has handled the scope of the glue grant from genetic screening to computational modeling. You have to have a reasonable awareness of all this stuff

and know enough to keep it all moving in the right direction. Rick has this amazing ability to assimilate new ideas quickly and yet do it in a way that protects other people’s interests. Plus he really does it for the love and the benefit of the field as opposed to doing it for the sheer professional glory. You can never run something as big as this without some occasional ill will, but Rick has been able to diminish those

feelings and keep this on track.”

“Rick Horwitz has always had a natural talent for collaboration,” says Clayton Buck, the recently retired Director of the Wistar Institute in Philadelphia. Buck worked closely with Horwitz in the early 1980s when Horwitz was at the University of Pennsylvania. “Rick has been a fantastic leader in the community,” Buck notes. Horwitz works to ensure that collaborators communicate, meet goals, and work together.

“The keen intelligence, experimental skills, and Horwitz’s ability to ‘keep things friendly’ were there from the beginning of his independent career,” says Buck. Buck heard Horwitz lecture at Penn on membrane structure and was struck by his brilliance. Their labs were just across the street, Buck remembers.

“We’d been struggling to isolate the membrane proteins involved in adhesion. Unbeknownst to me and for different reasons, Rick came up with a monoclonal antibody that perturbed adhesion during muscle development in embryos,” Buck recalls. “So we purified it and

made some antibody affinity columns and began pulling out what turned out later to be a bunch of integrins.”

Actually, Horwitz and Buck had an integrin beta-subunit, but they were not alone in struggling with pieces of the integrin problem. Richard Hynes at MIT and others were examining the problem from other directions.

“Richard called us up and asked if we’d be interested in collaborating,” Buck recalls. John Tamkun, who was a postdoc in Hynes’ lab, was working on the expression cloning for fibronectin. “So we were always going back and forth,” Buck continues. “It was a lot of fun. It was Hynes who came up with the name ‘integrin’ and the first comprehensive review to place ‘integrins’ in their total biological perspective,” says Buck.

“Everyone knew one another. People talked to each other. But it was Rick who was instrumental in keeping everything aboveboard and friendly ... [and] was absolutely pivotal in the field because he was there in the beginning,” Buck adds. With Horwitz, egos just didn’t get in the way.

“Rick taught me how to have fun in science,” says Anna Huttenlocher, of the University of Wisconsin, Madison. Huttenlocher was a postdoc in the Horwitz lab at the University of Illinois, Urbana–Champaign. She remembers Horwitz’s advice: “Go after the important questions that are exciting to you and then be on the leading edge.” She also learned the value of bringing people with diverse perspectives together. “Rick just loves new ideas,” Huttenlocher concludes.

Alan Fredrick Horwitz, as he was named at birth, was born in Minneapolis. However, he can’t remember living anywhere but St. Louis Park and being called anything but Rick. Nevertheless, his publications can be found under “A. Horwitz,” “R. Horwitz,” “A.R. Horwitz and “A.F. Horwitz.” “That’s why you can’t find me easily on PubMed,” he says.

A scientist was the last thing his parents wanted him to become. His parents were “not particularly intellectual,” Horwitz says. They were products of the Great Depression and were unable to go to college since they had to scramble for a living. “The dictum in our house was that there are book smarts and there are street smarts, and street smarts are a lot smarter,” he recalls. Horwitz remembers stopping by his father’s wholesale distributing office after his freshman year in college. “There were all my

great uncles sitting there and they said, ‘Ricky, have you figured out what you want to do?’ And I said, ‘I want to be a research scientist at a university.’ And they looked at me and said, ‘Don’t do it. Go make some money, first.’ At the very least, they wanted me to go to medical school.”

In any case, Horwitz wasn’t exactly pre-med material when he entered the University of Wisconsin. His overall high school record was abysmal, says Horwitz. He had been a lousy student—bored, unmotivated and happily mediocre—until his sophomore year. For reasons he never altogether understood,

his parents suddenly took him out of the public high school. For one year, he was sent to the Blake School, a nearby day prep school that was small, intense, and academically difficult. To his own astonishment, Horwitz discovered that the harder the subject, particularly if it

involved math or chemistry, the better he liked it, and the harder he worked.

Back in public school the following year, Horwitz sank back into academic torpor; passive learning and sitting still weren’t his natural attributes. Then his guidance counselor suggested that as college wasn’t for everyone, he might be happier in a “Voc-Ed” program. This was just the spur Horwitz needed. He changed counselors and went off to Wisconsin, determined to study something interesting, complicated, and difficult. He ended up in the undergraduate Honors program, majoring in chemistry with almost enough physics and math to make a triple major. For his senior year thesis, Horwitz worked in a nuclear chemistry lab doing neutron activation analyses on geologic samples. “The professor, Larry Haskins, gave me a project,” Horwitz remembers, “and then left me on my own. I did the first experiment and then I didn’t want to go home. I kept thinking, ‘Well, what if I did it again but like this? How would that change the result?’ So I did it and then I wondered, ‘Well, what would the next thing be?’ It was the most exhilarating thing I’d ever done. Within a week, I was absolutely hooked on research.”

Horwitz earned his doctorate in Biophysics from Stanford in 1970, working in Harden

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McConnell's magnetic resonance lab on hemoglobin cooperativity and the just-emerging problem of membrane fluidity. He did a post-doc at the University of California, Berkeley, in the chemistry lab of Nobel Laureate Melvin Calvin and Mel Klein. He worked on lipid structure using NMR. To widen his expertise and point him toward his interest in cell

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biology, Horwitz traded his services, at night, as a bench biochemist, to virologist Harry Rubin in return for training in cell culture. His job search yielded a job offer from the University of Pennsylvania School of Medicine and a one-year fellowship offer from Max Burger's Biozentrum lab in Basel. Penn deferred the job and Horwitz went to Switzerland to work on membrane fluidity and cell adhesion.

The Horwitz lab opened in 1974 at Penn, and focused on adhesion and membrane fusion questions. His tools quickly became hybridomas: fused cell lines that could produce specific monoclonal antibodies against unknown membrane surface proteins in muscle cells.

One of these antibodies yielded a vital piece in the search for adhesion receptors and led to his collaboration with Clayton Buck on what would turn out to be integrin. Horwitz left Penn in 1987 for the opportunity to build a Cell and Structural Biology Department at the University of Illinois, Urbana-Champaign. In 1999, he moved east again, this time to the University of Virginia School of Medicine in Charlottesville.

Today Rick and his wife, Carole, who is the Director of Communications for the university's Integrated Systems Project and his “true soul mate,” live on a ridge top outside Charlottesville. The house has sweeping mountain views, an abundance of wildlife, and the family's peripatetic piano, which has followed them around the country.

The piano was a necessity, says Horwitz, who now prefers to play his stereo system. He and Carole first met folk dancing in Berkeley; and although they've never been folk dancing since, music has been a constant. A second Horwitz piano recently left home with their son Jeremy, who took it to Chicago and then to Cambridge, MA. Jeremy is a software designer by day and an off and on musician/composer by night.

Horwitz's daughter Rachel, is a survey statistician in Washington, DC, with the U.S. Census. “Rachel keeps me active,” says Horwitz. “I was moaning that I'd always wanted to try windsurfing and suddenly Rachel is saying, ‘Let's do it. Come on. We can do it together.’ So now we're windsurfing.” They windsurf from the family's “cinderblock” beach house on Chesapeake Bay, where they keep a small flotilla of small craft for sailing, fishing and windsurfing.

In Charlottesville, Horwitz enjoys walking through Thomas Jefferson's famous quadrangle on the way to the campus gym. Regular pleasures also include audio courses like the one he just completed on high medieval history. Not to be omitted from the list is listening to Garrison Keillor's Lake Wobegon tales on the radio. “Listening to Garrison Keillor is therapy,” says Horwitz. “My wife will agree. It's like going to a therapist. I'd hear all his stuff and I'd say, ‘Yeah? Yeah? And it's okay to be that way?’ It took me ten years of listening to Garrison Keillor before I finally understood what I was.”

Radio therapy is definitely a Minnesota thing. ■

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