

CREATIVE WAYS TO ENERGIZE YOUR CAREER

By day, Lynda Williams teaches physics at Santa Rosa Junior College in California. On weekends, audiences laugh at “Carbon Is a Girl’s Best Friend” and other technology songs she writes and performs as “The Physics Chanteuse.”

Like Williams, science faculty can transform their training and expertise into stimulating new professional activities, well beyond their job descriptions. While the responsibilities of a full-time position are always paramount, scientists, for example, might graft an innovative academic or research component onto existing duties, or earmark ample free time to explore another facet of their field. When an intriguing possibility arises, they can experiment with weaving that fresh pursuit into their professional spectrum. This article covers a few more “serious” ways in which faculty can get creative and perhaps increase the satisfaction level of the job. **By Carol Milano**

If a particular new dimension for a teaching portfolio intrigues the instructor, it’s likely to appeal to students, also. While introducing an academic offering isn’t quick or easy, it’s definitely gratifying.

Create a Student Program

Current and prospective students kept asking the Regents Professor of Soil Science at Washington State University about courses in organic agriculture, which he has researched since 1985. Eager to encourage any farming interests, **John Reganold** developed a successful new “Organic Agriculture and Farming” course in 2001. Then, “one day I thought, why not just have a major?” says Reganold.

Colleagues at a mid 2002 faculty meeting encouraged him. For 18 months, he met repeatedly with chairpeople and professors in every Agricultural College department at WSU. “It’s a science-based major—you’re not just outside growing plants,” stresses Reganold, who created specific soil science courses while weaving chemistry, biology, horticulture, entomology, economics, and other requirements into the curriculum. Each participating professor had to agree to shift 15 percent of an existing syllabus to organic agriculture. “We built on existing tradition, namely WSU’s solid reputation in organic agriculture. I presented this as the mission of a land-grant institution.”

Graduate assistant Kathi Peck sought farmland for the new major. Then a colleague, Cathy Perrillo, spent months on extensive national marketing surveys to provide justification. “Everything went smoothly, but it’s time-consuming,” Reganold recounts. “The package had to go through five [university] committees, like the Academic Senate. Then the State Higher Education Coordinating Board took several months to approve it.”

Following approval in June 2006, America’s first organic agriculture major quickly drew student and media attention. Advising most of the 16 current majors, Reganold relishes “seeing their excitement about what they’re taking. Each is really interested in a particular path, like food or soil science, so we [follow] it. That’s the biggest plus for me: to have any undergrad excited about their major is hard to do. Sometimes colleagues come and thank me. That’s very rewarding.”

Unlike Reganold, **William Kisaalita** didn’t follow tradition. The University of Georgia professor of engineering has pioneered an unusual international program. By 1997, his fulfilling job and family life had generated “an urge to give something back,” especially to help people like those he’d grown up with in Uganda. With economic development funding unlikely, and senior faculty urging a research focus while awaiting tenure, he had stifled his passion until professorship.

Hoping to involve undergraduates in international work, Kisaalita secured a small grant in 2000 to travel through Uganda, searching for possible study projects. Now, through his global component in the required Capstone Design Experience, small, carefully selected teams of fourth-year engineering students spend their summer or spring break in poor African villages. Their assignment: Solve a local problem, on site.

To persuade administrators, Kisaalita emphasized a 2001 pilot program’s benefits. “If you can justify what students will learn, you can justify the project. Measurable value is the *continued* »



Lynda Williams

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Leslie Voshall

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“You have to choose where your expertise fits and can help”
—Gregory Knipp



best evidence.” Now, the program integrates his research, teaching, and outreach responsibilities. “The blessing is, our solutions are so unique, they themselves are publishable.” One successful invention was a solar-powered milk cooler that doubles production.

Villagers living on \$2 a day recognize blessings, too. “We talk to them, they see us coming back, they develop a belief in what we’re doing. They know we’re here to stay, not just bringing students to see poor people, then write about them. I get satisfaction from seeing the students being transformed, and from the customers.”

Reach for a Wider Audience

Beyond students and colleagues, who else could a professor’s expertise benefit?

“We’re not doing a good enough job getting science out to the public,” laments **Louann Brizendine**, clinical professor at the University of California, San Francisco. To share her research findings with a wider audience, the neuropsychiatrist chose to write a mass-market book.

Fascinated by women’s mental health since medical school, Brizendine began suspecting connections between female hormones and depression. Recruited by UCSF in 1988, she created a “Hormones in Psychiatry” course, inspired by her pregnancy and postpartum experiences. It evolved into her UCSF Women’s Mood and Hormone Clinic, treating about 600 women annually. When patients taking a particular medication for depression experienced decreased libido, Brizendine measured testosterone and sexual function. Low levels of both generated her “passion to clarify biological aspects of women’s health in hormonal issues.”

She’d never imagined writing a book, until a fortuitous social encounter with an editor. *The Female Brain* was published five years later, in mid 2006. Brizendine worked on it rigorously, largely on weekends. Rewriting took a year, to present all the science more personally and less technically, through anecdotes and clear explanations. “What I thought the whole book would be is now Appendix I,” she reflects.

Translated into 24 languages, *The Female Brain* has sold 300,000 copies in English alone. “The outcome way exceeded my expectations,” admits Brizendine, gratified by letters she receives from high school students. “They’ll say, ‘I was never interested in science before. Now I want to know what courses I can take to be a neuropsychiatrist.’ It’s deeply meaningful.” A sequel, *The Male Brain*, is due out in November 2008.

Other best-selling professors include Marion Nestle, Goddard Professor of Nutrition and Public Health at New York University, author of several well-reviewed books about food issues. Some scientists write mainstream newspaper, magazine, or e-articles. Lisa Sanders, has a popular monthly column, “Diagnosis,” in *The New York Times Magazine*.

Apart from writing, academics can translate their knowledge into other modes, like practical talks for community or nonprofit

groups. **Lynda Williams**, in her “Physics Chanteuse” guise, has presented her witty science songs at New York’s Cornelia Street Café, the Swedish Arts and Science Festival, an American Physics Society conference, and the Inspiration of Astronomical Phenomena meeting in Palermo, Italy.

Develop a Small Business

Sometimes, pursuing a passion can evolve into an outside enterprise with a valuable product or service.

During a late ’60s Peace Corps stint in Brazil, **Louis Kirchoff** encountered Chagas disease, a major cause of Latin American morbidity and death, affecting 12 million to 14 million people. His early research soon brought a prestigious biomedical prize and four-year US National Institutes of Health fellowship. Now the professor of infectious disease, epidemiology and internal medicine at the University of Iowa - Carver College of Medicine, he has spent 75 percent of his time on research since 1985, funded by the Veterans Administration, American Heart Association, and other sources.

Often asymptomatic, Chagas is easily transmitted by blood transfusions. Seeking a serodiagnostic tool to avoid infection, Kirchoff and technician Keiko Otsu developed a simple, accurate test using recombinant DNA technology. Eventually negotiating all rights to his invention, he applied for US and several Latin American patents (see “Who’s Rights?”). In 1998, with NIH small business funding, he set up Goldfinch Diagnostics, Inc., as an affiliate of the UI Technological Innovation Center.

In 2007, Goldfinch licensed his automated Chagas assay to Abbott Laboratories, which had originally contacted Kirchoff years before, after learning of his research. The pharmaceutical firm is developing two products based on Kirchoff’s work.

What inspired him? “To have participated in developing something that will have an impact. If this works out, I’ll donate blood soon, and it will be tested for Chagas—for which I provided the technical basis!” Kirchoff adds, “I’m not Mother Theresa with a stethoscope—the idea of an effortless royalty stream every quarter is additional motivation.”

Expert Advice

Another academic sideline is consulting. For **Gregory Knipp**, associate professor of industrial and physical pharmacy at Purdue University, separating consulting projects from academic responsibilities is delicate. Sought out because of his publications and reputation, Knipp was initially “enticed by trying to develop something new, plus some financial incentives.” *continued »*

Featured Participants

Purdue University
www.purdue.edu

University of Georgia
www.uga.edu

Rockefeller University
www.rockefeller.edu

University of Iowa
www.uiowa.edu

Santa Rosa Junior College
www.santarosa.edu

Washington State University
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University of California, San Francisco
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Faculty Positions

“We’re now a major player in NCI’s long-term initiative to diagnose and cure cancer.”

—David Soll



In pharmaceutical consulting, he tackles immediate problems—such as promising therapeutic agents with previously unnoticed barriers—and seeks ways to “salvage new compounds or delivery systems and bring them to market. It can really cut into weekends and nights, so I don’t do it all the time. You have to choose where your expertise fits and can help.” Though high fees can significantly supplement academic income, “I’d rather do something where I know I could be of benefit than something outside my league, just for a paycheck,” Knipp reflects.

Some institutions allow professors one day a week for outside projects. They can have consulting checks sent to the school, for use as unrestricted funds (unlike a grant), for equipment, research, or travel. Consultants may help companies make critical decisions that could impact overall success potential, or recommend cutting an unrealistic project, says Knipp, convinced that his students benefit from the new perspectives he hones with each consulting project.

Expand the Scope of Your Work

Adapting expertise to an unfamiliar research area can be stimulating.

In 1986, with minimal expectations, **David Soll** assigned a corner in his lab to a small, faltering NIH program, the Developmental Studies Hybridoma Bank (DSHB). In 22 years Soll, the University of Iowa’s Carver/Emil Witschi Professor of Biological Sciences, has transformed DSHB into a vast, nonprofit resource for animal cell researchers using hybridomas (hybrid cells bred by fusing an antibody-producing lymphocyte with a tumor cell). In 2006, for 65,000 customers worldwide, DSHB staff filled nearly 9,000 orders. “At commercial prices, our revenues would total \$25 million, but we [charge] 10 percent to 15 percent of those fees,” says Soll, proud that DSHB, operating six days a week, is completely self-funding.

DSHB broke even and started expanding after one year. “The hybridomas themselves became fascinating. As we began making and using them, I realized I was facilitating research, the Bank was paying for everything, and everyone in my lab was working for them. Suddenly I was becoming an expert on antibodies. It was intriguing—I loved it,” Soll recounts.

Recently, DSHB expanded into microbial research, providing deeply discounted monoclonal antibodies and hybridomas. “The new branch will soon catch up to the older one, doing the same amount of good for society,” Soll predicts. In 2007, NIH National Cancer Institute’s new Proteomics Initiative selected DSHB as official bank and distributor for 20,000 hybridomas secreting antibodies against proteins encoded by one-quarter of the entire human genome: about 5,000 cancer-linked genes. “We’re now a major player in NCI’s long-term initiative to diagnose and cure cancer.”

Like Soll, **Leslie Vosshall** built her career around tiny lab organisms, but expanded her focus differently. Using fruit flies, her neurogenetics and behavior laboratory at Rockefeller University researches the brain’s processing of olfactory signals for food,

Whose Rights?

What if the scientific work leads to a new device, procedure, or product? A salaried professor or researcher isn’t completely independent.

Investigate the institution’s policies about intellectual property. Start by checking with the department chair, or contact the Technology Innovation Center (or equivalent).

Louis Kirchhoff, a professor at University of Iowa’s Carver College of Medicine, developed an assay test for a tropical disease. “When I recognized that I was generating intellectual property, I submitted a conflict disclosure because it belonged to the UI Research Foundation,” he recounts.

Each situation is distinctive. If William Kisaalita’s engineering students devise a solution for an African village’s difficulties, “the University of Georgia has a policy on products developed in a course,” he notes. But because his international on-site program has external funding, it’s exempt.

For basic information on the legalities of claiming rights to one’s own creations, visit the US Patent Office website (www.uspto.gov).

danger, or potential mating partners. In 2003, she and her postdoctoral fellow, Andreas Keller, were eager to test a controversial new theory about scent’s effects. Vosshall opted to undertake her first clinical trial. Fortunately, Rockefeller University Hospital encourages and assists basic scientists to research human subjects, explains Vosshall, the Chemers Family Associate Professor.

Recruiting was uncomplicated : “People are fascinated by smell, and our studies are not terribly invasive, requiring just a blood sample.” After a three-hour screening, subjects perform smell tests, reporting reactions verbally or by computer during successive visits. Now on their fifth human trial, her team recently published a lengthy paper on the work.

Vosshall relishes distinctions between her research subjects. “You can communicate with humans! Fruit flies don’t talk—we do things indirectly, assessing from behavior what we think happened. We do genetic experiments with fruit flies, but can’t ask specific men and women to breed.” Surprisingly, Vosshall finds human research more cost effective. “Fruit flies are donated but we have to feed them and pay people to take care of them. Longer term, it’s more technical than having humans sniff odor vials.”

Thanks to some foundation funding, Vosshall expects to continue researching both species, rather than choose either. “Our goal is to understand in both insects and humans how the brain perceives odor stimuli. So many scientists spend their whole career working on one model organism, it’s very rewarding to have the opportunity to jump up the family tree.”

So what steps to take to broaden horizons and invigorate a career? Be alert to possibilities that catch a particular interest; don’t be afraid to consider adding a new dimension. Scientific faculty can be expert witnesses, join editorial boards, help plan professional conferences, establish a research consortium with other institutions—the possibilities are as boundless as ingenuity. The rewards, too, are infinite. As Soll of NIH confides, having assisted 30,000 scientists, “The excitement is because it’s all intermingled with freedom, research, mission, and a feeling of accomplishment. The whole idea is to keep doing new things.”

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