

# Three Symptoms of Scientific Isolation and How to Cure Them

A White Paper on a Common Issue in Smaller Colleges and Research Universities

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The pond ecosystem is an appropriate analogy for departmental structure. Scientific isolation happens when departments don't pay attention to maintaining or increasing the diversity of fish within the faculty pond. It's rarely a deliberate act, but likely a pragmatic one because there are only so many tenure track lines to

go around. A department has to have a pretty strong case to even request a new tenure track line.

I spent most of my twenty year career as the only plant biologist in a fairly small biology department. As the sole extant specimen of a fish with a little star in a pond of mostly red fish and blue fish, there is a powerful feeling of being the only one with a particular kind of expertise among species of fish in the departmental pond. That powerful feeling is fleeting, because there are no other fish with little stars to form a school for talking shop, collaboration, career mentoring, and to protect you from being eaten by bigger or many red or blue fish. Most of the time, it was about hiding in the emergent or floating vegetation. As the only fish in the pond with a little star I had to find my own school to swim in before scientific isolation killed my career. So, how can scientific isolation ruin your academic life?

## Teaching is Isolating

Why is teaching the first sign of isolation? Too much teaching eats time for research. Teaching too far outside of your expertise, especially at smaller colleges and even research institutions is one of the first signs of scientific isolation. Unlike many fields of biology, plant biologists are frequently the jacks and jills of all trades, yet masters of none within the life sciences. Plant biologists get asked all the time to teach outside the discipline. It comes down to plant blindness or animal bias (Wandersee & Schussler, 2001; Allen, 2003). Questions like the following are all too frequent:

- “Can you teach microbiology?”
- “We need one more person to teach anatomy and physiology?”
- “Please teach animal physiology, it can't be too different from plant physiology.”

These scenarios may seem ridiculous, but the anecdotes are out there. Some subjects like cell biology, genetics, molecular biology, and biochemistry are more relevant options depending on the plant biologist. For me cell biology was a great experience. Genetics was not.

Early in my career I taught microbiology every semester for six straight years. It was too far outside my discipline. It started off okay, but turned into a soul killing experience that nearly led to burnout. It almost killed my research. Microbiology lab was a preparation intensive endeavor. I solved this time eating problem by asking for and getting an advanced undergraduate as a work-study student helper. Then, I asked for a graduate student teaching assistant and the chair said yes. Having a TA helped a lot, but after I received a USDA research grant and the department expanded with a new faculty hire, I never taught it again. Rather with the time, I redeveloped the existing plant morphology course into a modern plant biology course and revised a graduate version of plant physiology into an undergraduate elective with a NSF curriculum grant.

## **No Colleagues, No Collaborators**

Today with the internet and social media, it shouldn't be too difficult to find colleagues to talk shop and collaborate with. Back in the late 1980s and early 1990s of my career, the internet was barely a reality. I had no Internet/Bitnet access then, so I had to do it the old fashioned way – through personal contacts. At the time, I had an acquaintance who was a postdoc at the flagship state research university with a college of agriculture. That's where a critical mass of plant biologists can be found. I needed a greenhouse for a research project. So, I hauled myself over for a visit. Her principal investigator told me about a couple of plant biologists at the other research university, just up the street from mine, who had a greenhouse. That trip resulted in collaboration, involvement at the regional society level, membership on a committee at the national level of scientific society, and a husband.

## **Your Discipline is Limiting**

Successful research and education collaborations are not always within your discipline. In my career, I had successful collaborations with colleagues from physics, chemistry, and African-American/Africana Women's Studies. The latter directly connected to an NSF ADVANCE Program Leadership Award and was the best, most successful interdisciplinary collaboration of my career. Inter- and cross- disciplinary research is the wave of the future, or so I am told. Keep an open mind about who might become a future research collaborator. Even at the end of my higher education career, my cancer center colleagues asked me about phytochemicals and their roles in alternative medicine for chemotherapy.

## **Challenge Yourself**

If teaching outside your expertise, few to zero colleagues, or a limiting discipline describes your current situation, you are probably working in scientific isolation. Staying in scientific isolation puts you on the path to academic burnout, career stagnation, and reduces your chances for tenure/promotion. In the early days of my career, I put one foot over that line more than once. Fortunately, I pulled myself back by taking specific action to overcome scientific isolation. Through those steps, I recovered my passion for science, teaching, research, and collaboration.

You too can recover your passion for research, teaching, and the academic life. Challenge yourself to find the freedom to develop and teach new or revised courses that speak to the greater good of science and science literacy. Challenge yourself to find fun, interesting colleagues to talk shop with. Challenge yourself to discover crazy cross or interdisciplinary research or educational projects that are fundable, fulfilling, fun, and productive. Look outside your teaching, your discipline, and your department to pull yourself out of isolation. Equip yourself to pay better attention to the diversity in that departmental pond ecosystem for the right balance of fish species and numbers so nobody works alone.

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Allen W (2003) Plant Blindness. *Bioscience* 53(10): 926.

Wandersee JH and EE Schussler (2001) Toward a Theory of Plant Blindness. *The Plant Science Bulletin* 47(1): 2-9.