

## Report on sabbatical (Fa2017, Sp2018), Andrew F Read

***AC17: At the conclusion of the sabbatical leave, the recipient must submit a report of the work accomplished to the Executive Vice President and Provost of the University via the executives, administrators and academic administrators in the channel appropriate as described above. The report should indicate how the experience improved the recipient's capacity to serve the University.***

I went to one of the world's leading universities, ETH Zurich, Sept 2017-June 2018. I was hosted by the Sebastian Bonhoeffer and Jukka Jokela. Bonhoeffer runs the world's best group in my area (in all senses of best: he's a generous, open, supportive competitor of the highest caliber). He has fantastically smart people doing awe-inspiring interdisciplinary work limited only by their own imaginations and ambitions <http://www.tb.ethz.ch/research/bonhoeffer-group.html>. Jokela runs a world leading group in parasite ecology <http://www.ae.ethz.ch/people/jokela-jukka.html> that is going for the jugular.

ETH Zurich is one of the most resource-rich universities in the world. Switzerland's Higher Education system makes its competitive cut at the post-doc stage (chances of a faculty position are minimal). Those that make it are exceptionally well resourced with core research funding, especially at the ETH, the premier Swiss university. There, grants are desirable but not essential, grant funding rates are unbelievably high (>50%) and teaching loads are modest. It is nirvana. The major stress suffered by ETH faculty, as I kept reminding them (believe me), is that they have to do something globally special because if they don't, who can?

What did I do on sabbatical that enhanced my capacity to serve Penn State?

- I thought a lot about the system differences. That led largely to envy, but I like to think it made me a better science leader. Like learning another language, you gain insights into the familiar by experiencing another.
- I ran a faculty cluster (strategic) hire in resistance evolution for PSU that resulted in six faculty hires. I am proud of those hires, angry at the one that got away because of our institutional failures, and sorry I was talked into spending precious sabbatical brain space on institution building. I am excited to see what these new folks, coupled with our existing excellence do. We could be world beating in this space.
- I wrote 20% of my book *Evolution Within. How Darwinian Process Make Us Sick and What We Can Do About It*. It's about cancer and infections. Obviously, I'd hoped to finish it, so 20% (by word count) was disappointing. But I learned the hard work is in figuring out the structure, and by the time I left, I had a something on which all the science can be hung (and incidentally, most days I use that structure to advance thinking at PSU). I also have a narrative drive which *might* make it interesting to the intended audience, readers of the NY Times science pages and my many colleagues embedded (lost) in the weeds. Unclear now is whether I will ever finish the book, given my new PSU commitments. Not that failure here would be without advantages: books really hang your ass in the wind, and so escaping critical ridicule (or zero sales) would be good. [Obviously that sentence is completely inappropriate in a report like this. But I assume no one will ever read this. Please email me (afr3) if you did.]

- I got talked into applying for the Huck Directorship (thanks, in order, Neil, Ashley, Pete, Vivek, Nina J). I was *totally* against applying until I had the band width to think about the positives -- and was far removed from the daily (and now hourly) reminders about the baggage that goes with university leadership. Time will tell whether the substantial hit to my personal scholarship is worth it to PSU. Sure is unclear right now.
- I investigated the Swiss University approach to gender diversity. They have a truly appalling sex ratio among faculty, something like the US in the last quarter of *last* century. But ETH Zurich has very serious people doing very serious analytics on the problem. This reveals that that issue is not post-application processes (which for them work well, in the sense that the 10% of applicants are female resulting in 10% of the faculty). Thus, much of the HR processes we (PSU) focus on are irrelevant, at least in Switzerland. The real question is why only 10% of applicants are women (among grad students and post-docs, the potential applicant pool, women dominate). I admire the way the Swiss focus on data to move from the anecdotal thinking which seems to characterize much of our HR approach to a root cause analysis which could actually affect change. Although, much of the Swiss problem may be beyond the reach even of university HR. It may be that 10% is what happens with societal expectations of what women 'should' do. Swiss (of all genders apparently) still like kids to be fed by their mothers at lunchtime on a school day. Canton Zurich recently voted for that. I am not making that up.
- I investigated *Ignorance*. Much to my delight, my expertise got me invited by the ETH philosophy department to a workshop on the subject. The workshop was built around a visit from Columbia neuroscientist Stuart Firestein who literally wrote the book on the topic (he also wrote another book, *Failure*, also one of my expert areas). The workshop was mind-blowing, for so many reasons. I plan to use a similar exercise as vehicle to promote interdisciplinary work at PSU. *Ignorance* and *Failure* are something that all creative scientists can dialog about. Can that dialog facilitate transdisciplinary communication?
- I gave invited seminars and talks at Max Planck Institute for Evolutionary Biology in Ploen, Germany; Kiel University, Germany; European Society for Pediatric Infectious Diseases, Malmö, Sweden; University of Zürich, Department of Plant and Microbiology; University Hospital of Zürich, Department of Infection and Microbiology; Swiss Federal Institute of Aquatic Science and Technology; and ETH Zürich, Department of Integrative Biology. Much to my total pleasure, I was invited to give the Darwin Birthday Lecture, at the Institute of Cancer Research, London, UK. I would like to think these talks benefitted PSU's international reputation.... Whatever, I was pleased with that diversity.
- I served on the DFG's review panel on the Collaborative Research Centre (CRC) 1308 "Therapeutic Resistance: Origins, Mechanisms and Reversal", which culminated in a two-day meeting in Berlin. The application involved a consortium of faculty from almost all the Berlin universities and associated institutes. The review experience substantially affected my thinking on what is possible in my intellectual space – and the institutional barriers to realizing that potential. The Germans could not make the unconventional happen even though it would have made them world leaders. Conservatism, it seems, is not just a feature of the NIH.
- I wrote/revised/nurtured some great papers. I know, that's what academics are supposed to do, but the brain space that is freed up when you are far from the endless limits on creativity imposed by modern university life – leads to better papers. That's what I learned on my [last](#)

[sabbatical](#) (2006-7). Highlights this time: Kennedy, D.A. & Read, A.F. (2018) Why the evolution of vaccine resistance is less of a concern than the evolution of drug resistance. *Proceedings of the National Academy of Science* USA115: 12878-12886. PMC5378080; Huijben, S., Chan, B.H.K., Nelson, W.A., & Read, A.F. (2018). The impact of within-host ecology on the fitness of a drug resistant parasite. *Evolution, Medicine and Public Health* 2018: 127-137. PMC6061792. Another [ten papers](#) were also better than they would otherwise have been.

- I submitted two NIH R01 grants, one as lead PI, one as a subcontract with collaborators in Michigan. The later was successful and is now underway; the other was reasonably well scored and I just resubmitted it. Fingers crossed.
- I did some astounding mountain hikes, alone, with colleagues, with partner Ashley, with my estranged son, with my step kids. I skied my heart out with family in magnificent alpine scenery; more cautiously, we all skied out alive from a monumental storm; Ashley and I skied out of a white out and, screaming with pleasure, into ethereal light; we all swam in the river flowing out of Lake Zurich; we (not the kids) drank fine cocktails (some of the most expensive in the world); I sampled the world's wine on lake boats in the middle of winter (again, not the kids..); Ashley and I saw opera so fantastic that I was rendered to undignified tears in public; and most tragically, I watched from afar as America gave up on the global leadership which made Europe safe and great. Far better, I ruminated on the lovely path that runs from the top of Spyristrasse to Spyristeig to the Hotel Zuriberg. Next to the forest, you overlook the city of Zurich, surely one of Europe's jewels, its grand lake filled for 200 years with relaxed sail boats even when World Wars raged. From there, you can't help but stare upon the magnificent Alps. Some days, the local weather is forgiving, and then you can see the ominous, threatening triangle of the North face of the Eiger, home to the Hinterstoisser Traverse and the White Spider, the dreams of my mountain climbing youth.

Ok, so none of that last bullet did any good for PSU directly, but I am better, saner, more alive, more interesting for it. Maybe that's good for the university. I bet you get back more than the salary cut it took me to do it. Again: email me if anyone read that.

Thanks. I know sabbaticals are a privilege of our academic life. But seriously, we should force, literally insist, that all faculty take them – and get out of State College. Don't let anyone be comfortable. I am very grateful to Penn State for the opportunity to go, and to Sebastian and Jukka for making it happen.

Andrew Read,  
Huck Institutes of the Life Sciences,  
Penn State, March 6, 2019