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Heavy Ion Accelerator facility at the ANU

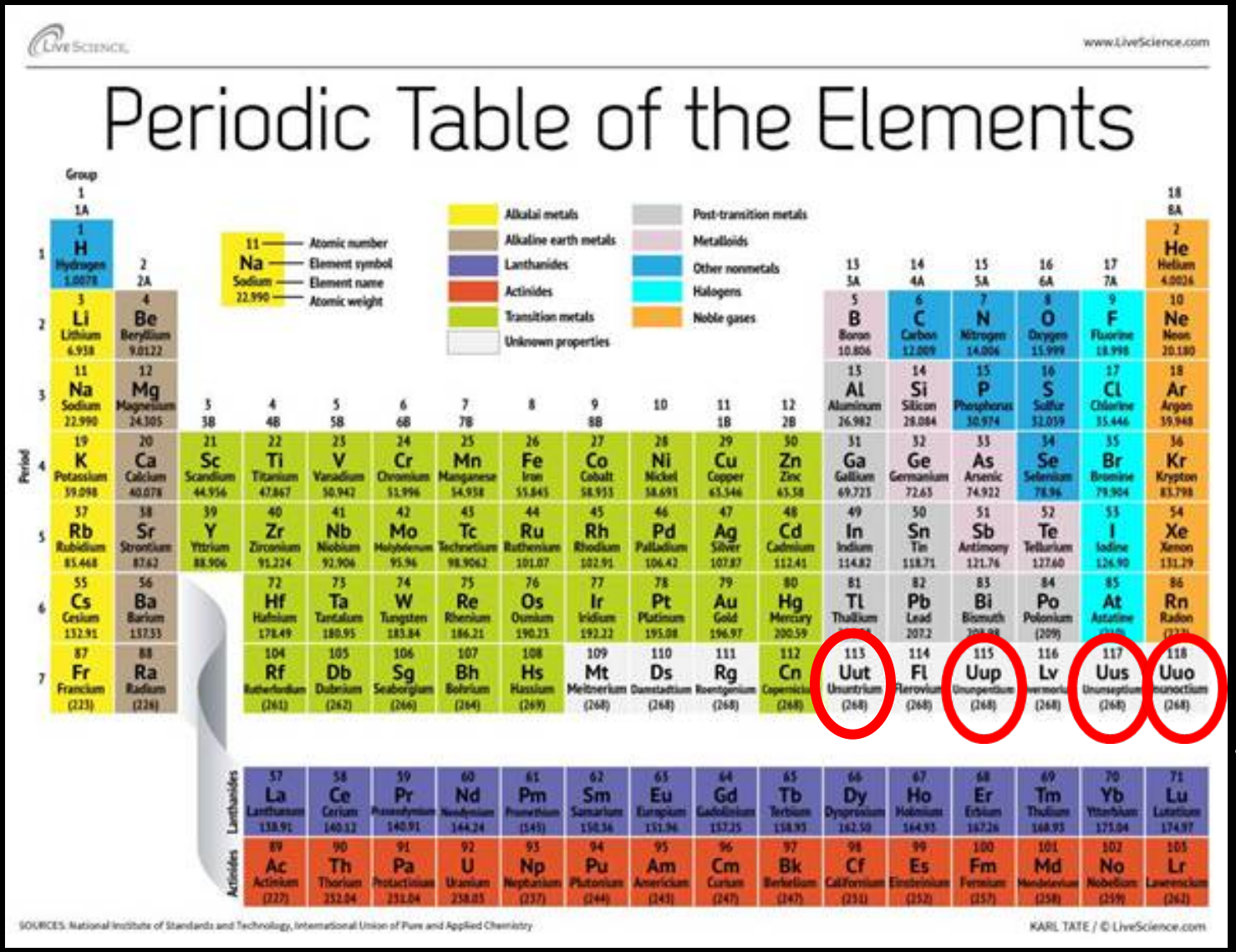
15 Million Volt accelerator; national and international users

Operations supported through Federal Government's NCRIS program

Applied Research – materials, erosion, medical physics

Four new elements added to the periodic table

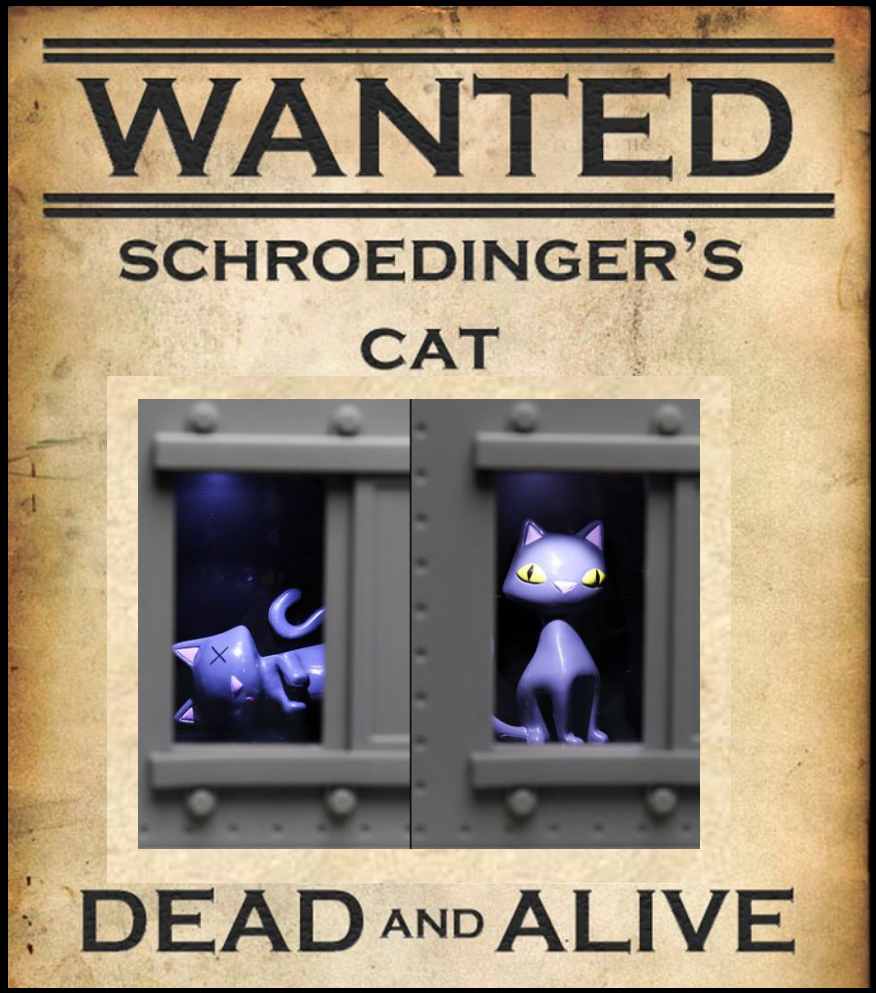
(IUPAC announcement Dec 2015; media coverage worldwide in Jan 2016, named 28 Nov 2016)



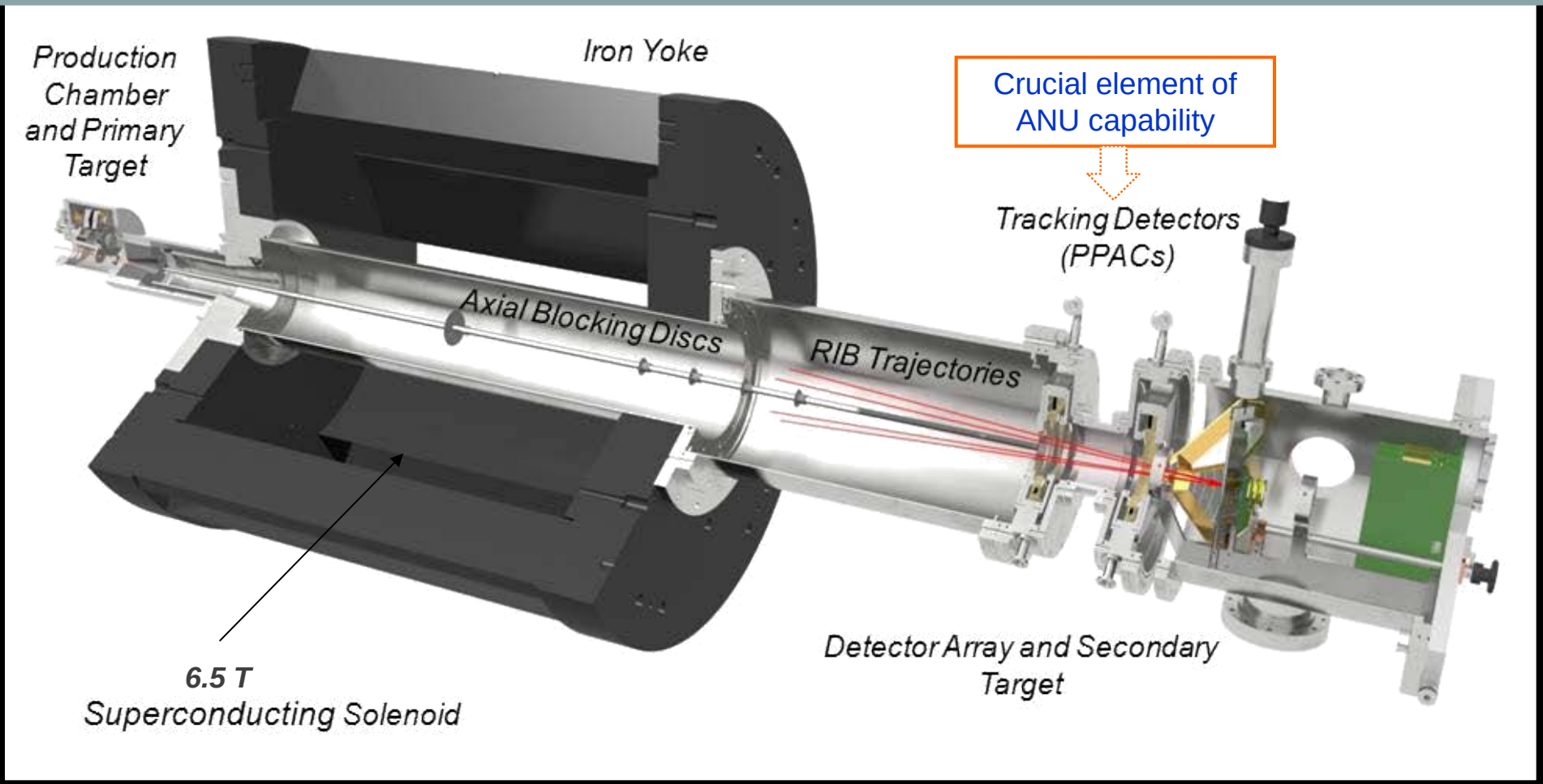
Completes the seventh row of periodic table

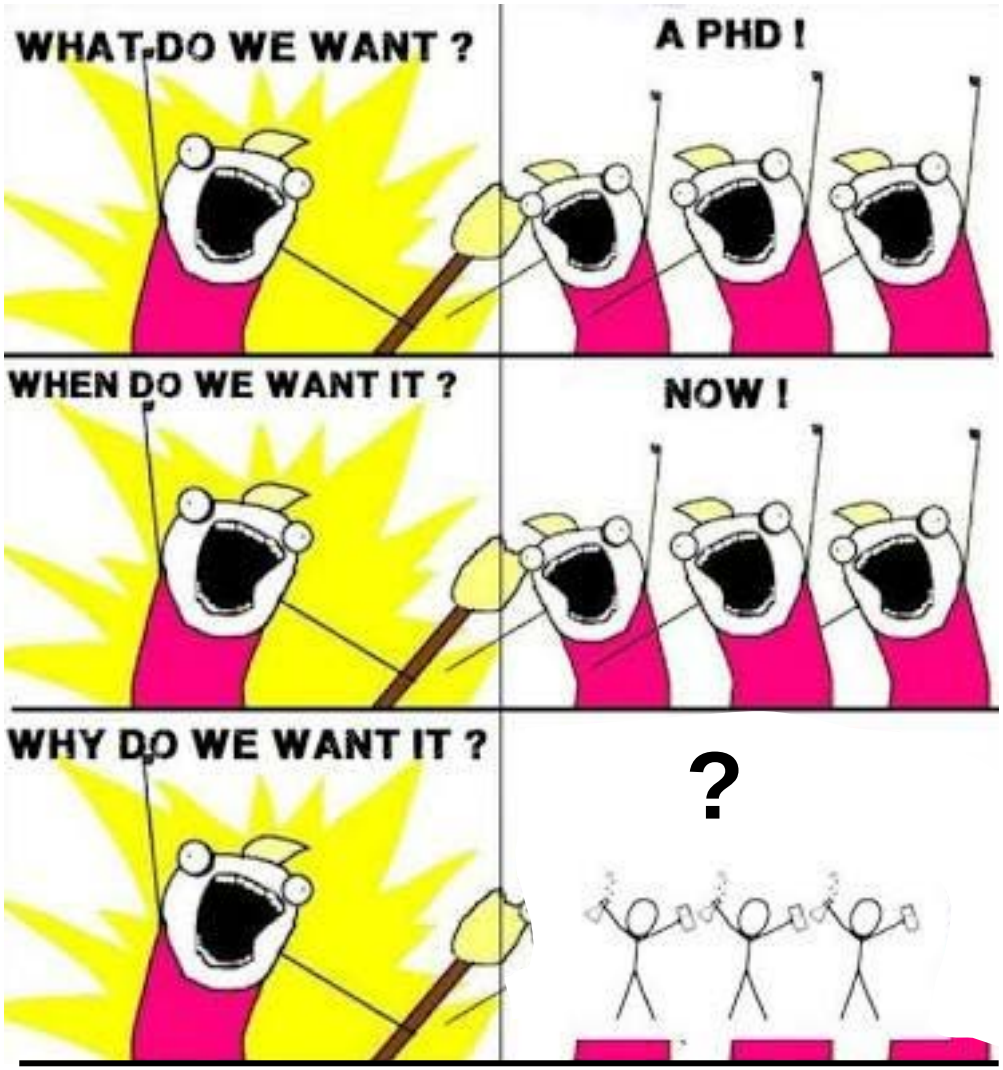
Nihonium (Nh, 113)
Moscovium (Mc, 115)
Tennessine (Ts, 117)
Oganesson (Og, 118)

Quantum tunnelling of many body systems



Novel Devices: Superconducting Solenoidal Separator





modified from https://imgur.com/

Why a PhD

- **Training in research/thinking** – Academia, Industry, Government agencies

  Not a continuation of your undergraduate program – no recipe for success, lot depends on you and your drive, unique experience

- **Problem solving** (handling complexity, large data, across multiple disciplines, programming, mathematical skills, evaluating when to stop and change directions)

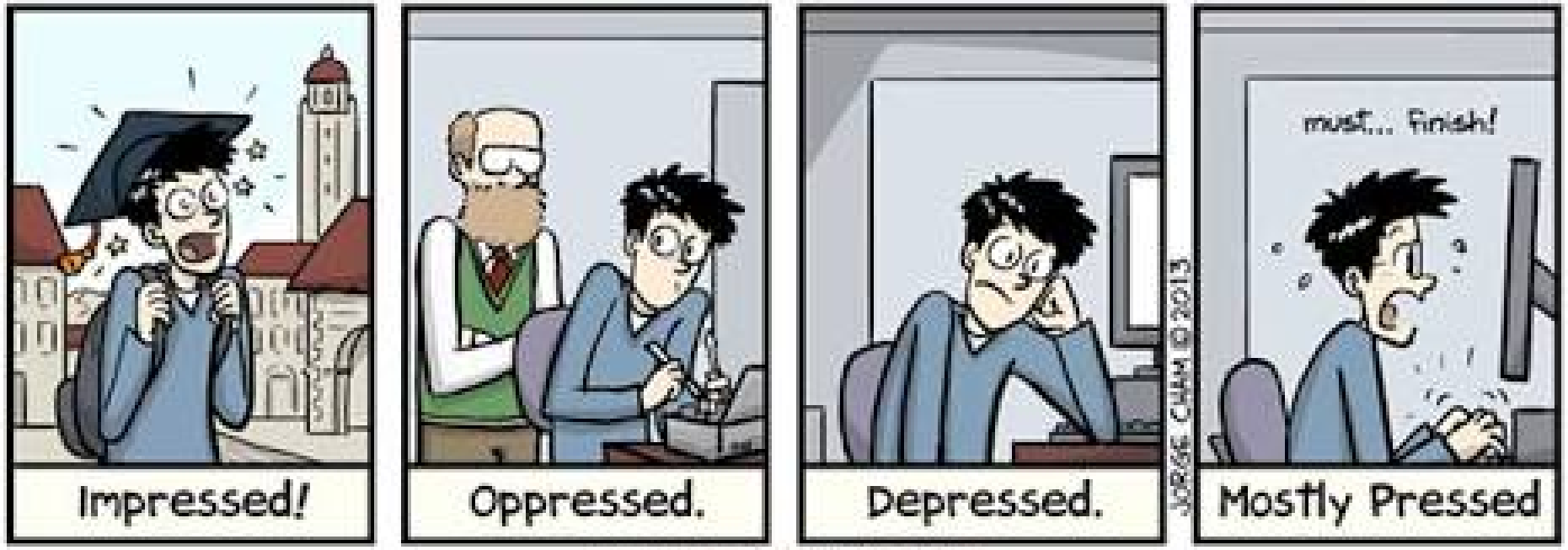
  Develops the confidence to solve problems not encountered before

- **Working to time pressure** (whilst having an understanding that there may not be a solution), time management skills

- **Communicatio**n – both oral and written

Anecdotes from recently held workshop:
Very few are where they thought they would be at the start of their PhD

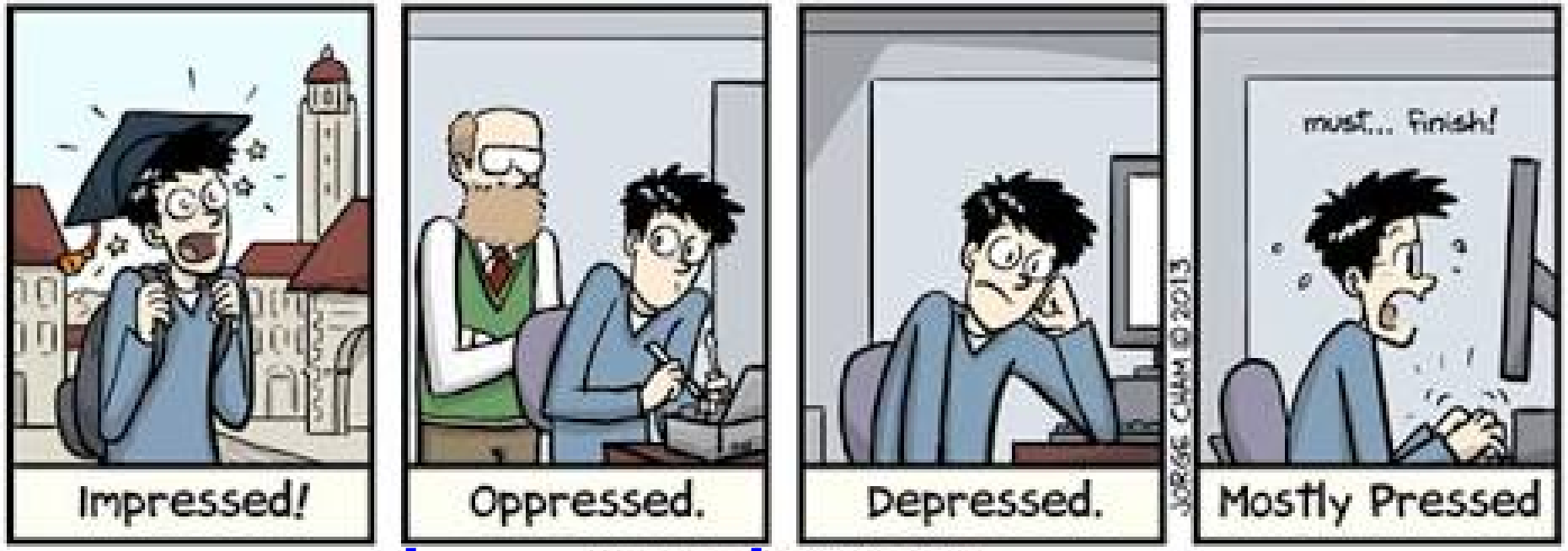
Grad School:



How to avoid these?

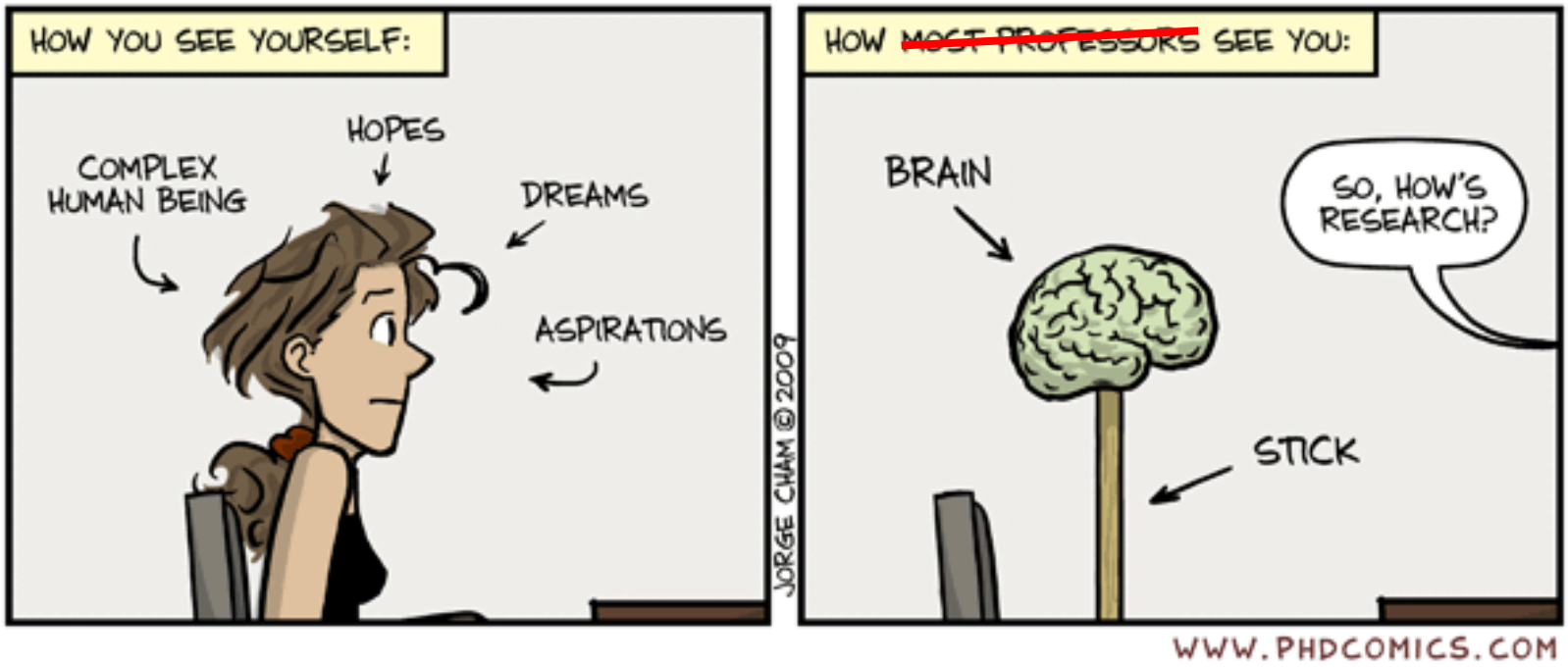
Fact of life!

- Understand your motivation
- Consider personal factors
- Choose areas that interests/excites you
- Is adequate scientific support available?



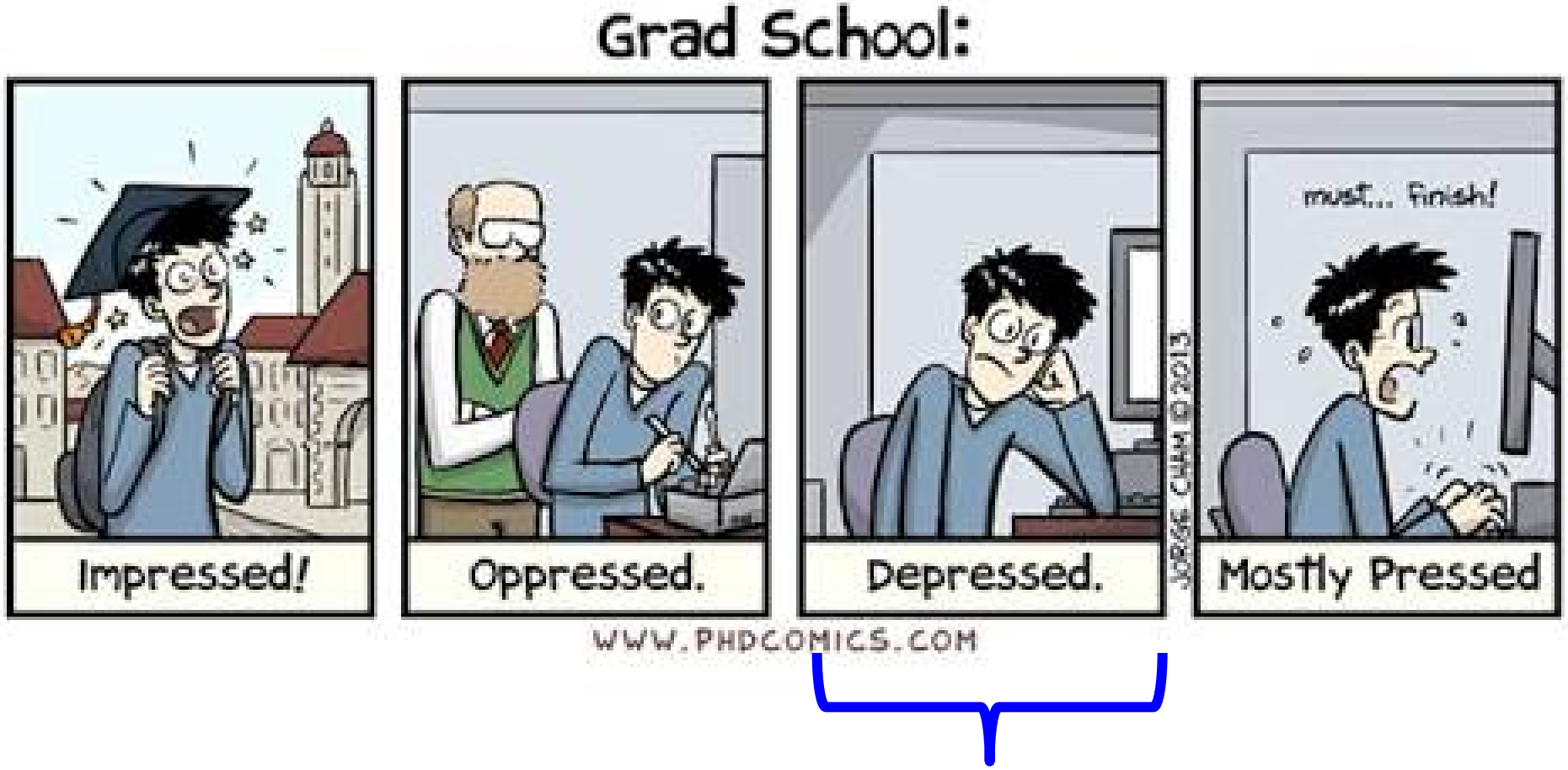
Avoid oppression - do your homework before committing to a group/supervisor!

some supervisors may

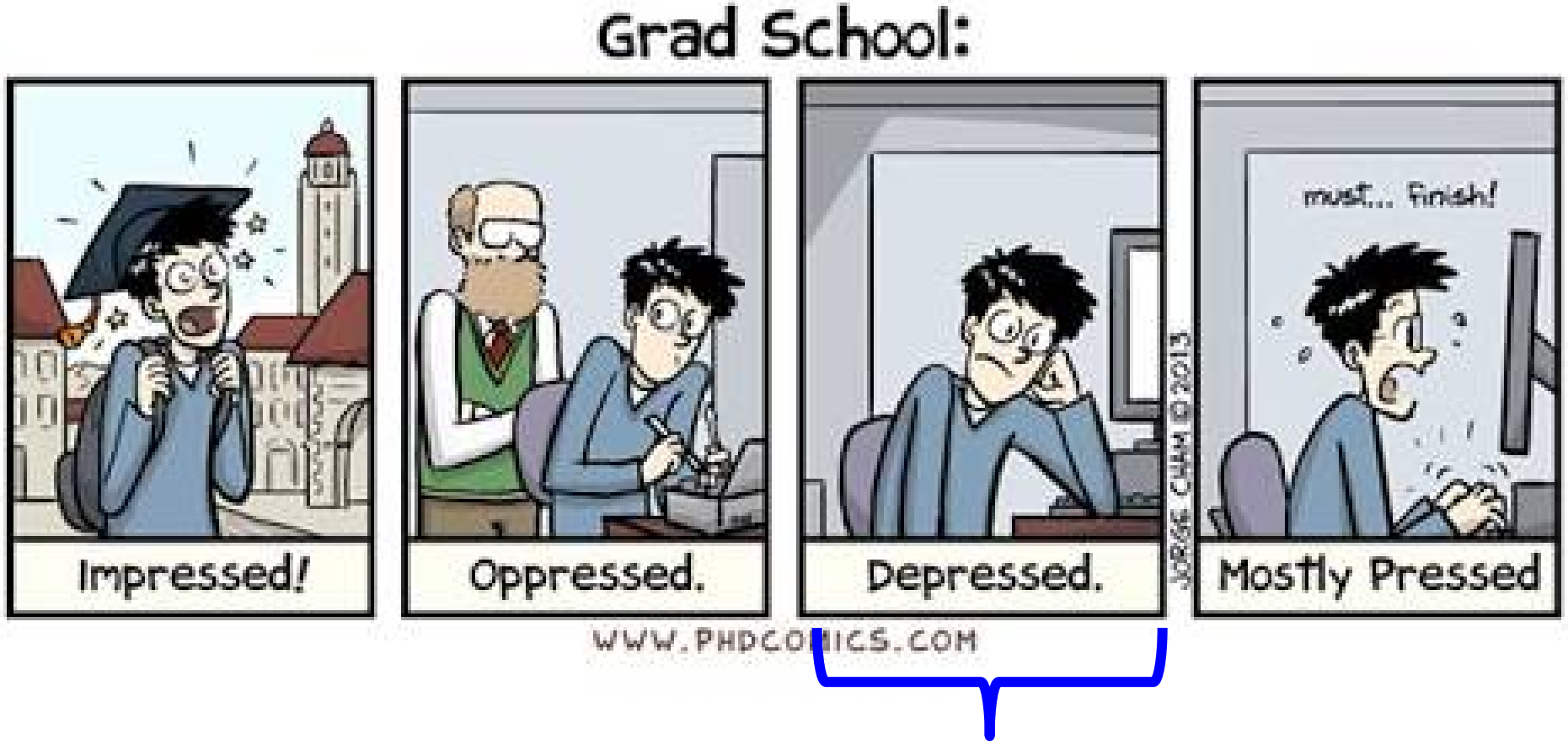


Consider:

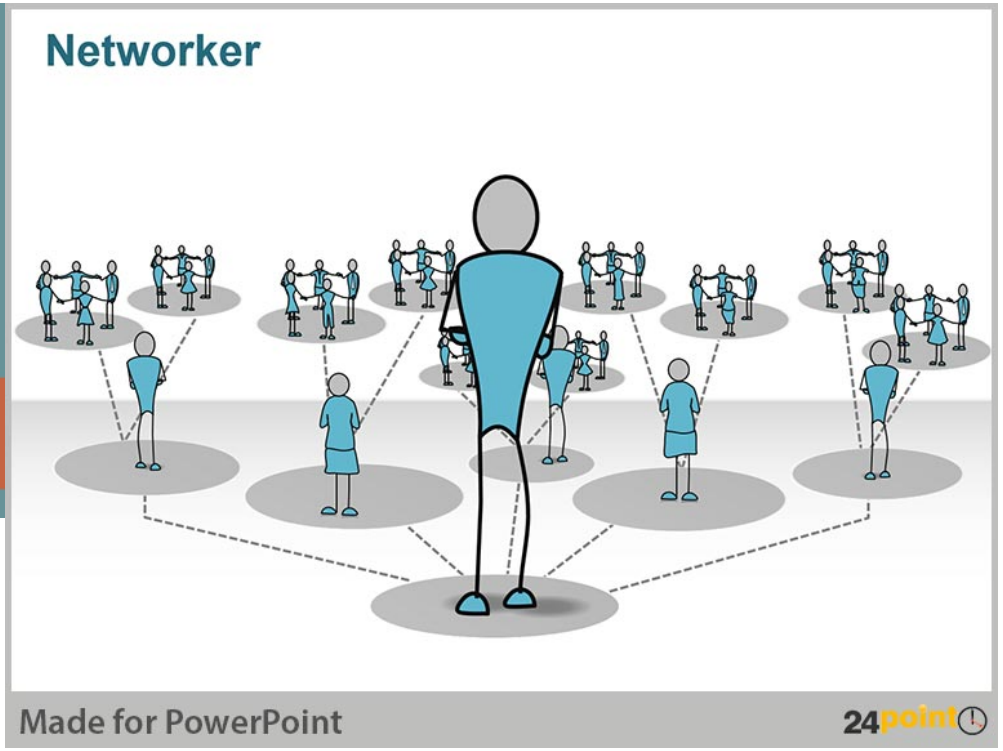
- Do you feel comfortable with the supervisor(s) and group – what makes the group tick (it is a commitment of 3+ yrs, important in any job)
- Understand expectations of the group/supervisor
- Student experience (quality of supervision, group support, mentorship, feedback), support for things outside (but related to career)



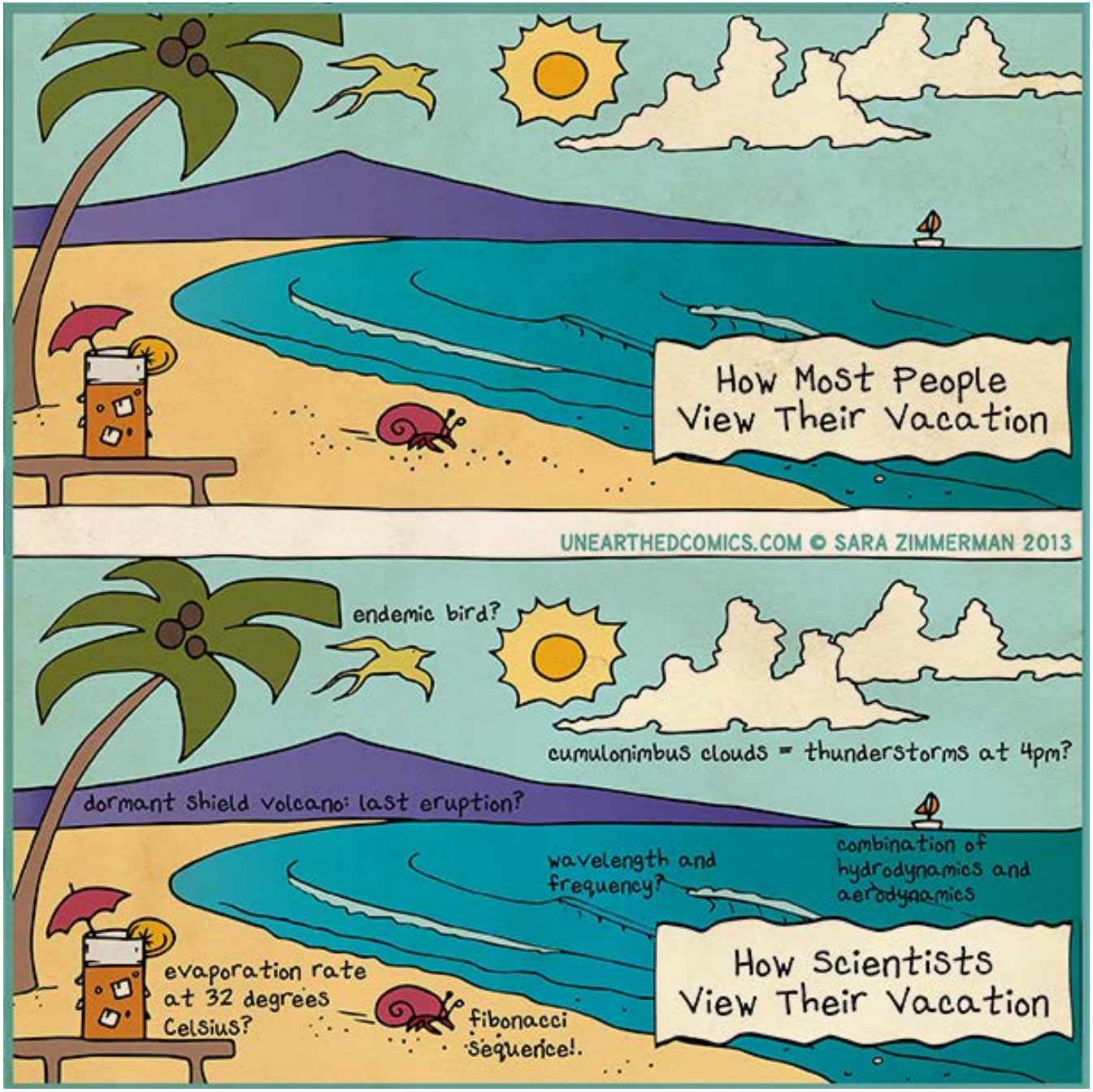
- Resilience and not giving up extremely important (you are dealing with challenging stuff)
- Progress may seem slow – take stock, talk with junior post-docs, look at your annual plan and see how much has been achieved (a lot you will find!)
- Find good mentor**s** early-on



- Develop a deep understanding to avoid frustrations (not procedural – only good if nothing ever goes wrong)
- Develop and keep a big-picture view of your PhD (how it fits into current, and developing scientific knowledge, and what contributions can it make to the world around you); also helps in communicating to a range of people

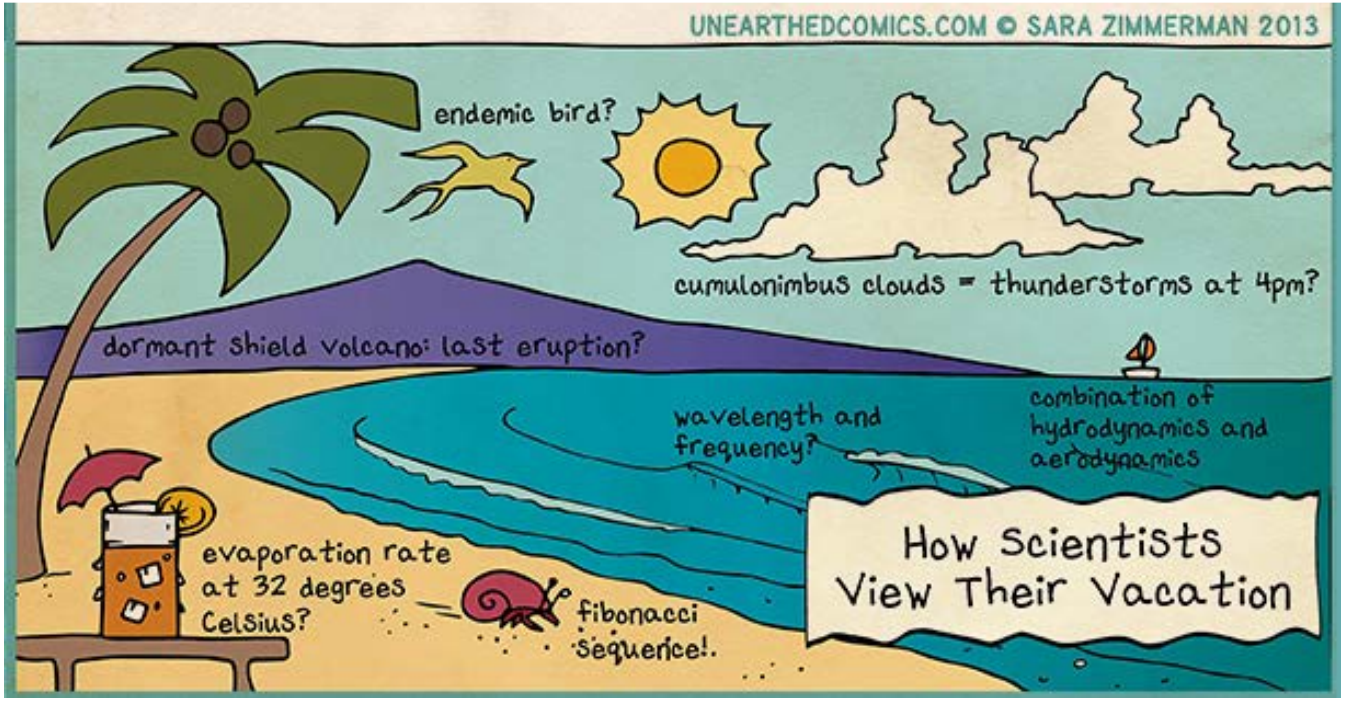


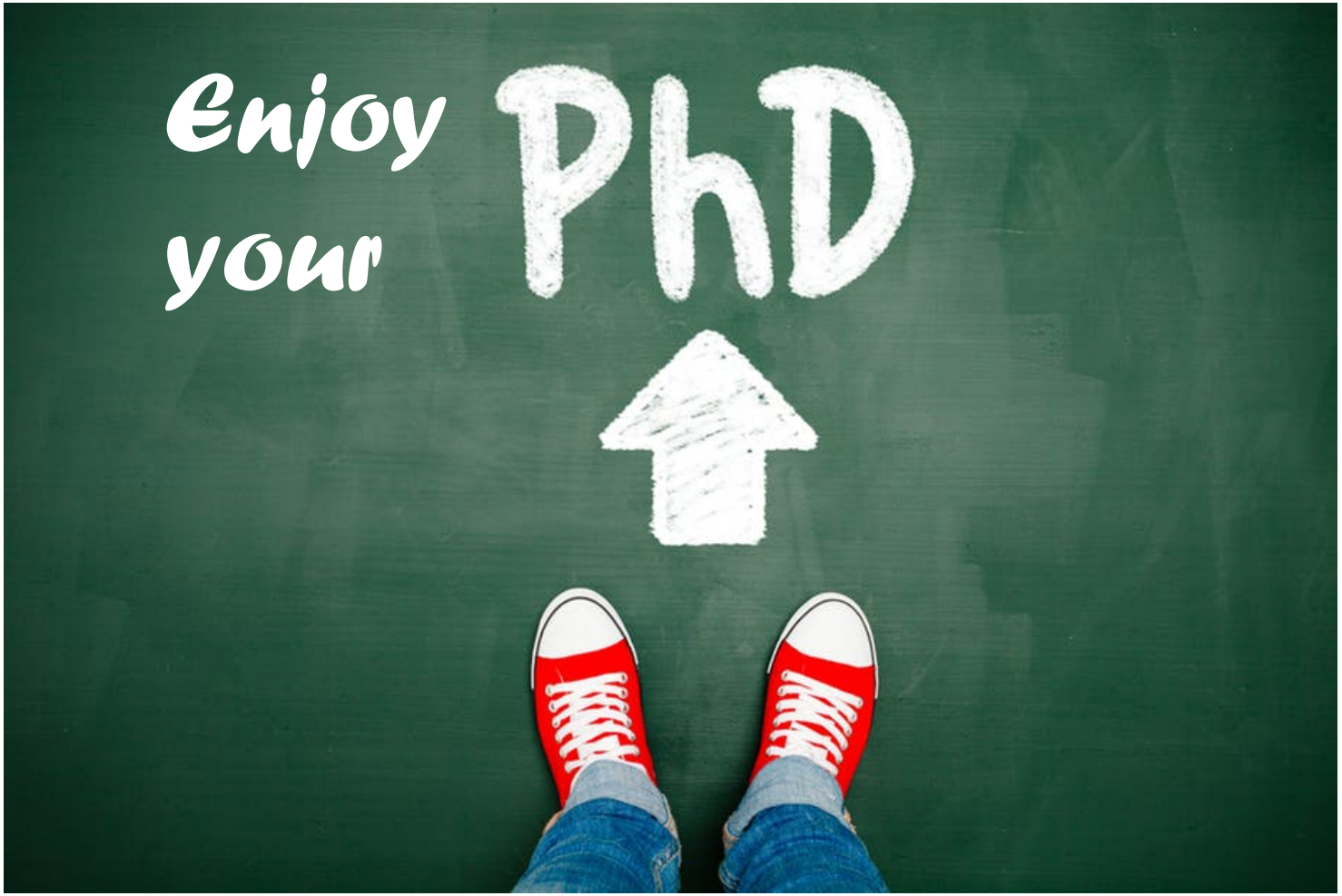
- Think strategically about your career – develop CV for the next stage
- Mentors: advice, inspire, motivate, help maintain perspective
- Make and foster/maintain connections with people


How Most People View Their Vacation
UNEARTHEDCOMICS.COM © SARA ZIMMERMAN 2013
endemic bird?
cumulonimbus clouds = thunderstorms at 4pm?
dormant shield volcano: last eruption?
wavelength and frequency?
combination of hydrodynamics and aerodynamics
evaporation rate at 32 degrees Celsius?
fibonacci sequence!.
How Scientists View Their Vacation

- Flexible schedule but hard to stop thinking about “your research work”: next experiment, how best to solve the problem, paper to be written….

- Well worth the time and effort – curiosity, passion and excitement about your work are drivers ….the buzz one gets out when the problem is solved is great





Some good advice here (not all applicable in an Australian context):
https://www.women.cs.cmu.edu/Resources/JobsResearch/gradprogram.pdf