**Cell tax Allen Brain..**

**Introduction**

* Hi! I am so excited to be here to talk to you today as an ambassador from the world of SCIENCE
* I’ve spent the last 8 years working in labs trying to understand molecular relationships that are critical to normal cellular function.

**Set up of the problem**

* But today I want to talk about something other than my research
* I want to talk about the data scientists are generating
* And how to get from data hoarding to meaningful data sharing

* Right now, it’s the best and worst of times for scientific research.
  + We have better tools {cool science stuff}
  + pace of innovation is accelerating,
  + we are undeniably producing more data than ever before.
  + But what’s happening to a lot of that data is pretty archaic.
    - {hard drive in desk drawers}
    - Closed access publications
* Over the last 50 years, scientist and institutions have built a system
  + write a grant to fund our work
  + do the work
  + publish it
  + use publications as a record of our productivity
* What’s wrong with this system?
  + Incentivizes secrecy
  + Ties a researcher’s publications to job security.
  + Institutionalizes the fear of getting scooped,
  + and leads to data of publicly funded research studies… just sitting there.
  + {should say, I am generalizing here, some fields are better than others}
* **My perspective** <picture of me as a younger scientist>
  + When I started in the field 8 years ago, it blew my mind that serious researchers were willing to train me to design experiments and collect data on million dollar microscopes
  + <That no longer amazes me, I was cheap and enthusiastic labor>
  + The longer I spend working at the bench, the more I see the influences
    - of the publishing industry
    - the grant funding cycle
    - bias in the academic system
* **Science**, like any other large lumbering system, **is political, vulnerable to outside influences, and needs a cultural facelift**.
  + **But we only have like 5 minutes left**
  + **So let’s talk about data.**
  + **What can scientists do?** 
    - As scientists, we need to acknowledge and discuss the larger environment that shapes how science gets done,
    - how scientists get rewarded,
    - how the output of scientific research gets packaged and accessed
    - and whether these systems work for 21st century data
    - We need to discuss development of systems that allow free access to that doesn’t gatekeep access, and your access to knowledge.
  + **What can anyone do?** 
    - Cultural change happens one person at a time…
  + **Everyone in this room can do to help build an open data, full access future for science**
    - You fund all of our work – taxpayer agitation for access to research methods and outputs can make an impact.
      * Blumenauer and other science-friendly politicians
      * White House OSTP
      * New data sharing friendly policies
  + Collaboration with scientist to make tools and build infrastructure to help share data
    - Come to these events and make new friends!
      * Science Hack Day is coming to PDX!
      * WIS networking night at OMSI
      * WIS career development seminar series, networking and career development
* In closing
* Like any big messy system, powerful interests control aspects of science now (publishing, instrumentation...) and I’m not sure how that’s going to go. But a lot of smart and enthusiastic people are building new platforms, trying new methods of communicating research, and some of them are working/being adopted.
* But we need you.
* I encourage you all you learn more about research and come to these events to make some friends and collaborations!
* **The Open revolution**
* **What is it**
* **Triumphs, failures**
* There’s a vocal minority of scientists who work openly
* And documented evidence that this improves the impact of your research
* But it’s not the standard/normal way of working now
* Why is it so hard to move away from existing systems, even when they’re bad/dysfunctional?
* Why does the Open revolution in science need you?
* In the current system, Scientists get and keep their jobs based on their publication record.
* **Secrecy is incentivized, collaboration and data sharing are not**.
* It’s called getting scooped.
* This sets up artificial barriers so I can’t read this paper I was second author on…
* I can’t read it.
* And if you wanted to get into gene editing – seriously, cheaper than a home-brew hobby – you can read about 50% of the literature on the topic.
* So… scientific currency of high impact papers is giving data the short end of the stick right now
* So the problem is that scientists have reasons for not wanting to share data or and these generally boil down to protecting their interests.
* The publishing system, and a few dominant profitable companies, has long been the gatekeeper for scientific data. But now, we generate more data faster than ever before. A publication can not contain the data one study can produce, just some summary figures.
* HAHAHA jk – like any entrenched system parts work well and parts of dysfunctional
* .. as well as scary things like getting scooped or sabotaged… and no! I don’t want to work on something for five years and have some other group publish first and steal my thunder!
* But after even longer in the field… I saw even people who get scooped still do ok (complain to me later is being scooped tanked your career). They get jobs. Their world doesn’t end. They publish in Neuron instead of Nature. It’s not the end. Because there are very few fields where there’s just one answer or discovery that closes the door on a scientific question. So, since it’s all about the data, and we are all going to keep our jobs what’s the big deal?