Communicating and Collaborating Across Disciplines:

*Use simple words*

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Our CLIMB curriculum of workshops on communication in scientific research:

1) Delivering scientific presentations and posters for impact: *Make it stick with SUCCESs*

2) Crafting the introduction to a scientific presentation: *Create a mystery box*

3) Communicating and collaborating across disciplines: *Use simple words*

4) Displaying visual evidence in scientific presentations: *Help viewers make valid scientific decisions*
Let’s consider some buzz words in scientific research

- IBiS – **Interdepartmental** Biological Sciences
- IGP – **Integrated** Graduate Program in Life Sciences
- NUIN – NU **Interdepartmental** Neuroscience
- CLIMB – **Collaborative** Learning and **Integrated** Mentoring in the Biosciences

But what do these buzz words actually mean? Do we actually discuss how to collaborate with others?
Why do we need to address collaborating across disciplines?

Because the frequency of collaborations is increasing.

The number of authors in other fields is also increasing

Why should we seek collaborations?

because having more collaborations may increase impact


Study shows correlation between large numbers of authors and of citations
Take-Home Messages

- The frequency of collaborations is increasing
- Having more collaborations may increase impact
- So, what does it mean to collaborate and communicate across disciplines?
- And how do we do this?
What does it mean to collaborate across disciplines?

Seek cognitive diversity

- Scott Page’s *The Difference*
  - View his YouTube video on Leveraging Diversity

- Page claims that:
  - Cognitive diversity enable groups to find more and better solutions
  - Cognitive diversity is esp. important when problems are complex

- Examples:
  - Watson and Crick: $1 + 1 = 12$
  - game show *Who Wants to be a Millionaire*

- Analogy of the toolbox
Scholars are studying how scientists collaborate in the field of “team science”

NIH released a field guide on collaborations in 2010

4th Annual Science of Team Science Conference
June 2013
How do we communicate across disciplines?

Make it simple

● The Heath brothers in *Made to Stick* warn us:
  ○ The Curse of Knowledge inflicts us with *jargonitus*

● The first principle of SUCCESs:
  ○ Make it simple

● Let’s watch a video example

● Let’s try an exercise to explain your research simply
Video example of a grad student trying to make it simple

- Video is from the Ready, Set, Go program
  - Turning great researchers into great communicators
  - rsg.northwestern.edu/

- Gallery: Seven Minutes of Science
  - Fooling Cancer with Nanoparticles by Marina Damiano
Let’s try explaining our research with simple words

● Inspired by xkcd’s explanation of the Saturn V rocket
  ○ http://xkcd.com/1133/

● Now, you try explaining your research using only the ten hundred most used words
  ○ http://splasho.com/upgoer5/
Take-Home Messages

To communicate across disciplines, use simple words.

(Using simple words is not easy!)
For your 2\textsuperscript{nd} practice session:

- review and revise your intro according to feedback
  - try to simplify your wording
- add your experimental design and methods section
- present both sections
  - don’t assume people will remember your intro and go too quickly
Example of effective slides

- Good use of message or question titles
- Good mix of text and images
- Concise explanations

- Insulin frees bound Amyloidβ Oligomers from the surface of hippocampal neurons
  
  Xiao-Wen Yu
  Klein Lab Rotation
  Fall Quarter 2011

- Amyloidβ Oligomers are harmful to neurons
  - Alzheimer's Disease
  - Memory Loss
  - Neurodegeneration
  - Amyloidβ plaques
  - Amyloidβ Oligomers (AβO’s)
  - Loss of synaptic connections
  - Reorganisation of receptors

- Insulin dysfunction co-occurs with Alzheimer’s Disease
  - Early Alzheimer’s: ↓ glucose utilisation by neurons
  - Diabetics 2x more likely to develop Alzheimer’s
  - More than glucose!
  - Insulin may liberate AβO’s from neurons...

- Does Insulin protect neurons against AβO’s?
  
  - Hypothesis
  - Insulin specifically liberates AβO’s
  - Requires insulin pathway activation

- Methods
  - Cultured hippocampal neurons on coverslips
  - AβO’s in MEM bind neurons
  - Measure AβO levels in media with dot immunoblot
  - MEM control, Insulin