



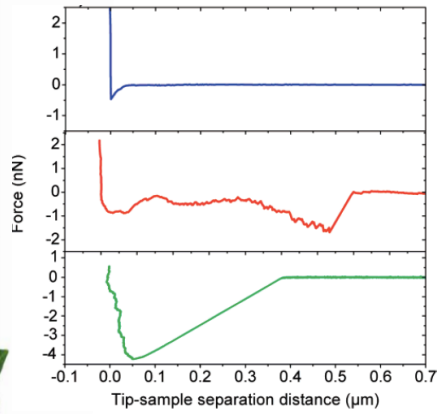
# **How to play nicely and make new friends:**

a Biologist's perspective  
on inter-disciplinary collaborations

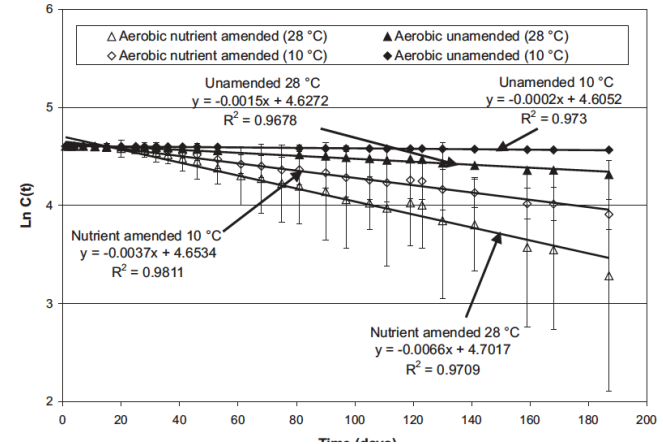
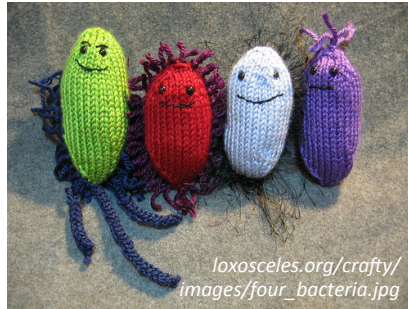
Julia Focht

Professor, Biological Sciences

Or, to put it another way....

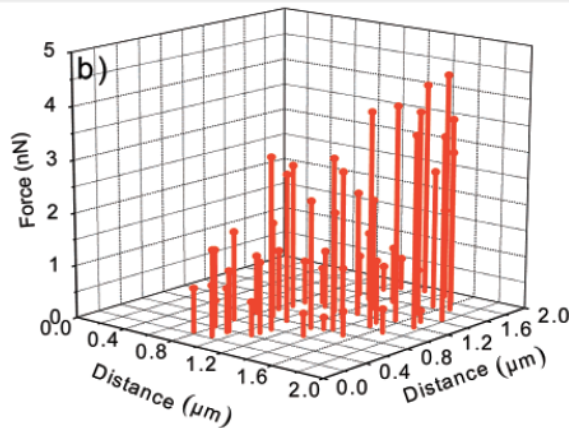


$$Q_{d,max} \approx \frac{D_{eff} AC_{sol} \chi_{HC}}{L}$$

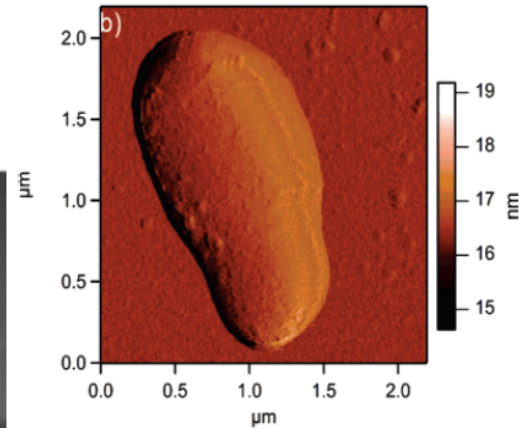
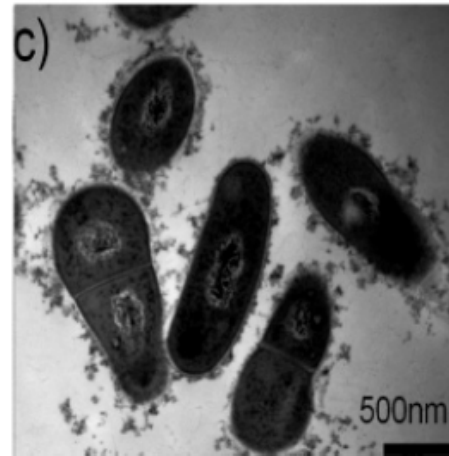


$$F_e = 4\pi\epsilon\epsilon_0(\kappa a) \left(\frac{kT}{ze}\right)^2 \psi_t \psi_s \left[ \frac{\exp(-\kappa ah)}{1 + \exp(-\kappa ah)} - \right.$$

$$Q_{10} = \frac{k_2^{10/\Delta T}}{k_1}$$

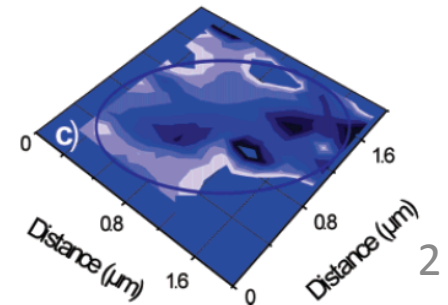


$$\left. \frac{(\Psi_t - \Psi_s)^2 \exp(-2\kappa ah)}{2\Psi_t \Psi_s (1 - \exp(-2\kappa ah))} \right]$$

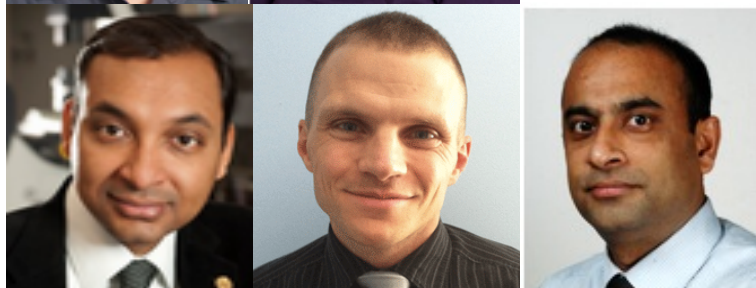
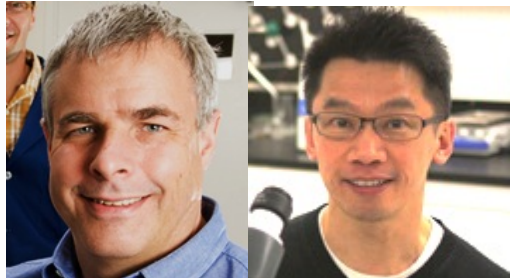


$$(1 + \cos \theta) \gamma_L = 2(\sqrt{\gamma_S^{LW} \gamma_L^{LW}})$$

$$\frac{dX}{dt} = \mu \cdot \left(\frac{A}{a}\right) \cdot bX$$



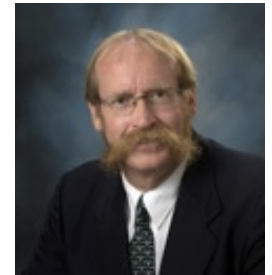
# Petroleum Microbiology



Chemical

Environmental

Mechanical



Why you should cultivate  
inter-disciplinary 'play dates'  
(what's in it for you AND your students)

Intellectually stimulating







# What can we do together?

- ★ Collaborate on research and publications
  - journal choice?
- ★ Co-supervise grad students
  - course options?
- ★ Sit on grad committees and examinations
  - expectations?
- ★ Give or host guest seminars or lectures
  - your place or their theirs?



# What benefits can you expect?

*(besides someone new to listen to you whine)*

- Interdisciplinary environment for your students (NSERC 😊)
- Source of external examiners for PhD theses
- Change in your perspective: ‘parallax’
  - a sounding board for research data
- New technical expertise in your lab
- Access to new funding sources
- Access to new audiences and journals

# Teaching projects

## Professor helps pioneer new teaching tool

By Richard Cairney March 13, 2012

 Print  Share



# Obstacles to be aware of

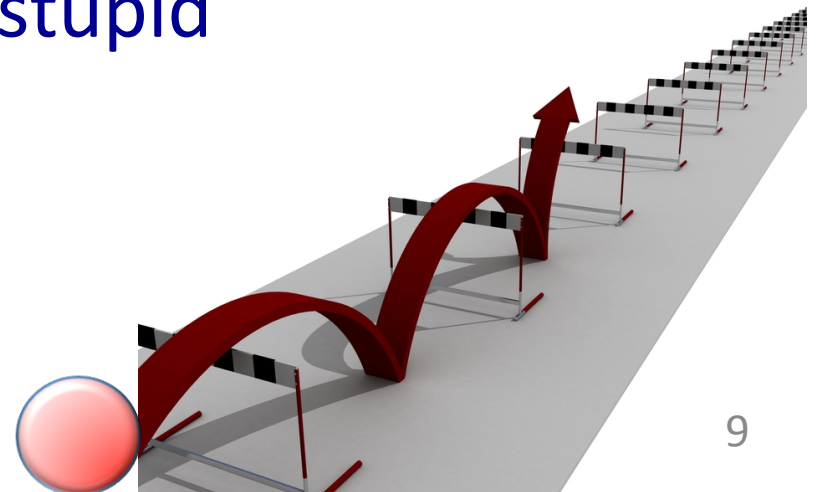
- We speak different languages:
  - true technical terms vs. jargon
  - same word means different things
- We have different approaches (research “cultures”)
  - equations vs. ‘squishy’ science
  - quantitative vs. qualitative/descriptive
  - biological controls





# More potential obstacles

- We have different tolerances of 'error' and variation
  - $\pm 10\%$  is pretty good for biology
  - replication vs. certainty
- We have different timelines
  - biology often takes much longer to do
- We all fear sounding stupid
  - **GET OVER IT!**





# OK, you've convinced me: where do I start?

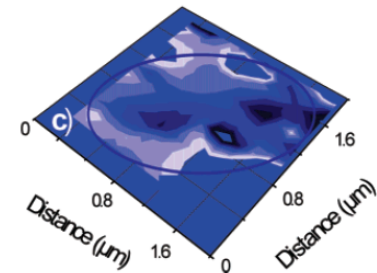
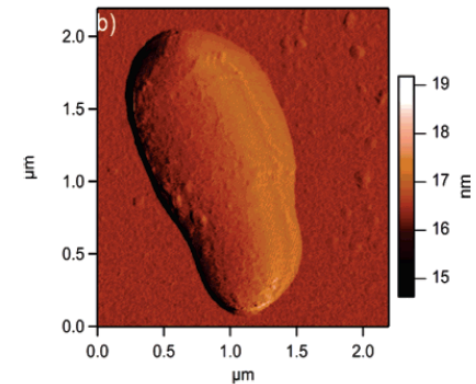
- ★ Talk to colleagues who already collaborate outside Engineering
- ★ Attend seminars on campus that sound relevant – or interesting
- ★ Go to inter-disciplinary sessions at conferences
- ★ Do a literature search on Web of Science for key words plus UAlberta address
- ★ Make some 'cold calls'



## Don't be afraid to:

- say “I don't understand: please explain it again.”
- explain yourself again in a simpler way, maybe in words or pictures rather than equations

$$F_e = 4\pi\epsilon\epsilon_0(\kappa a) \left(\frac{kT}{ze}\right)^2 \psi_t \psi_s \left[ \frac{\exp(-\kappa ah)}{1 + \exp(-\kappa ah)} - \frac{(\Psi_t - \Psi_s)^2 \exp(-2\kappa ah)}{2\Psi_t \Psi_s (1 - \exp(-2\kappa ah))} \right]$$



So.....

what are you waiting for?

