How to play nicely and make new friends:

a Biologist’s perspective on inter-disciplinary collaborations

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Or, to put it another way....
\[ Q_{d,\text{max}} \approx \frac{D_{\text{eff}}AC_{\text{sol}}x_{HC}}{L} \]

\[ F_e = 4\pi\epsilon_0(k\alpha) \left(\frac{kT}{ze}\right)^2 \psi_t \psi_s \left[ \frac{\exp(-k\alpha h)}{1 + \exp(-k\alpha h)} - \frac{(\Psi_t - \Psi_s)^2}{2\Psi_t \Psi_s} \frac{\exp(-2k\alpha h)}{1 - \exp(-2k\alpha h)} \right] \]

\[ (1 + \cos \theta)\gamma_L = 2(\sqrt[\gamma_s^{\text{LW}}\gamma_L^{\text{LW}}}) \]

\[ \frac{dX}{dt} = \mu \cdot \left( \frac{A}{a} \right) \cdot bX \]
Petroleum Microbiology

Chemical

Environmental

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

Intellectually stimulating

Enriching

Fun!

Productive

Rewarding
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
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
  - ± 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

\[ F_c = 4\pi \varepsilon_0 (\kappa a) \left( \frac{kT}{ze} \right)^2 \psi_t \psi_s \left[ \frac{\exp(-\kappa ah)}{1 + \exp(-\kappa ah)} - \frac{(\psi_t - \psi_s)^2}{2\psi_t \psi_s} \frac{\exp(-2\kappa ah)}{1 - \exp(-2\kappa ah)} \right] \]
So......
what are you waiting for?