BS6213

Golden thread of science

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This session introduces students to three forms of logical reasoning (viz. deduction, abduction, and induction), the concept of invariants, and a couple of tactics to problem solving that logically exploit invariants.

The supplementary materials below are useful for a deeper appreciation of the examples discussed in the session. These are optional to read:

- Bellucci & Pietarinen, "Charles Sanders Peirce: Logic", *Internet Encyclopedia of Philosophy*, http://www.iep.utm.edu/peir-log . This short note on Pierce's logic is a succinct description of the different forms of reasoning.
- Chua & Wong, "Increasing the reliability of protein interactomes", *Drug Discovery Today*, 13(15/16):652--658, 2008; http://www.comp.nus.edu.sg/~wongls/psZ/DRUDIS406.pdf. This article is useful background for exercises #1 and #2.
- Pearson, "An introduction to sequence similarity (homology) searching", *Curr Protoc Bioinformatics*, 2013; http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3820096. This article is useful background for exercise #3 and #4.
- Lim et al., "Interconversion of the kinetic identities of the tandem catalytic domains of receptor-like protein-tyrosine phosphatase PTPα by two point mutations is synergistic and substrate-dependent", *Journal of Biological Chemistry*, 273:28986-28993,1998; http://www.jbc.org/content/273/44/28986.full.html. This article is useful background on the example that exercise #5 is based on.