How to succeed in ECOL 330?

Hidden in contemporary diversity is an image of the past diversifications.

Life seems exceedingly improbable… yet abundant, unstoppable, competent, and beautiful.

It cares not at all about our calculations.

What are we missing?

ECOL330, clearly…
The concept of the "adjacent possible" is the set of all possible states around the entity that can be reached in the next step.

Unpredictability (large "adjacent possible") is explained by two considerations:
1) "uncontrollable boundary"
2) "path-dependence"

In evolution, organisms constantly coevolve with their boundaries. Newly evolved configurations become part of the environment and constantly reshape boundaries of other players. They are thus not fixed at any given time.

What is the role for selection making it or maintains the system so it is possible to evolve it?

Extreme conservation (see protein universe slide) essentially means that this squirrel and its fir cone (and us) share most genes and proteins. Why this doesn’t seem to translate into their phenotypic similarity? What makes them so different then?

Think the unthinkable.

Life – adaptions to contexts
or
Life – maintenance of cohesion across contexts

Physicists should have biology envy

Deriving not only the laws of diversification but also the origin of these rules.
Why is external context so important in life?

Same elements... different result...

Why some changes are path setting and others not?

Neck stretching in giraffe and Pa Daung woman

- same cellular & physiological mechanisms
- neither is transmitted to next generation directly
- heritable vs non-heritable changes

Marie Antoinette syndrome:
Hair turning gray night before beheading

Why stress causes gray hair?