ME586!
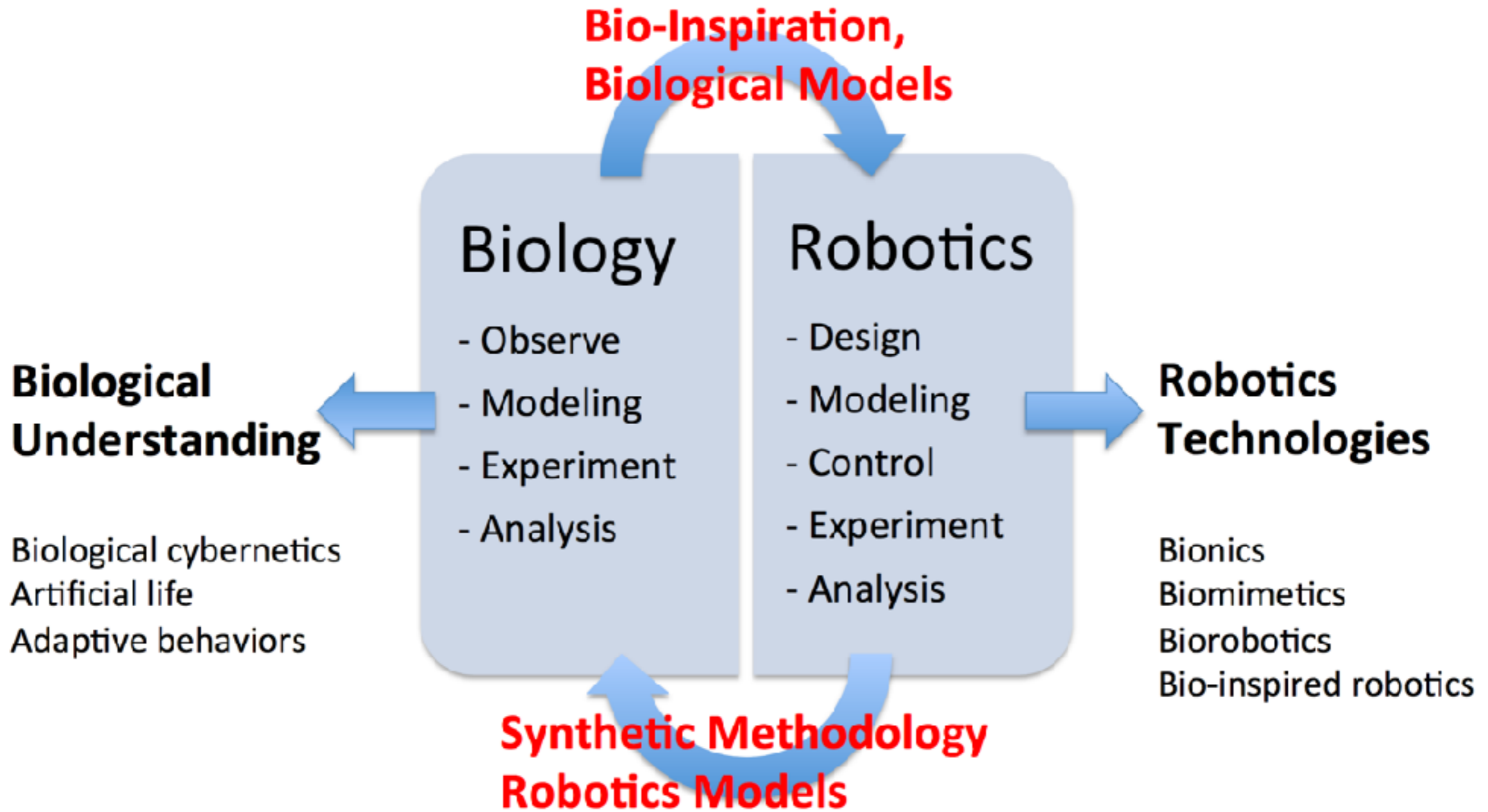# ~~ME~~ 599/EE 546: **Biology-inspired robotics**

Lecture 5
Sawyer B. Fuller
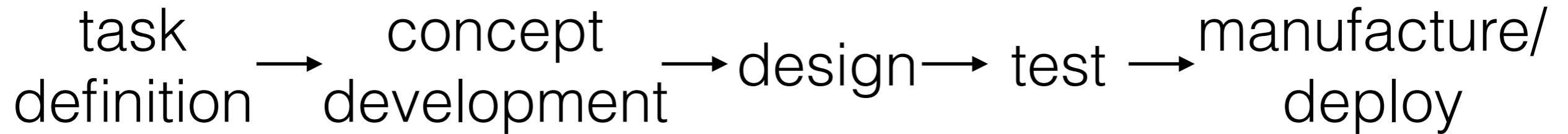
today:

- Tom Libby as guest speaker
- idea generation for course project

Bio-Inspiration, Biological Models

Biology
- Observe
- Modeling
- Experiment
- Analysis

Robotics
- Design
- Modeling
- Control
- Experiment
- Analysis

Biological Understanding

Biological cybernetics
Artificial life
Adaptive behaviors

Robotics Technologies

Bionics
Biomimetics
Biorobotics
Bio-inspired robotics

Synthetic Methodology Robotics Models

engineering vs research oversimplified

- Engineering process:

task definition $\rightarrow$ concept development $\rightarrow$ design $\rightarrow$ test $\rightarrow$ manufacture/ deploy

- Research process:

concept development ⟷ feasibility analysis $\rightarrow$ publication/ commercialization
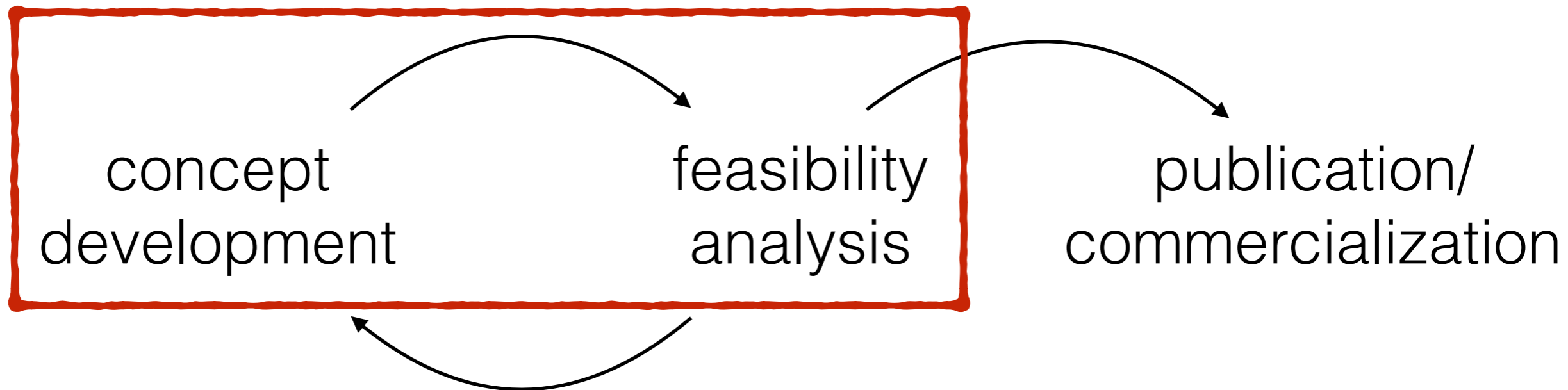
idea generation

- main point: generate as many ideas as possible, but *do not evaluate them.*

- Some starting points (3 minutes each):

  - Think of a biological capability you wish you understood better

    - e.g. catching, locomotion in various animals, things you've seen in the wilderness,

  - Think of how a robot could be improved

    - e.g. a robot you wish you had, a robot you've used or seen

  - Think of things that are totally unrelated

idea evaluation

- Now, spend a few minutes reducing these ideas down to about three of your favorite. After we are done with this step, you will discuss these with your neighbor (but don't do that yet).

    - group them into rough categories

    - propose one or two "research objectives" you could ask of the most promising ones

- Discuss with your neighbor (5 minutes each)

    - get feedback, form more ideas, practice explaining

evaluation of ideas

	idea 1	idea 2	idea 3
feasible in a quarter's time	+	0	0
plays to your strengths/ expertise	0	+	-
interesting	+	-	-
interesting for funding agencies	0	0	0