

**SAMPLE slides from WSU faculty and instructors (and others) 10/10/2008**  
**Warm-up: Student background, pre/mis-conceptions; surface and share attitudes**

How much anatomy have you already taken?

- X** A. None (other than what's included in more general biology courses)
- X** B. A primarily lecture-based anatomy course
- X** C. An anatomy course with at least one dissection lab per week
- X** D. More than one undergrad anatomy course, or graduate-level anatomy course(s)

Sprunger

**(Student background / Pretest)**

**Reading a Phylogenetic Tree: Which is true for you?**

- a) I have never learned how to interpret a phylogenetic tree and I will guess the answers to the next questions**
- b) I have studied this before but still have to guess**
- c) Cool! This is a cakewalk!**

Anelli

**Warm-up to new topics**

Did you take a shower in the last 12 hours?

- a) Yes    b) No

(Intro to Homelessness/ 3<sup>rd</sup> world economies)

How many hours of television do you watch a week?

- a) 0    b) 1-4    c) 5-10    d) 11-20    e) more than 20

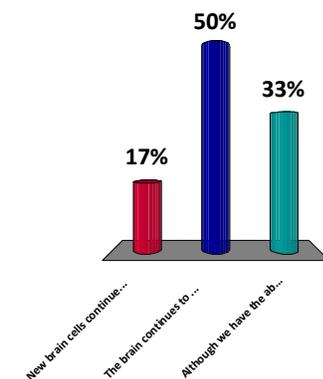
(Media viewing)

Green

**MISCONCEPTION CHECK**

**Which statement is a correct description of brain growth and development?**

1. New brain cells continue to grow into late adolescence
2. The brain continues to mature, "pruning" connections into late adolescence
3. Although we have the ability to learn many new things, the brain is basically finished maturing in late childhood

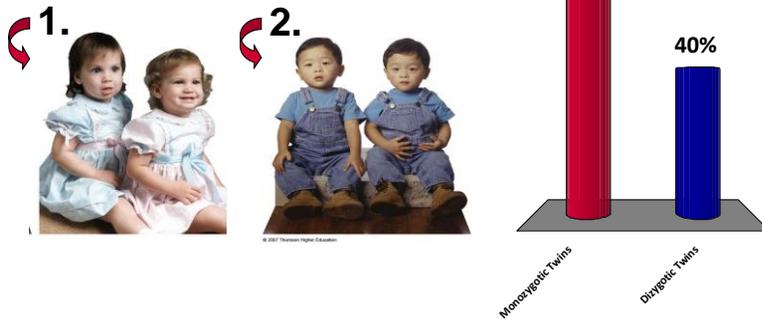


Sumner

## APPLICATION Questions, using visuals, charts, scenarios

Which set of the twins below is described by the following scenario?

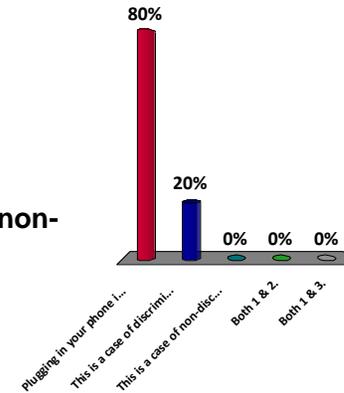
*A single zygote divides into two separate identical cells*



Sumner

Your cell phone gives you a warning beep for “low battery” approximately 20 minutes before it makes another beep and completely shuts off. You have learned to plug your phone in after hearing the 1<sup>st</sup> warning beep to prevent the sound of your phone shutting off. Which of the following is TRUE for this example?

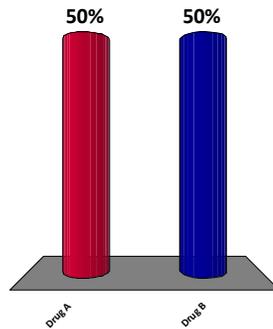
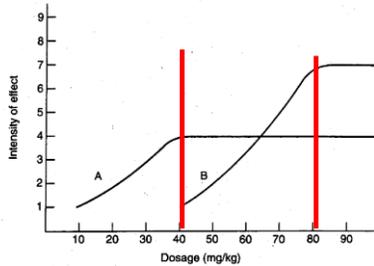
1. Plugging in your phone is being negatively reinforced.
2. This is a case of discriminated avoidance
3. This is a case of non-discriminated avoidance
4. Both 1 & 2.
5. Both 1 & 3.



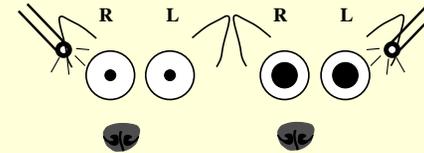
Sumner

Which DRUG is more *potent*?

1. Drug A
2. Drug B



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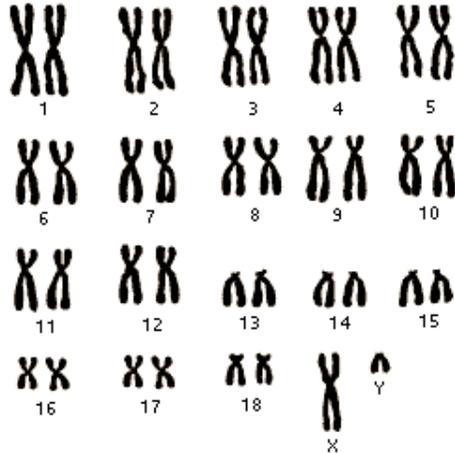


- Where is the deficit?
  - A. R optic n.
  - B. R oculomotor n
  - C. L optic n.
  - D. L oculomotor

Sprunger

**Introduce new topics / promote discussion / explore sensitive topics**

**Guess: Which pairs of chromosomes were sequenced first?**



**Followup: Discuss popular wrong answers and the thinking behind them. Adapted from O'Dowd, D.**

**Expressing personal opinions that might not be PC:**

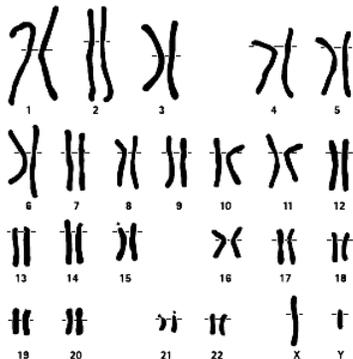
- How do you feel when you see a homeless person?
- Would you share a hospital room with someone with AIDs?
- How many of you never watch television?

**Discussion questions could ask students to**

- Predict outcome
- Rank in order of importance
- Give own opinion / vote

**Green**

**Make 3 conclusions about what you can SEE in this karyotype:**



**(Model and distinguish what you can OBSERVE from what you learn by applying BACKGROUND INFO – important distinction in biology. O'Dowd, D. )**

**1. Vote: What is your biggest concern about active learning?**

- A. Too much time to develop
- B. Content is sacrificed
- C. Students feel it is condescending
- D. Too much time for technology and related problems
- E. Other

**2. Why? Discuss with your neighbor.**

**3. Discuss with whole class; dispel common misconceptions.**

**Adapted from O'Dowd, D**

## Multi-part questions / Application

## Think/pair/share



### APPLICATION 1: The Scenario

- While watching TV, you see a public service announcement that claims the following:

“Last year, 250,000 individuals died in car accidents when they were not wearing their seatbelts. This shows how dangerous it is to drive without your seatbelt fastened. Be Safe. Buckle Up.”

Assuming the statistic is true, is the conclusion valid? That is to say, does wearing your seatbelt increase the likelihood that you will survive a car accident?

- A. Yes
- B. No
- C. Cannot determine based on insufficient information



### APPLICATION 1: The Scenario

- While watching TV, you see a public service announcement that claims the following:

“Last year, 250,000 individuals died in car accidents when they were not wearing their seatbelts. This shows how dangerous it is to drive without your seatbelt fastened. Be Safe. Buckle Up.”

If you said “Yes” in response to the previous question, you committed which of the following violations in rationality?

- A. Ignoring baseline rates
- B. Framing effect
- C. Small sample bias
- D. Conjunction fallacy

## Comparison

Which one is healthy and which is parasitized?

A

B



cleistothecium of *U. necator*

## Discuss with your neighbor

Which one is healthy and which is parasitized?

How do you know?

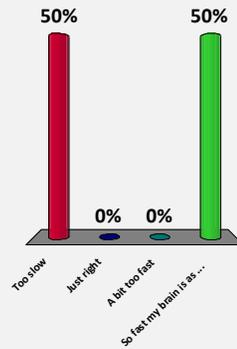


cleistothecium of *U. necator*

## Feedback

**\*\*GAUGING THE PACE\*\***  
How is the PACE of this lecture?

1. Too slow
2. Just right
3. A bit too fast
4. So fast my brain is as cramped as my writing hand



Sumner

**Self-assess: How easy or hard?**

**For each principle, please indicate for you whether it's:**

- 1 for 'Dead easy'**
- 2 for 'Difficult but I'm getting there'**
- 3 for 'Dastardly'**

**Then do a quick tally on the 3 principles studied so far in class:**  
Disjunctive Syllogism, V-elimination, Conditional Proof.

Adapted from Stuart, M. I. Brown & S. W. Draper

**Students notice and report impact**

**To what extent has using clickers in class helped you learn?**

- a. A lot
- b. Some
- c. A little
- d. Doesn't impact my learning
- e. I learn less

**When the answers to a clicker question show that the students disagree, do you get more interested in the question?**

- a. Definitely
- b. Somewhat
- c. Nope

**Students can get immediate feedback from peers**  
**(rubric based feedback on oral presentation)**

| 1                                                                                                                                                                                                                                                                                                                        | 2                                                                                                                                                                                                                                                                           | 3                                                                                                                                                                                                                                                                                                                                | 4         | 5         | 6 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------|---|
| Absent                                                                                                                                                                                                                                                                                                                   | Emerging                                                                                                                                                                                                                                                                    | Developing / Competent                                                                                                                                                                                                                                                                                                           | Effective | Mastering |   |
| <p>Communication choices may:</p> <ul style="list-style-type: none"> <li>• Convey little or no purpose, or unintended message</li> <li>• Produce unanticipated or detrimental affect (visceral impact, tone and credibility),</li> <li>• Disregards or poorly manages rapport with audience (or participants)</li> </ul> | <p>Attempts, with uneven success, to:</p> <ul style="list-style-type: none"> <li>• Convey a purpose and message,</li> <li>• Create the desired affect (visceral impact, tone and credibility),</li> <li>• Manage rapport with immediate audience / participants.</li> </ul> | <p>Uses communication choices to effectively:</p> <ul style="list-style-type: none"> <li>• Convey identified purpose and message, <b>and</b></li> <li>• Create the desired affect (visceral impact, tone and credibility), <b>and</b></li> <li>• Manage rapport with (multiple) intended audience(s) or participants.</li> </ul> |           |           |   |

Thanks to Springer for sharing this application

## Some Strategies

### Getting Started!

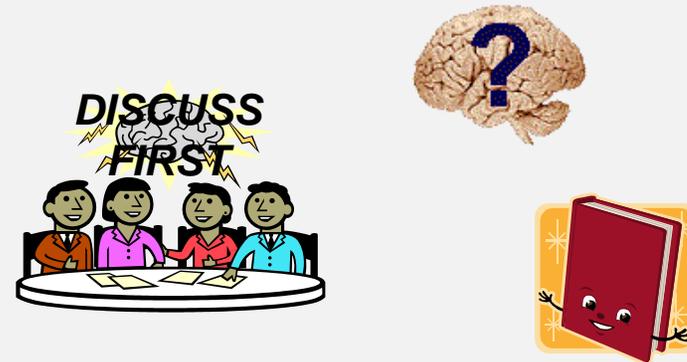


### Avoiding Pitfalls

- Keep it simple
- Low-stakes clicker activities
- Focus on learning (not quizzing)
- Expect techie glitches

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### Visual Aids for Communication



Sumner

### Demonstrate the importance of classroom interaction / small group discussion in exploring new ideas and longterm learning.

- Start on day one, and overtly revisit this idea at least weekly, so it is a consistent thread in learning, and in everyone's expectations
- Set up groups on day one; include small group activity each class.
- From first lecture include unifying themes / organizing principles in content (ex from biology: systems are organized in hierarchies) that you use to deepen discussion in subsequent classroom / clicker activities.
  - I'd like to hear what one group thinks about x.
  - How about a second group?
  - Does anyone want to challenge this? (gets students to explain)
  - "So you might put this one first, because it is bigger, but what about ...?" (explains / summarizes, with notes on board)
  - Makes connection to principle (such as, hierarchy)

Abridged from O'Dowd, Diane, UCI.



### Why Do We Have to Buy These Things?

#### Making Your Objectives Transparent

- Explain in the syllabus / eLearning
- Explain Metacognitive Accuracy / Pedagogy
- Instructor Feedback / Improve Teaching

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**Thanks to the following people teaching at WSU  
for providing sample slides / questions**

**Leslie Sprunger, VetMed  
Sam Swindell, Psychology  
Jean Sumner, Psychology  
Carol Anelli, Entomology**

**Compiled by Kimberly Green,  
Center for Teaching, Learning, and Technology**

**Samples also from other sources:**

**O'Dowd, Diane, University of California, Irvine, guest lecture for  
Sharing Teaching Innovations, University of Idaho, 3/23/07**

**S. A. J. Stuart, M. I. Brown & S. W. Draper  
Using an electronic voting system in logic lectures: one  
practitioner's application, Departments of Philosophy, Computing  
Science, and Psychology, University of Glasgow, Glasgow, UK  
<http://www.psy.gla.ac.uk/~steve/ilig/papers/stuartbrown.pdf>**