

Anatomy and Physiology Active Learning Joint Activity

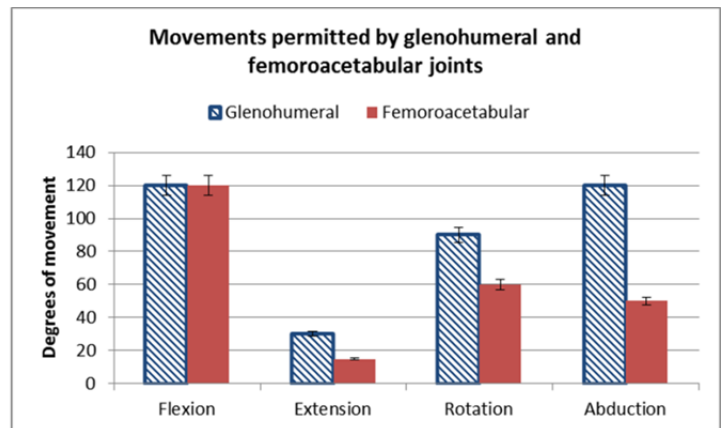
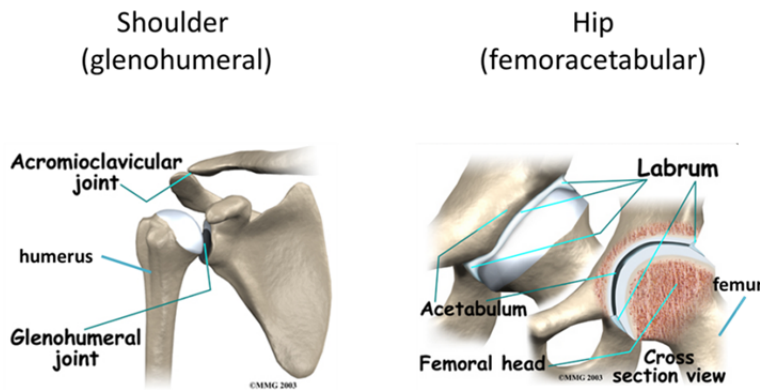
Content Objectives:

- Compare structure and function of similar classes of joints using specific joints of upper and lower limbs
- Predict how accessory structures as well as bony fit influence joint range of motion and stability
- Propose selective pressures that may have influenced joint structure

Prior knowledge: None

Model 1:

In this image you see the shoulder (glenohumeral) and hip (femoracetabular) joints, as well as a data about these joints. Using the images and data table, answer the following questions.



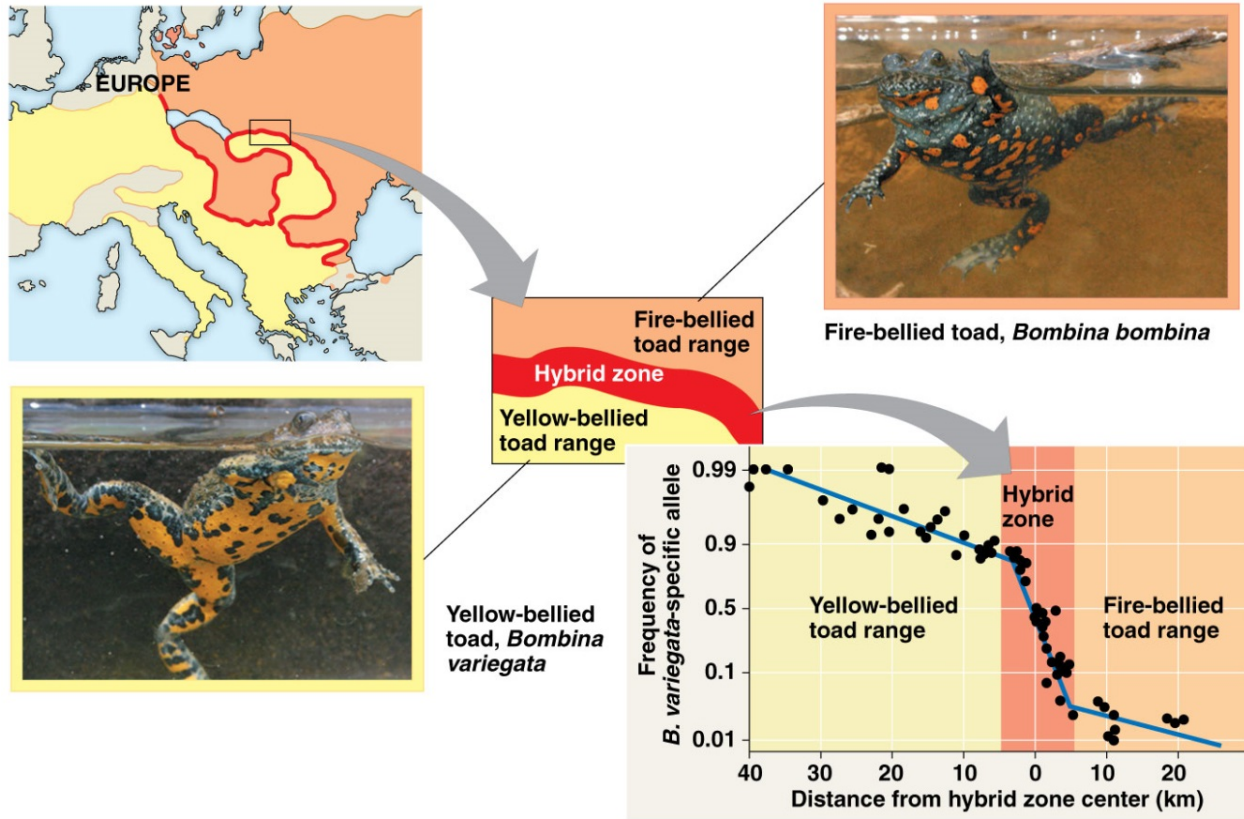
Images courtesy: eOrthopod.com

| Joint | Type of Joint | Bones involved | Labrum characteristics (fibrocartilaginous extension of socket) | Joint capsule ligaments |
|-------------------------|---------------------------------------|--|---|---|
| Shoulder (glenohumeral) | Diarthrosis, Synovial, Ball in socket | Head of humerus (ball), glenoid cavity of scapula (socket) | Present, but attached only to rim of glenoid cavity; widest = 4 mm | Loose, ~2x larger than humeral head |
| Hip (femoro-acetabular) | Diarthrosis, Synovial, Ball in socket | Head of femur (ball), acetabular cavity of pelvis (socket) | Present, extends from acetabular rim to tightly adhere to femoral neck; widest = 5.3 mm | Tight, covers head onto neck of femur like a sleeve, tightens when standing |

Model 1 Questions:

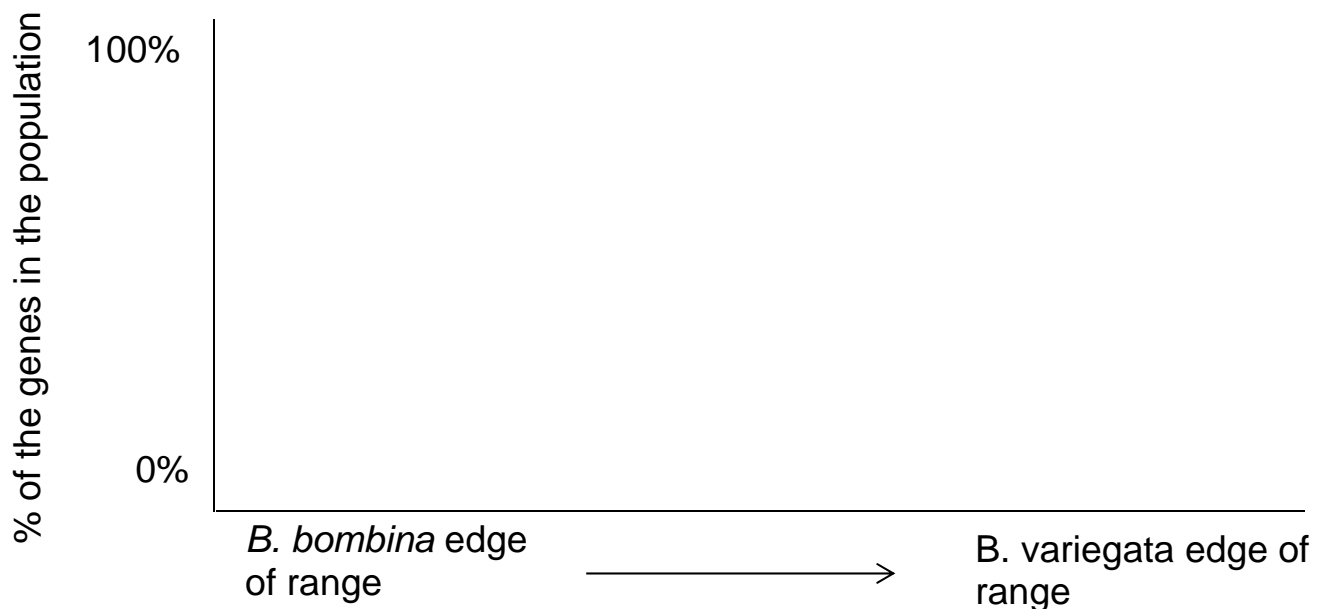
1. Are the joints being compared in model 1 the same type of joint?
2. Compare the anatomy of the glenohumeral joint and femoroacetabular joint. Which joint has more bony contact between the "ball" and "socket"? Estimate the percentage of contact as a fraction of total head area.
3. Do the shoulder and hip move in the same ways (types of movements)? Do they both permit the same amount of movement?
4. The shoulder joint is dislocated 3X more often than the hip joint. Why might this be so? Explain your reasoning.
5. What do you think is the relationship between stability and range of motion for a joint?
6. What might be some advantages and some disadvantages of being a less stable joint? Explain.

Activity 1. How does hybridization affect speciation?
 (modified from Practicing Biology: A Student Workbook, Pearson, 2014).

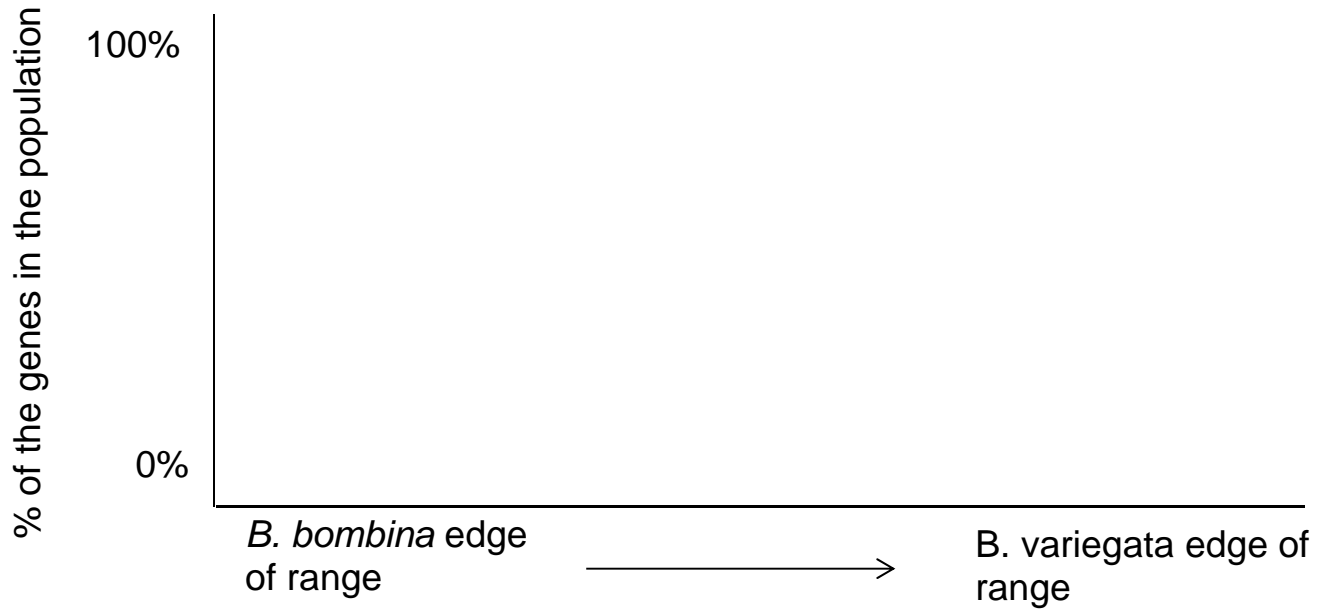


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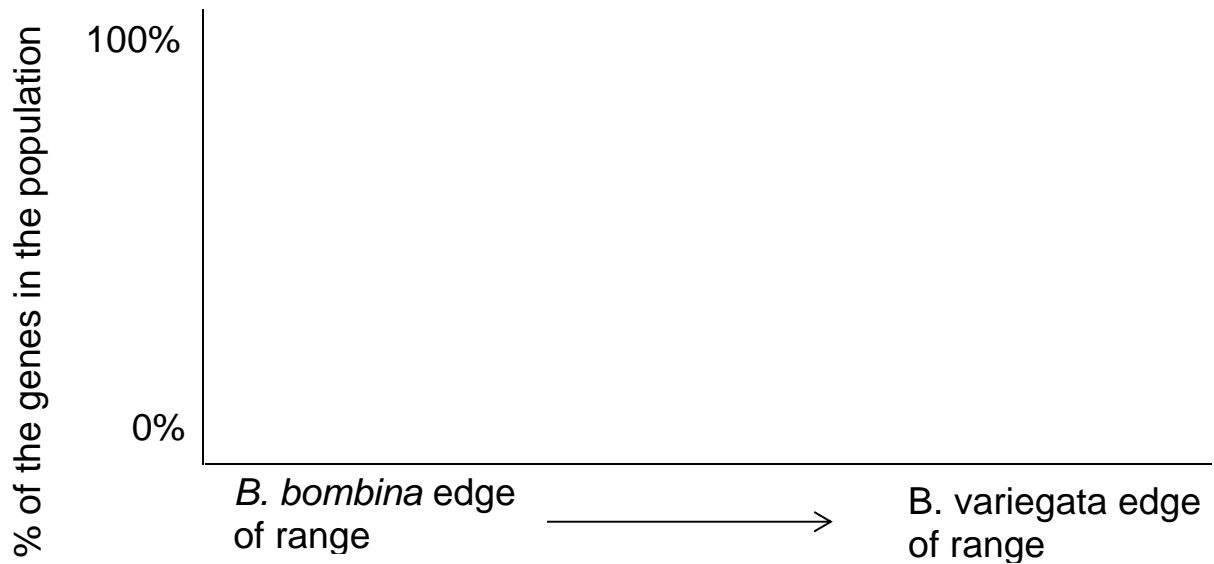
1. Graph the percentage of each type of species specific genes present across the hybrid zone. Use an X to indicate *B. bombina*-specific genes and O to indicate *B. variegata*-specific genes.



2. What would the graph of genes in the population of *Bombina* frogs look like if reinforcement were occurring?



3. What would the graph from *Bombina* frog genes look like over time if fusion were occurring?



Large Lecture Success

Learning Strategies Worksheet

CONNECT WEEK 2014

Dr. Lesley Blair (BI 10x Coordinator) and Dr. Lori Kayes (BI 21x Coordinator)

Goals:

Introduce Unique Characteristics of Large Lectures

Discuss Active Learning Strategies

Strategy #1: Stay focused on learning during lecture.

List four ways you can minimize distractions and maximize learning in a large lecture.

Strategy #2: Interact with instructors and graduate teaching assistants (GTAs).

What are different ways you can interact with your teachers?

Strategy #3: Develop contacts with other students.

Strategy #4: Read the course syllabus for “goal insight.”

What information do you want to know at the beginning of a course to target success?

What you can get out of a large lecture class:

The energy of an engaged group of fellow students

Top Lecturers

Another way to learn (collect diverse learning experiences)

Strategy #5: Keep up on material, study daily, even if not prompted to do so.

If you are taking 12 credits this fall term, approximately how many hours can you expect to study each week in addition to homework and exam review? _____ hours

Strategy #6: Prepare for exams early, quiz yourself to retrieve information.

Why is it important you spend as much time testing yourself as reading over the material?

Strategy #7: Study strategy not working? Get help and try something else.

Focus on your success: be attentive and motivated

Expand your learning team: Interact with other students

OSU is committed to your academic success

ACT NOW. What is one thing you can do right away to improve your success in a lecture course this fall term?
