## Teaching Notes

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**Course Information**

Department: Biology

Level: **Lower Undergraduate**

Course type: **Lecture**

Students: **Majors**

Number of Students: 1-100

**Module Information**

Original Module Name: A tale of two globins: hemoglobin and myoglobin

Link to Original: Chapter 13.2 Molecular Switches: Integrating Concepts in Biology

[Adapted Module Name: (if applicable)

Link to Adapted Module]

Modified Module Name:

Files associated: PowerPoint Slides

Modification Learning Goals:

* Describe cooperativity and how it produces an emergent property for hemoglobin.
* Interpret the oxygen-hemoglobin association/saturation curve
* Explain why hemoglobin is more suitable for carrying oxygen in the blood and myoglobin more adept at storing oxygen in the skeletal muscles.

**Teaching Notes**

*(Think about what you would like to read about this activity if you came back to it in 2 years)*

Suggestions for this section (not all required, and extras always welcome):

* What did you change and why? I modified the teaching slides for Chapter 13.2 to focus on the role of hemoglobin and myoglobin in binding and transporting oxygen in a case study format.
* How did the activity go? I was only able to present part of the topic due to remote instruction
  + What went well and why? Oxygen saturation curves and cooperative binding by hemoglobin is an interesting topic that lends itself to real-world applications. The students were challenged with interpreting the graphs and understanding the physiological basis for the shifts in affinity for oxygen by hemoglobin.
  + What went wrong and why? I was not able to fully engage the students with a discussion on the topic because of the online format of instruction.
* What was the prep like?
  + How much time went into prep? Prep time was for students to read about the topic in their textbook.
  + Did you have to do any prep (i.e. grow cultures, grow seeds, order supplies) ahead of implementation? Not applicable
* Would you do this activity again? Yes
  + What would you change in the future? Design more clicker-based questions and possibly have an accompanying worksheet for students. Incorporate the hemoglobin and myoglobin protein structure.
* What do you wish you’d known before you ran the activity? It was very challenging to do student engagement in a recorded lecture for remote instruction.
* Is there anything else you would like to make note of? I would relate the topic to previous topics in the course such as cellular respiration, allosteric regulation, and protein structure.
* How does this activity fit in your overall course curriculum? This topic was taught as part of the physiology unit (respiration ) of the course.
* In what ways, if any, did you modify your teaching practice with this activity?

This would ideally be presented in a face to face class. If this will be taught in an online course, then various ways to make the recorded lecture be more interactive should be devised.