Discussion Questions for Study Groups

Getting the Group Started (Introduction)

- You have read Dr. Meadows' story about meeting Lucy. What story can you tell that describes your experiences with learning evolution as a student yourself?
- What story can you tell to share your typical experience with teaching evolution to classes with resistant students?
- As you look at the chapter topics and key questions (Table I.1), what do you look forward to about the book? What concerns do you have about what is ahead?

Understanding Evolution (Appendix)

Note that your group needs to decide whether you want to discuss the material in the Appendix and, if so, when. Discussion questions from the Appendix are included here before the questions for the other chapters mainly as a reminder that working through the Appendix material now may be helpful to your group.

- How confident are you about your own understanding of evolution? Evaluate the instruction you received about evolution when you were a student.

- What questions do you have about whale evolution? Which resources given in the Appendix are most helpful to you?
- What questions do you have about radiometric dating and deep time? Which resources given in the Appendix are most helpful to you?
- What questions do you have about human evolution? Will you bring up human evolution with your students?
- Which resources in the Appendix would be helpful to your students?

Discussing the Issues (Chapter 1)

- What is your initial response to the idea of teaching evolution to resistant students so that they understand it, but don't necessarily accept it?
- This book takes a strong stand that evolution is essential content that students must learn. Do you agree? Why or why not?
- How do you respond to what Chapter 1 says about valuing our students' beliefs?
- How have you used inquiry-based science teaching in your classroom? What is your reaction to the idea of using inquiry to teach evolution?

Focusing Your Unit (Chapter 2)

- What is your reaction to the overall strategy for planning a unit? How is it different from how you plan? How is it similar?
- How helpful to you is the "Explaining Evolution" map from *Atlas of Science Literacy* in thinking about the big ideas you want your students to learn in your unit?
- How do Tables 2.1, 2.2, and 2.3 help you to think about the content you want your students to learn?
- How might your final unit focus differ from what is presented in Table 2.4 (middle school teachers) or Table 2.5 (high school teachers)?

- Chapter 2 suggests the essential question "Why can't we just skip evolution?" Discuss possible alternatives to essential questions. Which essential question would be the most productive for your students?

Engaging Students in Evolution (Chapter 3)

- How do you try to engage your students in the science content? What strategies work for you? What is difficult about engaging students in studying science?
- When you read the description of theistic students, do individual students come to mind, either from your current or previous students? What problems do theistic students have when studying evolution?
- Which of the engaging experiences described in Chapter 3 would be most successful with your students?
- What questions and concerns do you have as you examine the lesson segments described in Tables 3.1, 3.2, and 3.3? Which parts of those lesson segments will your students respond well to?
- Review the Typical Objections to Evolution and think about the objections your resistant students might raise. What concerns do you have?

Guiding Students to Examine the Evidence for Evolution (Chapter 4)

- What is your initial reaction (overwhelmed? excited? confused?) as you read through Chapter 4 and think about beginning the study of evolution with students by examining the evidence for evolution?
- How might your students respond to the lesson on natural selection given in Table 4.1? What would work well for them? What would be challenging?
- How might your students respond to the lesson on the evidence for evolution given in Table 4.2? What would work well for them? What would be challenging?

- Discuss the accommodations for theistic students given in both lessons in Chapter 4. What new approaches to working with resistant students are there? What concerns do you have about the accommodations? How will your students respond if you implemented those accommodations?

Guiding Students to Examine Evolution (Chapter 5)

- How much have you thought about the difference between natural and supernatural explanations? What questions do you have about the distinction? How can you use the differences to ease the tensions resistant students face when learning about evolution?
- What questions do you have about whale evolution? Discuss any questions you have about the lesson on whale evolution.
- What questions do you have about HIV evolution? Discuss any questions you have about the lesson on HIV evolution.
- What questions do you have about bird evolution? Discuss any questions you have about the lesson on bird evolution.
- Discuss the accommodations for theistic students given in the lessons in Chapter 5. How will your students respond to those accommodations?

Deepening Understanding/ Addressing Objections (Chapter 6)

- Inquiry requires you to craft effective large-group discussions with your students as they process the evidence put in front of them. What is working in your classroom as you try to implement those types of discussions? What is challenging?
- How might your students respond to the scientific worldview lesson given in Table 6.1? What value will they get out of it? What will be challenging about guiding them through this lesson?

- Discuss the approach to dealing with objections described in Chapter 6. What aspects of the approach sound most beneficial for your students? How might you modify the approach to best meet the needs of your students?

Solidifying Student Understanding (Chapter 7)

- How well are your students learning evolution? Are they getting the big ideas given in Tables 2.1, 2.2, and 2.3?
- How have you used project-based learning in the past? If you have, what works for you about the approach? If you have not, what concerns do you have about it?
- Which of the projects in Table 7.1 will be most beneficial for your students in helping them finalize their understandings of evolution? What will be challenging about guiding their work in those projects?
- Which of the projects in Table 7.2 will be most beneficial for your theistic students in helping them finalize their understandings of evolution? What will be challenging about guiding their work in those projects? How do you feel about the set of projects specifically tailored to the unique needs of your theistic students?
- Examine the alternatives to project-based learning. Which of these are you considering? What other alternatives will help your students exit the unit with a solid understand of evolution?

Wrapping Up (Chapter 8)

- Review the big ideas in the Looking Back section of Chapter 8. What is the most important lesson you learned from reading this book? Is there a big lesson you learned that is not mentioned in the section?
- How will you answer a student who asks, "What do you believe?" How does this section of the book help you to think through the issues involved in answering questions about your beliefs?

- Scan the last paragraph. How are you doing with opening the door to science for all of your students? What about specifically with your resistant students?