

**BIOL 120: Animal Systems**  
**Spring 2008**  
**Writing Assignment #3**

Due to your lab instructor: Monday, April 28, 2008

This writing assignment is based on the very recent publication of two primary research papers (Shubin et al., 2006 and Daeschler et al., 2006) and a short column meant to introduce and summarize these two papers (Ahlberg and Clack, 2006). All three papers have been posted as .pdf files to the BIOL 120 Blackboard site under 10 April.

The purpose of this assignment is to get you to read these papers carefully and to extend some of the information that is presented. Don't get too bogged down in some of the intensive morphological/anatomical terminology; you won't need to understand most of the fine details to complete this assignment. I ask you to find definitions to some of the terms so as to aid in your understanding of what's presented in the papers.

Answer the following questions, type-written, double-spaced, in paragraph format. Be sure to answer all parts of each question. You may need to consult sections of all three papers to answer the questions, but you may also need to look for additional information from other sources. Make sure that such sources are reputable; it's your responsibility to make sure your definitions apply to the context of these papers.

1. Define the following terms:

Manus

Imbrication (esp. as it relates to ribs)

Appendicular skeleton

Homologous (as used by evolutionary biologists)

Axial skeleton

Autopod

2. What is the estimated age of the *Tiktaalik* fossils (in years)? Describe the environmental conditions which existed in the region where the *Tiktaalik* fossils were found at the time they were fossilized (e.g., was the area cold, wet, hot, dry, etc.? ). Describe the habitat in which *Tiktaalik* likely lived (e.g., was it open ocean, dry savannah, conifer forest, etc.?).

3. Describe the primary anatomical characteristics that *Tiktaalik* possessed that the authors argue made it well adapted to the type of habitat in which it lived. According to the authors, what was the function of the heavily-boned, strong pectoral appendages that *Tiktaalik* possessed?

4. The *Tiktaalik* fossils were found in present day Nunavut Territory, Canada. Other "hotspots" for sarcopterygian/tetrapod transitional fossils include Scotland, Latvia, and the northeastern United States and Quebec. Provide a map showing the locations of these

five areas presently (i.e., as they exist now), and provide a second map showing the approximate locations of these five sites relative to each other at the time that *Tiktaalik* lived. (HUGE hint: [http://jan.ucc.nau.edu/~rcb7/rect\\_globe.html](http://jan.ucc.nau.edu/~rcb7/rect_globe.html))

5. Find five primary publications which discuss the genus *Ichthyostega*, and find five primary publications which discuss the genus *Acanthostega*. List all ten citations in a References list in the format of the journal *Evolution*. In addition, print out only the title page to five of these ten articles and include them with your assignment.

None of your work may be plagiarized in any way, from any source; all writing must be in your own words. You may reproduce maps that you find for #4, as long as you indicate the source of the map.

Be sure to answer each question as completely as you can, and be sure to proof-read your assignment carefully, as spelling and grammar will count.

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(10% per day late will be deducted from your final score)