

OEB 207

The Fishy Aspects of Human Body

Instructor: Dr. Stephanie. E. Pierce, Professor of Organismic and Evolutionary Biology and Curator of Vertebrate Paleontology in the Museum of Comparative Zoology

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Head Teaching Instructor: Dr. Megan Whitney, Postdoctoral Researcher, Pierce Lab

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TF: Shraddha Lall, PhD student, de Bivort Lab

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When & Where: Mondays 3:00pm-5:15pm in rooms NWB B108 (discussion) and NWB B311 (lab). This course is designed to have two hours of active learning, plus a break in between the discussion and lab section. We have budgeted 15-minutes to account for this break but do not be surprised if we go over or under by a few minutes. We aim to be as efficient as possible during in-class time.

*Note, the first class on 24th January 2022 will take place in NWB B108 at 3:00pm.

Description: This course explores how the human body evolved through an analysis of the award-winning non-fiction book *Your Inner Fish: A Journey Into The 3.5 Billion-Year History of the Human Body* by evolutionary biologist Neil Shubin. We will read and discuss each chapter in turn, and discover how different parts of the human body can be traced back to creatures that lived eons ago. By the end of the course students will gain a better appreciation for how all life on Earth is interrelated and how our own bodies are a result of millions of years of evolutionary history.

Course objective:

- Learn how to explain complex scientific concepts to a general audience through different media
- Practice general science communication skills including writing and speaking and visual design
- Familiarize yourself with the process of evolution from multiple scales and scientific discovery
- Appreciate, and celebrate, that the human body is the product of millions of years of evolution

Marking scheme:

Chapter discussions and hands-on lab: 30% (10 discussions = 3% each)

Chapter reviews/virtual lab: 40% (10 chapters {8&9 reviewed together} = 4% each)

Chapter quizzes: 10% (10 chapters {8&9 reviewed together} = 1% each)

Museum exhibit: 20% (putting it all together!)

Discussions and hands-on lab (30%): A major part of this course is participation in in-class discussions. Students are expected to come to class prepared to fully engage in the topic and to actively discuss the chapter's content. To support student learning, and reinforce scientific concepts, each discussion session will be supported by a hands-on, specimen-based lab – bringing the chapter to life!

Reviews and virtual specimen website (40%): Before each class, students will write and submit a 300-500 word critical review of each chapter. The review should detail the major aim(s) of the chapter, the content presented, and if the author effectively presented the material. Any uncertainties in the content or missing content should be highlighted. Students will also be required to explore the specially designed (bespoke!) virtual specimen website before coming to class and write 150-200 words comparing the book vs. website as different mediums for conveying the same information. Interacting with the virtual specimens website will also prepare students for a more meaningful live discussion and hands-on lab. The marking rubric for chapter reviews is provided on Canvas.

*Note, at the end of the term, students can rewrite and submit up to two chapter reviews to be regraded. This gives students an opportunity to reflect on prior reviews and refine their own writing styles.

Optional video review: To channel your creativity, students can choose to replace 1 written review from Chapters 4-6 and 1 written review from Chapters 7-10 with a video review (in other words, a total of 2 written reviews throughout the course may be optionally substituted with video reviews). The same grading rubric applies to video reviews, but videos can garner extra credit points to reflect the effort to represent your opinions in this format. Videos should be no longer than 5min!

Quizzes (10%): Within 24hrs of the end of in-class discussions, students will be required to take a short, timed quiz via Canvas. Each quiz will be focused on the scientific concepts of each chapter solely. Questions will be pulled from the book, virtual specimen website, in-class lecture, and hands-on lab – so pay attention! The quizzes are meant to gauge students' understanding of the science and to ensure maximum engagement with the material.

Museum exhibit (20%): The final project in the course is to design a museum exhibit explaining evolution at different scales. Throughout the term, you will have experienced science communication through readings, a virtual website, and in person interactions with your peers and teaching staff. A museum exhibit is yet another medium used to educate students and the general public about scientific (and non-scientific) concepts. In this final project, you will work in teams of four students to design a museum exhibit composed of five different galleries: intro, anatomy, development, genetics, and deep time (fossils). Instructions on how to develop your galleries and present the museum exhibit, as well as the grading structure will be provided in a separate document.

More details are available on the course Canvas website including accommodations, course etiquette, integrity policy, etc. If you have any lingering questions, please reach out to teaching staff!



Detailed weekly course schedule (*indicates optional video 1 and *indicates optional video 2)

Date	Chapter	Review due date – 12pm sharp!
Monday 24 January 2022	Intro to course and tree thinking	NA
Monday 31 January 2022	Chapter 1: Finding Your Inner Fish	Monday 31 January 2022
Monday 07 February 2022	Chapter 2: Getting a Grip	Monday 07 February 2022
Monday 14 February 2022	Chapter 3: Handy Genes	Monday 14 February 2022
Monday 21 February 2022	President's Day Holiday – no class	NA
Monday 28 February 2022	Chapter 4: Teeth Everywhere*	Monday 28 February 2022
Monday 07 March 2022	Chapter 5: Getting Ahead*	Monday 07 March 2022
Monday 14 March 2022	Spring Recess – no class	Monday 14 March 2022
Monday 21 March 2022	Chapter 6: The Best-Laid (Body) Plans*	Monday 21 March 2022
Monday 28 March 2022	Chapter 7: Adventures in Body Building*	Monday 28 March 2022
Monday 04 April 2022	Chapter 8&9: Making Scents & Vision*	Monday 04 April 2022
Monday 11 April 2022	PBS documentary & HMNH visit	NA
Monday 18 April 2022	Chapter 10: Ears*	Monday 18 April 2022
Monday 25 April 2022	Chapter 11: The Meaning of It All	Monday 25 April 2022
Monday 02 May 2022	Open session to discuss final project	Time blocks TBD
Friday 09 May 2022	Final Museum Exhibit Due	Friday 09 May 2022

*Note, final project assignment dates and tasks are provided separately.