**Geol 159C: Early Life and its Environmental Context**

**Professor Susannah M. Porter**

### Lecture and Exam Schedule

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<tr>
<th>WEEK 1</th>
<th>INTRODUCTION</th>
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| Thurs (Sep 27) | Lecture 1: History of Precambrian Paleontology  
*Chapter 1-2 in Schopf (1999)* |
|  | ‘Practice’ Paper of the week: Maher and Stevenson (1988) |

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<th>WEEK 2</th>
<th>THE ERA OF SHORT DAYS, A FAINT SUN, AND GIANT IMPACTS</th>
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| Tues (Oct 2) | Lecture 2: Hadean and Archean Earth I  
*Valley (2005)* |
| Lab (Oct 2) | How to read a scientific paper (**No homework this week**)* |
| Thurs (Oct 4) | Lecture 3: Hadean and Archean Earth II  
|  | **Paper of the Week #1: Bada et al. 1994 OR Lowe and Tice (2004)** |

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<th>WEEK 3</th>
<th>SYSTEMATICS PRIMER &amp; THE ORIGIN OF LIFE</th>
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| Tues (Oct 9) | Lecture 4: Overview of Phylogenetic Systematics  
*Wiley et al. (1991); Skelton book on Evolution pp. 516-544* |
| Lab (Oct 9) | Candybar Cladogram (**Problem Set due Oct 16**)* |
| Thurs (Oct 11) | Lecture 5: Origin of Life  
*Hazen (2005); Ch. 5 in Knoll (2003)* |
|  | **Paper of the Week #2: Forterre (2006)** |

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<th>WEEK 4</th>
<th>THE BUGS THAT RULE THE WORLD</th>
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| Tues (Oct 16) | Lecture 6: The Tree of Life  
*Doolittle (2000); refer to Ch. 2 in Knoll (2003)* |
| Lab (Oct 16) | Lecture 7: Prokaryotic Diversity I  
*Lane (2006); Recommended: Nealson (1997)* |
| Thurs (Oct 18) | Lecture 8: Prokaryotic Diversity II  
*Refer to Ch. 7 in Knoll (2003)* |
WEEK 5  THE BUGS THAT RULE THE WORLD & WHEN THEY FIRST APPEARED

Tues (Oct 23)  Lecture 9: Cyanobacterial Diversity
Lab (Oct 23)  Microbial Diversity Lab (due Oct 30)

Thurs (Oct 25)  Lecture 10: Earliest Life on Earth…and early life on Mars?  
TBD

No Paper of the Week. Review for the Midterm Exam instead!

WEEK 6  EXAMS AND ALIENS

Tues (Oct 30)  MIDTERM EXAM

Lab (Oct 30)  Video: Life on Other Planets

Thurs (Nov 1)  Lecture 11: The Great Oxidation Event
Refer to Ch. 3, 4, and 13 in Knoll (2003) and pp. 25-76 in Hazen (2005)

Paper of the Week #4: TBD

WEEK 7  EARLIEST LIFE ON EARTH

Tues (Nov 6)  Lecture 12: The Great Oxidation Event continued
Refer to Ch. 6 in Knoll (2003)

Lab (Nov 6)  Fossils of Early Life (Lab due Nov 13th)

Thurs (Nov 8)  Lecture 13: Origin of Eukaryotes
Refer to Ch. 8 in Knoll (2003)

Paper of the Week #5: TBD

WEEK 8  THE EVOLUTION OF COMPLEX CELLS

Tues (Nov 13)  Lecture 14: Modern Eukaryote Diversity

Lab (Nov 13)  Eukaryotic Diversity (Lab due Nov 27th)
Simpson and Roger (2004)

Thurs (Nov 15)  Lecture 15: Early Evolution of Eukaryotes: Endosymbioses
Delwiche (1999)
WEEK 9

TIME TO REFLECT ON HOW THANKFUL YOU ARE FOR ~4 GA OF LIFE’S EVOLUTION

Tues (Nov 20)  Snowball Earth Video: on reserve in the library watch on your own time.

No Lab Section This Week; question sheet on Snowball Video (Due Nov 27th)

Thurs (Nov 22)  THANKSGIVING

No Paper of the Week

WEEK 10

THE NEOPROTEROZOIC ENVIRONMENT

Tues (Nov 27)  Lecture 16: Snowball Earth Glaciations
Howard and Schrag (2000); Refer to Ch. 12 in Knoll (2003);

Lab (Nov 27)  Lecture 17: The Rise of Oxygen in the Neoproterozoic Era
TBD

Thurs (Nov 29)  Lecture 18: The Early Fossil Record of Eukaryotes
Refer to Ch. 9 in Knoll (2003)

Paper of the Week #7: TBD

WEEK 11

THE RISE OF MULTICELLULAR LIFE

Tues (Dec 4)  Lecture 19: Early Eukaryote Diversification and the Rise of Multicellular Life
Porter (2004); Refer to Ch. 9 in Knoll (2003)

Lab (Dec 4)  Eukaryote Fossils Lab (Due Dec 6th)

Thurs (Dec 6)  Lecture 20: Animals Take the Stage
Refer to Ch. 10-12 in Knoll (2003)

Paper of the Week #8: TBD

FINAL EXAM: Tuesday Dec 11th, 12-3pm.