

Silk Biomaterials Engineering

Goals:

- 1) Read and analyze primary scientific literature
- 2) Get a solid background and understanding of silk and other biomaterials by reading papers and presenting and discussing them.

Presentations:

The main idea of the in-class presentations is to communicate the assigned papers in a complete and efficient manner. The whole presentation, for each paper, should be no more than five minutes. This time should be used to discuss the paper and cover the following points:

- 1) Start with a summary of the paper's conclusions and results.**
- 2) Assess whether the methods used in the article are appropriate for the research.**
- 3) Finally does the data obtained support the conclusions that the authors reached.**
- 4) If it is a review paper then focus on 1. since this will be the majority of the article.**

The goals are to determine the main points of the published work and if the steps used to obtain them are valid and reasonable. Upon the completion of a paper's presentation questions maybe asked and a brief discussion will be held to answer these questions as thoroughly as possible. The presentations will proceed through the class until each student has presented all of their assigned articles.

Homework:

Each week, every student will be assigned an article(s) that they will be responsible for reading, understanding, and summarizing for a meaningful and continuous presentation for the following week. The subjects for each week will vary and can found in the tentative schedule. Also, if students are unfamiliar with various topics, methods, and results they are strongly encouraged to seek assistance, from various resources, before the next class to prevent wasting time and to increase the overall benefit from the class.

Before the beginning of next week's class, a one page summary of the top four papers from the previous week will need to be submitted to Dr. Lewis. These top papers are each student's individual choice and should not be the exact papers that the student presented. The summary should briefly describe each paper's results/conclusions and the student's reasons/logic as to why this paper was one of the top articles. These need to be emailed by Monday morning.

Grading:

Grades are based on oral presentations and the weekly write-ups. Basically did you understand and present the paper(s) you were assigned and the same for the papers you chose to write about. If you have any questions concerning your papers you can talk to Dan or Tom or call or email me. randy.lewis@usu.edu or 435-797-9291.

Schedule:

Week 0 (August 29): Introduction and Syllabus discussion

Week 1 (September 12): Methods, and Review

Week 2 (September 19): Overview of Insect Silks

Week 3 (September 26): Keratin and Assorted Fibers

Week 4 (October 3): Major Ampullate Silk (Phylogeny and Sequences)

Week 5 (October 9): Major Ampullate Silk (Characterization, Structure, and Synthetics)

Week 6 (October 17): Minor Ampullate Silk

Week 7 (October 24): Recent Scientific Articles (Your Choice)

Week 8 (October 31): Flagelliform and Aggregate Silks

Week 9 (November 7): Piriform/Pyriiform Silks

Week 10 (November 14): Aciniform and Tubuliform Silks

Week 11 (November 21): Recent Scientific Articles (Your Choice)

Week 12 (November 28): Applications and Diversification of Spider Silks

Week 13 (December 5): Recent Spider Silk Articles (Last 6 Months)