EID:

## Topic: Biomaterials (Week 9)

Pre-discussion questions. Answer briefly. Use only the space provided.

- 1) How many spiders and how many years did it take to make the piece of woven spider silk shown in the Nova video? (No wonder spider silk isn't currently used as a biomaterial!)
- 2) Describe one potential application of spider silk. What properties of spider silk make it superior to other materials for this application?

- 3) What is the most common amino acid in the silk protein repeat unit produced in [Xia2010]?
- 4) How do [Xia2010] engineer *E. coli* to meet the increased demand for this amino acid when expressing spider silk protein? (Address both how sufficient quantities of the amino acid are made AND how the capacity for incorporating the amino acid into proteins is augmented.)

5) What is the primary finding of [Xia2010] with regard to the properties of the different recombinant spider silk proteins that they produce?