Please read the questions carefully. Put your name on the back of this page.

1. **Before pregnancy, what 4 hormones are important in mammary development?** (2 points)
   - Estradiol
   - Growth Hormone
   - Prolactin
   - Cortisol

2. **Why does milk contain predominately fatty acids that are saturated?** (1 point)
   - Because most of the microbes* use the unsaturated fatty acids and turn them into saturated fatty acids which are then taken up by cow and put into the milk

3. **In cows, when does the majority of mammary development occur?** (1 point)
   - Right before parturition

4. **Discuss the importance of alpha-lactalbumin in lactose synthesis.** (2 points)
   - It is the primary protein that controls the production of glucose to lactose in the alveoli epithelial cells during low glucose concentrations.
   - It is the rate limiting protein.

5. **What is CLA and why is it important?** (1 point)
   - Conjugated Linoleic Acid = Potent Anticarcinogen

6. **Within 1000 pounds, what is the average milk production for the U.S. and what is the current world record?** (1 point)
   - Average 19,000
   - World Record 68,100

7. **What hormone is required by most nonruminants during lactation but can be removed from cows without affecting milk production?** (1 point)
   - Prolactin

8. **What hormone is commercially available to stimulate milk production?** (1 point)
   - Prolactin BST

**Bonus: (1 pt)**

What hormone is being advertised to increase breast size?

- [ ] Estradiol
- [X] Estrogen