**UNIT 4 REVIEW**

**Topic 1: Cell Communication**

1. **Cell-to-Cell Contact**: Describe how immune cells interact by cell-to-cell contact. Discuss antigen-presenting cells (APC’s), helper T-cells, and killer T-cells.
2. **Communication Using Local Regulators**: Explain the following:
3. How neurotransmitters work.
4. The plant immune response
5. Quorum sensing in bacteria
6. Morphogens in embryonic development

**Topic 2: Signal Transduction**

1. Describe the role of components of a signal transduction pathway in producing a cellular response.
2. Explain signal transduction as it relates to ***THREE*** of the following five examples:
   1. Cytokines regulate gene expression to allow for cell replication & division
   2. Mating pheromones in yeast trigger mating gene expression
   3. Expression of the SRY gene triggers the male sexual development pathway in animals
   4. Ethylene levels cause changes in the production of different enzymes allowing fruits to ripen
   5. HOX genes and their role in development

**Topic 3: Feedback**

1. **Negative feedback:** Describe blood sugar regulation by insulin/glucagon.
2. **Positive feedback:** Pick ***ONE*** of the following positive feedbacks to describe:
   1. Lactation in mammals
   2. Onset of labor in childbirth
   3. Ripening of fruit

**ALL THREE TOPICS NEED TO BE COMPLETED & TURNED IN ON THE DAY WE RETURN. THEY MUST BE HANDWRITTEN. NOTHING TYPED WILL RECEIVE CREDIT.**