

BIO 5099
Homework Assignment #12

Name _____

Due start of class, **Thursday November 14th**.

Late assignments are not accepted, show your work for partial credit.

Assignments may be e-mailed to: christiaan@xiaan.com or rbaror@dmibio.com anytime, or faxed to (303) 556-2889 between 3:00 and 4:00 p.m. on Thursday.

Define in your own words. No example necessary, but your definition must be complete to receive full credit:

1. (2pts) Apoptosis

2. (2pts) Morphogenesis

3. (2pts) Differentiation

4. (2pts) Cadherin

5. (2pts) Mesenchyme

For each of the following word pairs, describe the differences between the two. You will get no credit if you simply provide definitions for the two terms - **how are they different?**

6. (2pts) Homologous *vs* Analogous

7. (2pts) Allometry *vs* Heterochony

8. (2pts) Blastula *vs* Gastrula

9. (2pts) Endoderm *vs* Mesoderm

10. (2pts) Tissue *vs* Organ

11. (5pts) What constraints are there on organ development? Include at least one example not included in the lecture notes.

12. (5pts) Describe with an example how small evolutionary changes in development can lead to significant phenotypic differences in adult organisms.

13. (10pts) Describe the process by which the *Drosophila* embryo allows the homeotic genes to be differentially expressed along the body axis. Your correct answer should mention maternal, gap, pair-rule and segment-polarity genes and their control. Pictures may aid in your explanation, note this problem is worth 10 points.