Appendix A. Papers presented in the embryology course.

PAPER SET 1 (chosen by the instructor)

- Bovari, T. (1902). On multipolar mitosis as a means of analyzing the cell nucleus.
- Roux, W. (1888). Contributions to the developmental mechanics of the embryo. Translation in "Foundations of Experimental Embryology" (B.H. Willier and J.M. Oppenheimer, eds.), Prentice Hall, Inc., Englewood Cliffs, N.J. USA. 1964
- Driesch, H. (1892). The potency of the first two cleavage cells in echinoderm development. Translation in "Foundations of Experimental Embryology" (B.H. Willier and J.M. Oppenheimer, eds.), Prentice Hall, Inc., Englewood Cliffs, N.J. USA. 1964.
- Mangold, H. (1924). Induction of embryonic primordial by implantation of organizers from a different species. Translation in "Foundations of Experimental Embryology" (B.H. Willier and J.M. Oppenheimer, eds.), Prentice Hall, Inc., Englewood Cliffs, N.J. USA. 1964.
- Saunders, J.W., Gasseling M.T, and Cairns, J.M. (1959). The differentiation of prospective thigh mesoderm grafted beneath the apical ectodermal ridge of the wing bud in the chick embryo. Dev. Bio. *1*, 281-301
- Maccabe, A.B., Gasseling, M.T., and Saunders, J.W. (1973). Spatiotemporal distribution of mechanisms that control outgrowth and anteroposterior polarization of the limb bud in the chick embryo. Mech. Ageing Dev. *2*:1-12.
- Smith, W.C., and Harland, R.M. (1992). Expression cloning of noggin, a new dorsalizing factor localized to the Spemann organizer in Xenopus embryos. Cell. *70*:829-840.
- Niswander, L. and Martin, G.R. (1993). FGF-4 and BMP-2 have opposite effects on limb growth. Nature. *361*:68-71.
- Riddle, R.D., Johnson, R.L., Laufer, E., and Tabin, C. (1993). Sonic hedgehog mediates the polarizing activity of the ZPA. Cell. *75*:1401-1416.
- Dudley, A.T., Ros, M.A., and Tabin, C.J. (2002). A re-examination of proximodistal patterning during vertebrate limb development. Nature. *418*:539-544.
- Driever, W. and Nüsslein-Volhard, C. (1998). The bicoid protein determines position in the Drosophila embryo in a concentration-dependent manner.. Cell. *54*:95-104.
- Campbell, K.H., McWhir, J., Ritchie, W.A., and Wilmut, I. (1996). Sheep cloned by nuclear transfer from a cultured cell line. Nature *380*:64-66.
- Wilmut, I., Schnieke, A.E., McWhir, J., Kind, A.J., and Campbell, K.H. (1997). Viable offspring derived from fetal and adult mammalian cells. Nature. *385*:810-813.

PAPER SET 2 (a recent paper from 2008 on, chosen by the student with instructor approval)

- Guimond, J.C., Lévesque, M., Michaud, P.L., Berdugo, J., Finnson, K., Philip, A., and Roy, S. (2010). BMP-2 functions independently of SHH signaling and

triggers cell condensation and apoptosis in regenerating axolotl limbs. BMC Dev Biol. *12*;10-15.

- Bressan, M., Davis, P., Timmer, J., Herzlinger, D., and Mikawa, T. (2009). Notochord-derived BMP antagonists inhibit endothelial cell generation and network formation. Dev Biol. *326*:101-111.
- Jiang, Q., Liu, D., Gong, Y., Wang, Y., Sun, S., Gui, Y., and Song, H. (2009). yap is required for the development of brain, eyes, and neural crest in zebrafish. Biochem Biophys Res Commun. *384*:114-119.
- Chung, S., Leung, A., Han, B.S., Chang, M.Y., Moon, J.I., Kim, C.H., Hong, S., Pruszak, J., Isacson, O., and Kim, K.S. (2009). Wnt1-lmx1a forms a novel autoregulatory loop and controls midbrain dopaminergic differentiation synergistically with the SHH-FoxA2 pathway. Cell Stem Cell. *5*:646-658.
- Garcia-Morales, C., Liu, C.H., Abu-Elmagd, M., Hajihosseini, M.K., and Wheeler, G.N. (2009). Frizzled-10 promotes sensory neuron development in Xenopus embryos. Dev Biol. *335*:143-155.
- Kumano, G. and Nishida, H. (2009). Patterning of an ascidian embryo along the anterior-posterior axis through spatial regulation of competence and induction ability by maternally localized PEM. Dev Biol. 331:78-88.
- Marchetti, G., Escuin, S., van der Flier, A., De Arcangelis, A., Hynes, R.O., and Georges-Labouesse, E. (2010). Integrin alpha5beta1 is necessary for regulation of radial migration of cortical neurons during mouse brain development.. Eur J Neurosci. *31*:399-409.
- Chen, B.Y., Chang, H.H., Chen, S.T., Tsao, Z.J., Yeh, S.M., Wu, C.Y., and Lin, D.P. (2009). Congenital eye malformations associated with extensive periocular neural crest apoptosis after influenza B virus infection during early embryogenesis. Mol Vis. 2009 *15*:2821-2828.
- Hrycaj, S., Mihajlovic, M., Mahfooz, N., Couso, J.P., and Popadić, A. (2008). RNAi analysis of nubbin embryonic functions in a hemimetabolous insect, Oncopeltus fasciatus. Evol Dev. *10*:705-716.
- Freeman-Anderson, N.E., Zheng, Y., McCalla-Martin, A.C., Treanor, L.M., Zhao, Y.D., Garfin, P.M., He, T.C., Mary, M.N., Thornton, J.D., Anderson, C., Gibbons, M., Saab, R., Baumer, S.H., Cunningham, J.M., and Skapek, S.X. (2009). Expression of the Arf tumor suppressor gene is controlled by Tgfbeta2 during development. Development. *136*:2081-2089.
- Mei J., Li Z., and Gui, J.F. (2009). Cooperation of Mtmr8 with PI3K regulates actin filament modeling and muscle development in zebrafish. PLoS One. *4*:e4979.

Appendix B: Transcript of student peer discussion after individually answering an application question.

Student 1: I don't think answer A is a good answer because it goes against what I would predict.

Student 2: If you select answer B you should see the same fate as answer A.

Student 3: Do you want to raise phosphorylation?

Student 2: Isn't that want you want to do?

Student 1: You need to consider PIP3 if you elevate PI3K.

Student 4: Can't convert PIP3 back.

Student 2: Answer D is the only one that makes sense for this model.

Student 1: Answers A, B, and C all lead to elevated Hh.

Student 4: Right those answers raise Hh.

Student 2: I think Answer D is the correct prediction, do you remember what the experiment showed? Right here on the paper, you can see the morpholinos.

Student 1: I thought that too, let's go with Answer D.