

Study Questions: Discussion 9 - Development

9a. Review. Barald, K and Kelley. "From placode to polarization: new tunes in inner ear development." Development 2004, 131: 4119-4130"

This paper is better written and easier to understand than the original review paper by Bryant, Goodyear and Richardson and it is suggested that you substitute this one for the Bryant et al. However, on the first page of the Barald and Kelley paper there is an egregious error regarding an anatomical structure and its functional implication. What is that error?

9b. An overview of cochlear development is presented in: Torres, M and Giraldez, F. "The development of the vertebrate ear" Mechanisms of Development 1998, 71: 5-21.

9A. Groves, A. K. and Bronner-Fraser, M. (2000). "Competence, specification and commitment in otic placode induction," Development 127, 3489-3499.

1. What is the purpose of immunostaining for early markers of the otic placode?
2. Why do the authors graft quail tissue into chick embryos?
3. In this paper competence was found to diminish, some traits were retained while others were lost, with age. What could account for varying levels of competence?

9B. Eddison, M., Le Roux, I. and Lewis, J. (2000). "Notch signaling in the development of the inner ear: lessons from Drosophila," Proc Natl Acad Sci U S A 97, 11692-11699.

1. Is the evidence that Numb is present in hair cells and that it blocks signaling by Ser1 adequate to support the authors' model of how the spatial pattern of hair cells and supporting cells is generated? Explain.

2. What kind of modulation of the proposed scheme would be sufficient to produce the observed ratio of hair cells to supporting cells?