or ectoderm whose late blastula expression has never been described. Our validation studies on a selected pool of these candidate genes identified three uncharacterized genes expressed in the late blastula margin. Ongoing gain- and loss-of-function studies on these three genes, as well as further optimization of the FAM-P approach, will be presented.

doi:10.1016/j.ydbio.2006.04.267

243
Hennin: Dual roles for cilia proteins in mammalian development

Tamara Caspary [1], Kathryn V. Anderson [2]
[1] *Department of Human Genetics, Emory University School of Medicine, Atlanta, GA, USA*
[2] *Developmental Biology Program, Memorial Sloan Kettering Cancer Center, New York, NY, USA*

We identified and phenotypically characterized a recessive, embryonic lethal mouse mutant, *hennin* (*hnn*). Through mapping and positional cloning, we found a single base pair change in a novel predicted transcript. Hnn protein is predominantly localized to cilia, and *hnn* embryos show a defect in ciliated tissues. *hnn* mutants display a novel change in dorsal–ventral patterning of the caudal neural tube: too many motor neurons are specified, but there is no floor plate. A model in which a morphogen gradient of Sonic hedgehog (Shh) specifies all the ventral cell types of the neural tube is difficult to reconcile with the *hnn* spinal cord phenotype. *hnn* embryos do not specify a left side consistent with the random looping of their hearts. We found Shh signaling is intact in the node of *hnn* embryos, but the nodal cilia were short with a visible structural defect in the microtubule doublet. As the ciliary intraflagellar transport proteins (IFT) have been shown to be required for Shh signaling during mammalian development, it is possible that the structural integrity of the cilia is needed for signaling. Alternatively, the proteins that are important for the structure of the cilia may have additional functions within the cell that are important for signaling. We generated double mutants with *hnn* and an IFT mutant that lacks cilia and find a requirement for Hnn either in the cilia or in the cell depending on the developmental context we examine. Taken together, our data suggest that cilia and their related proteins are needed for multiple signaling pathways during mammalian development.

doi:10.1016/j.ydbio.2006.04.268

244
Gonadotrope cell specification in the pituitary gland

Shannon Davis, Sally Camper
University of Michigan, Ann Arbor, MI, USA

The anterior lobe of the pituitary gland is comprised of 5 cell types, producing 6 different hormones. Terminal differentiation of these cell types is typically marked by the production of their respective hormones. In mice the gonadotropes, which produce luteinizing hormone (LH) and follicle-stimulating hormone (FSH), are among the last cell types to produce complete hormones, occurring at E16–17, compared to E13–15 for thyroid-stimulating hormone, adrenocorticotropic hormone, and growth hormone. The late expression of LH and FSH implies that gonadotropes are specified after the other cell types. However, the spatial location of gonadotropes on the ventral side of the pituitary suggests an earlier time for specification. Cells proliferate around the lumen on the dorsal side of Rathke's pouch, the precursor to the anterior and intermediate lobes. As cells exit the cell cycle, they migrate ventrally and rostrally away from the lumen into the anterior lobe. Therefore, cells on the ventral side of the pituitary should have ceased proliferation and differentiated earlier than more dorsally located cells. We hypothesize that gonadotropes are actually specified earlier than the appearance of their hormone markers. Based on the assumption that cell specification occurs when cells exit the cell cycle, we are analyzing when the majority of cells for each cell type undergo their last mitotic division. Preliminary data suggest that most gonadotropes exit the cell cycle by E12, implying that cell specification occurs much earlier than the appearance of LH or FSH. The results of this study will determine when cell specification likely occurs, enabling a better understanding of cell type differentiation in the pituitary gland.

doi:10.1016/j.ydbio.2006.04.269