Carla Hutson: English
Mentor: Christa Merzdorf -- Cell Biology & Neuroscience
Are the "wings" of zic1 expression a part of the pre-migratory neural crest?

The transcription factor Zic1 has several important functions during early embryonic development. zic1 regulates several of the genes that contribute to neural crest development in addition to roles it plays in development of the neural tube. The expression pattern of zic1 in *Xenopus laevis* can be described as a “horseshoe” with “wings” on either side. Although the “horseshoe” part of zic1 expression is along the edges of the neural plate, the “wings” lie outside this area. It has been suggested that these wings” are migrating neural crest cells, but this contradicts the fact that, in *Xenopus laevis*, neural crest cells do not begin to migrate until after neural tube closure is completed. *In situ* hybridization is a process used to observe gene expression in an embryo. A RNA probe is introduced into the embryo, and, through a series of reactions, produces a color stain only in the area of the embryo that the gene of interest is active. A double *in situ* hybridization follows the same basic protocol, but the expression of two genes are detected in the same embryo so that comparisons can be made. *en-2*, which defines the midbrain-hindbrain boundary, and *slug*, which is expressed only in the premigratory neural crest, will be used to in double *in situ* hybridizations with *zic1*. Using single- and double in situ hybridizations, this project will address the question of what the “wings” of *zic1* expression are.