

**Dean Ricker: Chemical & Biological Engineering**

**Mentor: Christa Merzdorf -- Cell Biology & Neuroscience**

***Does aquaporin 3b affect the number and or characteristics of calcium waves in the neural plate of Xenopus laevis embryos?***

Does aquaporin 3b affect the number and or characteristics of calcium waves in the neural plate of *Xenopus laevis* embryos? Aquaporin 3b (Aqp3b) is a water channel protein that is expressed in two lines of cells along the edges of the neural plate. The neural plate then rolls up into the neural tube through a process called neural tube closure. The neural tube is the precursor to the entire central nervous system. When aqp3b expression is inhibited, neural tube closure does not occur. My hypothesis is that neural tube closure is orchestrated by calcium waves triggered by Aqp3b. In order to test my hypothesis, I inject three different groups of albino *Xenopus laevis* embryos at the four cell stage. One group, the control, is injected with a tracer (Rhodamine Dextran) and GCaMP6 mRNA that is translated into a protein that fluoresces in the presence of calcium. A second group, the test group, is injected with the tracer, GCaMP6, and aqp3b morpholino oligonucleotide (aqp3b MO), which inhibits translation of aqp3b mRNA. The final group, the second control is injected with tracer, GCaMP6, and a modified aqp3b MO that does not inhibit translation. This second control tests whether it is the presence of an MO or the inhibition of expression that affects calcium waves. The embryos are then allowed to develop to neurula stage, at which point a microscope camera is used to take a time lapse of them. Thus far, my efforts in this project have been to learn the necessary techniques and gain a qualitative understanding of the characteristics of calcium waves from the imaging I have done so far. Going forward I will be collecting more images of calcium activity in each of the three groups and developing a method for analyzing the data.

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