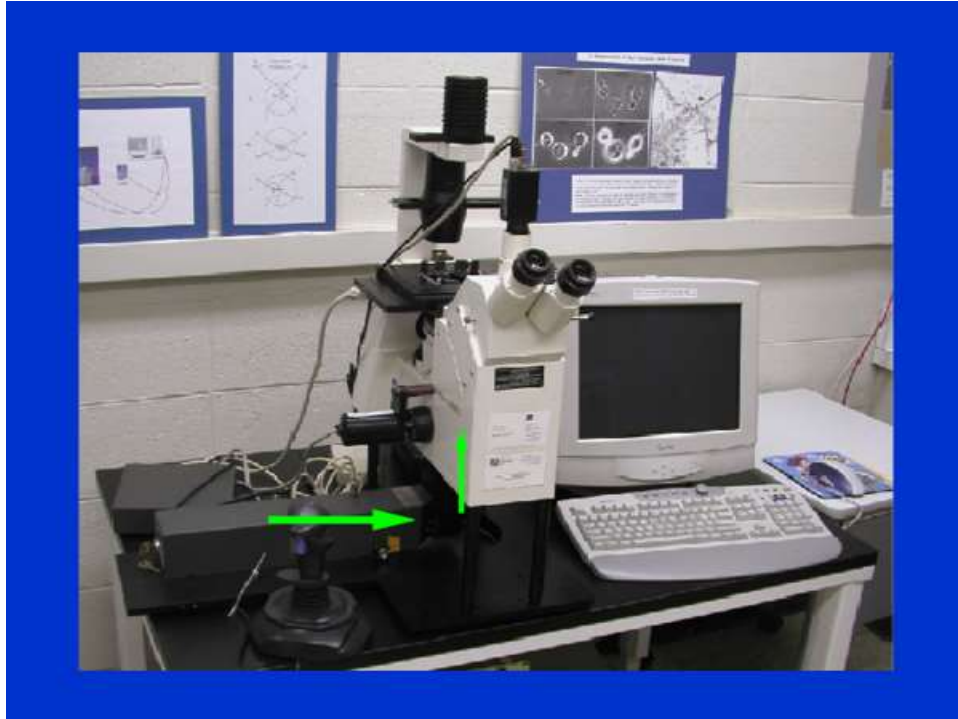


California State University, Fresno, Department of Biology presents:

“Target Preferences of Regenerating Retinal Rod and Cone Photoreceptors in vitro Revealed by Optical Tweezers”



In the healthy adult retina, photoreceptors make synaptic connections with bipolar and horizontal cells, but not with amacrine or ganglion cells. In the diseased retina, new inappropriate synaptic connections are often seen. The goal of this research is to gain an understanding of the processes at play in the reorganization of retinal neural circuitry in disease. The question asked here is do regenerating rod and cone photoreceptors prefer amacrine and ganglion cells (inappropriate) to bipolar and horizontal cells (appropriate)? We took an ‘in vitro’ approach using isolated adult cells from the salamander retina to study targeting of regenerating cell processes. Laser tweezers, a powerful tool developed for manipulating retinal cells in culture, were used to create rod-bipolar, rod-multipolar, cone-bipolar and cone-multipolar pairings and the reaction of the photoreceptors to the cells with which they were paired observed over 7 days. It was found that multipolar cells were more strongly attractive to rods than bipolar cells. Unexpectedly, multipolar cells appeared to be somewhat inhibitory to cone cells. Cone cells preferred bipolar cells. These results are reminiscent of the rod neurite growth into inner layers and the lack of growth of cones into these layers in certain retinal diseases.

Dr. Robert J. Clarke

END Technologist, Fresno Community Hospital

Friday, October 12, 2018

3:00 – 4:00 PM

Science 2, room 109