

Neurophysiology 430: Modeling Assignment for Kids Judge!  
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### **The Game of Growth Cone**

**Purpose:** To demonstrate the specialized role of the actin cytoskeleton in the growth cone during an axons progressive modulation and course through developing tissues. Secondly, we plan to illustrate how signals transduced from the environment play a vital role in the axonal guidance.

**Materials:** eight carpet squares, spray paint, construction paper, masking tape, 4 pieces poster board, markers, four cardboard boxes, four garbage bags, candy.

**Procedure:** The game will involve a relay race where the kids will be split into two different groups. The masking tape will label the start and the finish of the race. Down the middle of the 20-25 foot race we will place four cardboard boxes lined with garbage bags and with folded paper in them. The kids will use “actin” carpet squares to advance from the starting line to the finish or axonal target. The kids will have to stay on the carpet squares without stepping off, and recycle their actin from the back to the advancing front of the growth cone. On the way to the final target, the kids and their pioneer growth cone will stop at each box and choose one piece of paper which will give them contact-mediated attractive or repulsive information to either advance to the next box or return to the previous decision point. Which ever group makes it successful to the end first will be most successful in survival. All participants can then enjoy candy for their participation.

**Issues:** There are numerous types of signaling and molecules which play a role in growth cone guidance. Actin, although vital in the modulation and rearrangement of the growth cone, is only one component in an array of molecules which play vital roles in axonal propagation. Growth cones do not return to a previous origin upon repulsion from a site but instead bend around or change direction in entirety.