

Fertilization Experiment Plan

Readings:

Lab manual: pp 11-19 (both sections - 'Fertilization of the Sand Dollar' & 'Fertilization & Cleavage of the Sand Dollar')

Gilbert: 183-217, especially focus for lab on the sperm acrosome reaction (pp 191-192) in sea urchin, and both fast and slow blocks to polyspermy (pp 199-203) initiated by the egg following fertilization, also in the sea urchin. [The slow block is also known as the cortical reaction, and has significant similarities to the sperm's acrosome reaction.]

You should come with a plan for an experiment to test a hypothesis about the role of Na^+ or Ca^{++} ions in either the acrosome reaction, fast block or slow block.

Note that under each heading on p. 17 of the lab manual there are several possible experiments. For example, if you choose to investigate the '**Role of Ca^{++} in cortical granule reaction of the egg**' you need not try experiments both with A23187/ Ca^{++} in raising a fertilization membrane *and* with artificial activation of cleavage.

Keep it simple – this is an experiment you will (hopefully) actually be able to perform in a relatively short time available in lab.

Type up your plan and print out 2 copies, one to turn in at the beginning of lab and one to use in lab. The plan should be approximately 1 page in length (but no longer than 2). The plan should include what sets of conditions you will test and what controls you will have. Also include something about how you will analyze your results. [You may prepare a more detailed plan for yourself.]