* What did we learn from the review of the literature?
* Physical Design [Nathaly]
  + Why did we approach the project with an embedded kelp system?
  + What went into the physical design of the kelp?
* Testing [Nathaly]
  + Iteration 1: Basic Functionality Testing
  + Iteration 2: Canine Testing
  + Iteration 3: Hand Testing

Our literature review helps us determine that otters are rough players. Moreover, otters and dogs play similarly. For this reason, we followed the construction of standard dog toys to create a durable enrichment experience.

We made the decision to start experimentation with dogs given similar behaviors but also to ensure our initial designs were satisfactory before going into live testing with otters.

Therefore, we took subsequent steps towards the creation and testing of our final product, including focusing on physical design, technical design, testing, and data analysis.

The final toy design can be seen on the right. The physical design of the toy sought to mimic natural sea kelp. Thus, it bears a length of 5 feet of puncture-resistant canvas, a stronger polyester thread, and a jagged stitch. Accommodations for our technical components include pockets at each end of the toy, one for the handler IMU, and another for the otter IMU, that take advantage of triple layer protection by being encased in a 3D printed case that will go inside of a pouch and subsequently inside of the toy. The external flap protects the pouch access point to keep the otters from interfering and potentially hurting themselves or the device.

We underwent several rounds of testing to ensure both physical and technical performance. We started with basic IMU testing to ensure we were properly registering data and that the various IMUs were in proper communication. From there, we underwent canine testing to classify play and kill behaviors in our data and to test the durability of the physical design. Lastly, we mimicked the canine testing with human testing by performing similar movements on the toy for additional data.

The right images are the result of our canine testing showing lots of wet marks but no significant puncturing. Following is a video of the canine testing.