



Recreating Crumley: The setup (Updated)

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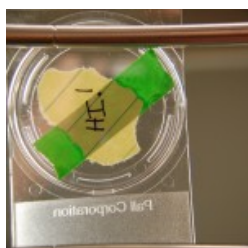
Hi!

I'm setting up the [Crumley Experiment](#) now that I have most of what I need. I ordered some more tobacco seeds but I have no idea when those are set to arrive so I'll begin a preliminary experiment with what I have to work out the kinks. If you are too lazy to click the link above then I'll recall for you that the experiment involved putting tobacco seeds in different percentages of D2O and tracking seed germination.

Their setup was to put seeds in petri dishes on moist cloth. I found these slide/petri dish hybrids called [Analyslide](#) that seemed perfectly suited to this and I'm going to omit the moist cloth and instead just fully submerge the seeds. The volume of the dish portion seems pretty low (less than 5mL is my guess) and the lids create a nice seal which will hopefully keep deuterium exchange to a minimum.

I built a photography system for the dishes which works a little like an inverted microscope. The slides sit up high on some cage system rods (from [Thor Labs](#)) and the camera is mounted on a rail below aimed upward. Currently I have to use a mirror to see in the eyepiece, but I'm thinking of equipping a webcam under the camera so I can see precisely what I'm looking at.

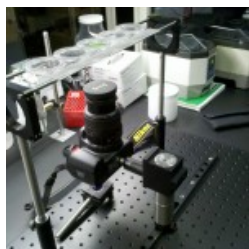
You can see the setup below with some dummy slides and some test images. I wanted to see how easy it would be to focus on something in the Analyslide so I wrote "HI!" on a piece of paper and taped it inside. It worked pretty well.



TEST IMAGE AT FARTHEST ZOOM



TEST IMAGE AT CLOSEST ZOOM



SAMPLE AND IMAGE ACQUISITION SETUP



ANOTHER VIEW OF THE SETUP



BARNSTEAD EASYPURE RODI

Update: I forgot to mention where the water comes from! It is very easy to overlook that fact since water is the most used chemical in the lab. When Koch talks about setting up osmotic pressure experiments he always mentions that water is the most overlooked variable because it is everywhere and we take it's effect on the experimental world for granted. Anyways:

All water is purchased from **Sigma-Aldrich**, except DI water which comes from a Thermo purifier in the lab. I purchased D₂O in a 100g amount bottle product number **151882**. Deuterium depleted water (DDW) is also purchased in 100g amounts and has the product number **195294**.

The DI water comes from a **Barnstead EasyPure RoDI** filtration system from Thermo Scientific, with part number D13321. I took a picture of ours for your viewing pleasure below.



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