So I’m working on your electroporation study power analysis and it’s going great. I know what I want to give you that is simple and actionable, I just need a couple details.

Quick recap just to make sure I remember everything. There were primarily two things that you were planning on measuring (tumor size & PFI). I want to leave PFI alone for now and focus on the much easier one, tumor size. This measurement is approximately normally distributed and shouldn’t ever come close to zero (tumor disappears). You’re starting with some tumor size in all mice and are applying various treatments (chemo only IL and IV, RE alone, and combinations) to measure percent shrinkage vs the starting tumor size. The clinically actionable outcome is if the shrinkage is at least 30% and we want this to happen at least 70% of the time. In addition, we want to try an adaptive design (up to two rounds) so that we don’t surpass time and resources required to actually do the trial. The limit we’d like to set is that there is at most up to 18 mice in each treatment arm and up to at most 9(?) in each round. We would like to be able to drop treatments going into round 2 based on round 1 outcomes and the rule for this is the same; at least 70% chance that the shrinkage is at least 30%. Does this all sound about right? Feel free to add in any additional important details that I might have missed.

Okay now for the first question: Do you have an approximation of the tumor size and it’s variance at the start? And if a tumor shrinks say 35%, do you have a guess as how the variance changes? For example the starting size is Normal( mean=10, var=1 ) and in the decreased size it might be Normal ( mean=7, var=2 ) meaning that the mean is lower but the variance higher vs where it started. I can incorporate unequal variances into the analysis without any problems whatsoever.

Second question: This is an easy one hopefully, what is the expected effect size that you think you’ll observe between the two conditions that are the most different? Say there is one treatment that you expect to \*really\* have major shrinkage, is major 50% shrinkage? 80%? 90%? I ask because I can make a power spectrum that goes through the effects that we might expect and rather than doing all of them and some are not actually possible, I’ll ask for what is possible.

Okay I think that’ll do it for now!