This week I looked at switch regulators to buy to provide the DC/DC step up that we wanted. I found two that looked like they would work. The first part we found was the LT3489, which had an adjustable output of 0-40V, Fig 1. The advantage to this circuit is that it had 8 pins and was simpler to build and calculate parts. This piece had a simulator from Linear Technologies which we used to determine output current and output voltage as to find the output power. The data we collected from that can be seen in graph 1 and 2. The output voltage is around 48V and the current is around 20 mA. This yields a power of .96W, which is close to our power output need that are overestimated to begin with.
Graph 1 output voltage
Graph 2 Output Current

The other switch regulator we looked at was the LTC3814-5, seen in Fig 2. It has an adjustable output voltage of 0-60V. This allows us a factor of safety if we are aiming for 40V. This circuit is more complicated with 16 pins and more components, such as two MOSFETs. We brought both these parts to Dr. Ayers again so see what his thoughts on them were. He did not tell us which one to use but seemed to be leaning towards the LTC3814-5. He told us to keep the switching frequency lower to provide more efficiency and for better testing. Then we went to calculate the component pieces. We are almost done calculating these and will order them by Monday. We still need to pick up our passes for the animal facility.
Fig 2 LTC3814-5