~~Hypothesis: Cancer becomes more likely with an increase in size and lifetime of organisms. As species increase their possible reproductive lifespan, as well as their size, the selective pressure of cancer is also expected to increase. P53 is a famous tumor suppressor protein in humans, and has homologues in many species of animals. Assuming cancer is a strong enough selective pressure, homologues of p53 are expected to show relative expression to body size, as well as high conservation in animals requiring cellular senescence to combat cancer.~~

~~I'm not exactly sure how I could get expression information from pure DNA, but I was thinking about looking at regions of DNA that p53 may bind, or even enhancers for p53 itself.~~

~~Revised: Cancer rates increase with age. In mammal species with longer average lifespans, the selective pressure of cancer should increase. P53 is a well known tumor suppressor protein in humans, and has homologues in many species of animals. I hypothesise that mammals with higher average lifespans will show signatures of selection in p53 homologues. Utilizing open source sequence data from NCBI, I will use Tajima's D and MK tests to evaluate selection. Signatures of selection in p53 would be consistent with p53's role as a tumor suppressor protein in mammals that undergo senescence.~~

Revised Revised: Cancer rates increase with age. In mammal species with longer average lifespans, the selective pressure of cancer should increase. P53 is a well known tumor suppressor protein in humans, and has homologues in many species of animals. I hypothesise that changes in mammalian lifespan will be linked with changes in p53 evolution. Utilizing open source sequence data from NCBI, I will use dN/dS and maximum likelihood tree building to determine different p53 evolution rates. I will then compare these rates to the average lifespan of the different species of mammals. Signatures of evolution in p53 with changes in average lifespan would be consistent with p53's role as a tumor suppressor protein in mammals that undergo senescence.