This is data from Laura Troyer's experiment on October 22 and November 7.						
Regular Strain' (E. Coli MG1655)						
Original Population Data						
cell colony count	dilution factor	volume plated		Rifampicin coloni	volume plated	
453	10^6	.100 mL		0	.200 mL	
313	10^6	.100 mL		0	.200 mL	
328	10^6	.100 mL		0	.200 mL	
31	10^7	.100 mL		0	.200 mL	
24	10^7	.100 mL		0	.200 mL	
51	10^7	.100 mL		1	.200 mL	
				1	.200 mL	
				1	.200 mL	
				1	.200 mL	
				1	.200 mL	
				1	.200 mL	
				1	.200 mL	
				2	.200 mL	
				3	.200 mL	
				7	.200 mL	
				9	.200 mL	
				29	.200 mL	
				32	.200 mL	
Mutator Strains						
ME120						
cell colony count	dilution factor	volume plated		Rifampicin coloni	volume plated	dilution factor
215	10^6	0.090 mL		0	.200 mL	10^3
155	10^6	0.090 mL		0	.200 mL	10^3
241	10^6	0.090 mL		0	.200 mL	10^3
22	10^7	0.100 mL		0	.200 mL	10^3
21	10^7	0.100 mL		0	.200 mL	10^3
30	10^7	0.100 mL		0	.200 mL	10^3
				0	.200 mL	10^3
				0	.200 mL	10^3
				0	.200 mL	10^3
				0	.200 mL	10^3
				0	.200 mL	10^3
				0	.200 mL	10^3
				1	.200 mL	10^3
				1	.200 mL	10^3
				2	.200 mL	10^3

ME121						
cell colony count	dilution factor	volume plated		Rifampicin coloni	volume plated	dilution factor
117	10^6	0.090 mL		0	.200 mL	10^3
154	10^6	0.090 mL		0	.200 mL	10^3
241	10^6	0.090 mL		0	.200 mL	10^3
22	10^7	0.090 mL		0	.200 mL	10^3
16	10^7	0.090 mL		1	.200 mL	10^3
11	10^7	0.090 mL		1	.200 mL	10^3
				1	.200 mL	10^3
				1	.200 mL	10^3
				1	.200 mL	10^3
				1	.200 mL	10^3
				2	.200 mL	10^3
				2	.200 mL	10^3
				3	.200 mL	10^3
				3	.200 mL	10^3
				3	.200 mL	10^3
				5	.200 mL	10^3
Notes on calculating N[0], also called N in eqn. 10:						

Use the data from the non-rifampicin plates (left three columns) to find the expected population of the cells immediately before being plated on both the rifampicin and non-rifampicin plates. The idea is that we dilute some of the original cell culture until we get a number that is most likely going to be reasonable to count. (We are assuming that when we plate the cells, we can spread them far enough apart that in a few days when colonies form, each colony originated from a single cell.) Let's say we didn't dilute beforehand, then we would probably have a starting concentration around 10^9 cells/mL of culture. If we plate 0.1 mL of that culture, then we expect to have around 10^8 cells to count on that plate. That is an unreasonable number! Ideally, we want to have something on the order of 10 to 100. If our starting concentration assumption is correct, how much should we dilute the starting population before plating on the non-rifampicin plates?

To calculate the number of cells that are plated on each rifampicin plate, we first need to find the starting concentration of cells (cells/mL) from the non-rifampicin data and then multiply that by the volume (mL) put on each rifampicin plate. Looking at the units, what seems like a reasonable way to calculate the starting concentration? Now multiply this number by the volume plated on the rifampicin plate. Note: because the mutator strains have a higher mutation rate and thus more survive on the rifampicin plate, both mutator strians were diluted 1:1000 before plating. This means that in the .200 mL concentration, we have actually plated only 0.000200 mL of the undiluted starting cell concentration.