Formulas from the paper:

$$Newly\ born\ cells = \frac{2^t}{\prod_{k=1}^{t}(1+\frac{k}{\gamma})}$$

$$P_m = \frac{t}{\gamma+t}$$

$$Accumulated\ cell\ number\ = \sum Newly\ born\ cells\ \times P_m$$

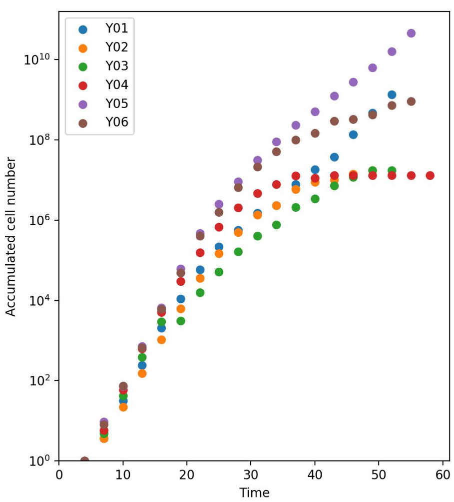
P_m is the **probability of mortalization**. t is the generation unit, that is "day" in our case. γ is a constant that indicates how fast the cells are dying. Precisely, γ is the number of generations while the probability of mortalization reaches 0.5. For example, $\gamma = 15$ means at the 15th day, the probability of mortalization is 0.5.

There is not "accumulated cell number" in the table. I calculated the growth rate of population by $(cell\ number\ at\ t\ )/(seed\ number\ at\ t-1)$. I added a new row at the bottom.

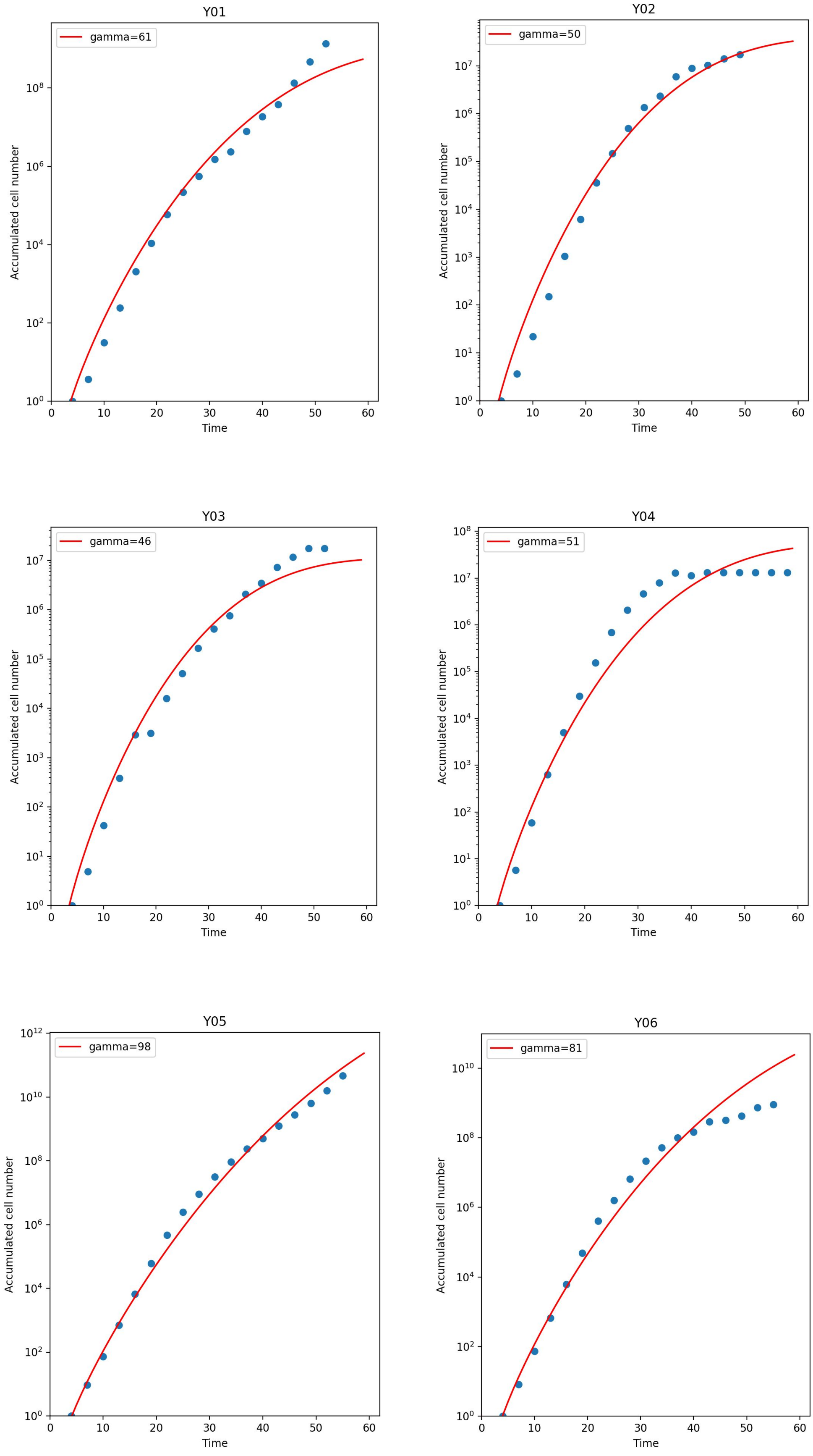
Days	**7**	**10**	**13**	**16**	**19**	**22**	**25**	**28**	**31**
seed	430000	430000	430000	430000	430000	430000	430000	430000	430000
cells		1556250	3737500	3343750	3637500	2281250	2318750	1587500	1100000
Population doublings	0.0	1.9	3.1	3.0	3.1	2.4	2.4	1.9	1.4
Cumulative Population Doubling	0.0	1.9	5.0	7.9	11.0	13.4	15.9	17.7	19.1
Population doubling time		38.8001	23.0794	24.33206	23.37254	29.90759	29.61819	38.2095	53.13281
rate	1	3.61919	8.69186	7.776163	8.459302	5.305233	5.392442	3.69186	2.55814

The **accumulated cell number** at a certain day t, is the product of all growth rates before t (including at t): $\prod_{1}^{t} growth\ rate$

I treated day 7 as the first day, here is the plot of Y01 - Y06:



Approximated γ and curve for every sample:



The curve, somehow, doesn't start at 0 point. I haven't figure out why… To have a better match, I moved the starting time of samples from day 0 to day 4. I'm not sure if this is a right thing to do, though.

Here is a plot contains all the data points and curves: