Article 3: questions

Klumpp, S., Scott, M., Pedersen, S., & Hwa, T. (2013). Molecular crowding limits translation and cell growth. *Proceedings of the National Academy of Sciences.*

Question 1:

What is the difference between the model introduced by Scott et al. and this one?

Answer 1:

Unlike the model introduced by Scott et. al., the theory presented by Klumpp et. al.

1. splits the ribosome-affiliated proteome sector into a ribosomal fraction and a fraction of T-proteins
2. allows for a growth-rate dependence of the translation speed, which depends on the T-proteins.

Question 2:

In Fig. 1A, why is there a non-zero ribosome fraction when the cell's growth rate is zero?

Answer 2:

Because there is a fraction of ribosomes that are inactive ($\phi_{Rb,0}$ in Eq. 3), i.e. they do not contribute to the cell's growth rate.