The partitioning of protein between the different portions of the cell is the major difficulty in the synthesis of the illustrations; other components such as lipid and nucleic acid may be read directly from Table I in the chapter by Schaechter and Neidhardt[1]. Protein comprises 55% of the dry weight of the cell (all percentage values will be percentage of the dry weight of the cell). The amount of protein in the outer membrane is calculated from Table I in the chapter by Nikaido and Vaara[1], assuming cylindrical proteins and a density of 1.33 g cm^{-3}, yielding a value of 6% of dry weight. Widely differing values of the percentage of protein in the inner membrane have been reported, ranging from 70:30 protein:lipid to 50:50. I used an intermediate value of 60:40 protein:lipid, yielding a value of 10% of dry weight. The concentration of protein in the nuclear region is also not well defined; Woldringh and Nanninga[2] use a value of 20 mg ml^{-1}, comprising about 1% of dry weight. This leaves about 38% of the dry weight of protein in soluble form. The protein components of ribosomes comprise 11% of this, leaving 27% soluble proteins. With a periplasmic volume of 0.057 μm^3 and a cytoplasmic volume of 0.6 μm^3, and assuming that the concentration of protein is the same in both compartments, 2% is in the periplasm and the remaining 25% is in the cytoplasm.

An average polypeptide has a molecular mass of 40 kDa (Ref. 1), so 25% of the 2.8×10^{-13} g of dry weight corresponds to about 1 000 000 individual polypeptide chains in the cytoplasm. However, most proteins do not exist as monomers. Using the concentrations of 25 soluble proteins reported by Albe *et al.*[4], we obtain an average oligomerization state of about 4, so there are about 250 000 protein entities in the cytoplasm.