Cell Biology by the Numbers - Exercise 3

Overall macromolecular composition of an average E. coli

1) Read "Order-of-Magnitude Biology Toolkit" and suggest one value you would like to see added to the list.
2) Choose one vignette to read from Chapter 2 of "Cell Biology by the Numbers" textbook, related to your research or to your fields of interest, and write us the title of the vignette you read. If you have anything to add (something you found especially interesting / new insights / a cool side-calculation) - feel free to write us that too!
3) Solve the following Cell Sudoku (Cell-duko!). Write as comments any assumptions and calculations you made that you are not sure of:

Macromolecule	***Percentage of total dry weight***	***Weight per cell (fg)***	***Characteristic molecular weight of one molecule (Da)***	***Number of molecules per cell***
Protein	?	?	?	?
RNA (total)	?	60		
- 23S rRNA		32	1×10^6	?
- 16S rRNA		16	5×10^5	?
- 5S rRNA		1	4×10^4	?
- transfer		9	2×10^4	?
- messenger		?	1×10^6	?
DNA	?	9	3×10^9	?
Lipid	?	27	800	?
Lipopolysaccharide	?	9	8000	?
Peptidoglycan	?	9		1
Glycogen	?	9	1×10^6	?
Metabolites and cofactors pool	3	?		
Inorganic ions	?	3		
Total dry weight	100	?		
Water (70% of cell)		?		
Total wet weight of one cell		1000		

[a]In balanced growth at 37°C in glucose minimal medium, mass doubling time, g, of 40 minutes. Based on classic table from Neidhardt et al.