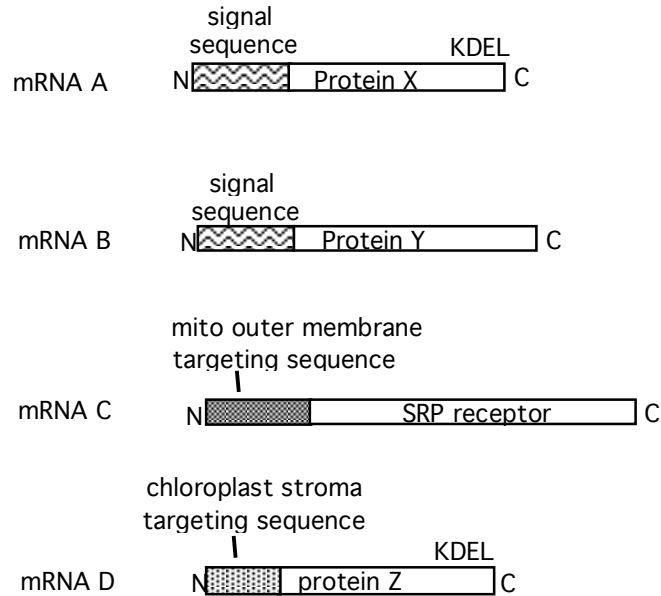


A molecular biologist has generated several mRNAs *in vitro*. The mRNAs encode the protein sequences shown below.



1. If mRNA A is injected into cells, where would you expect to find Protein X located?

Protein X would be found in the lumen of the ER.

2. If mRNA B is injected into cells, where would you expect to find Protein Y located?

Protein Y would be found outside of the cells, as it would have been secreted.

3. If mRNA D is injected into plant cells, where would you expect to find Protein Z located?

Protein Z would be found in the chloroplast stroma.

4. If mRNA D is injected into animal cells, where would you expect to find Protein Z located?

Protein Z would be found in the cytosol.

5. If mRNA A and mRNA C are simultaneously injected into cells, where would you expect to find Protein X located?

Protein X would be found in the lumen of the ER and in the mitochondrion.