

*Nucleo-Cytoplasmic Exchange: Keeping in mind the fact that cells like to be as efficient as possible, why is it that some mRNA is translated in one place and then again transported to another place? Why would they have such signals that tell it to go to one place to be translated then go to another?*

Actually, with regard to translation, it's an either/or situation. Either you're translated in the cytoplasm, or you're translated at the surface of the ER. The one thing that all proteins have in common that are translated at the ER is that there are parts (or all) of them that are never supposed to see the cytoplasm. So it makes sense to synthesize them in the ER, where they can maintain their separation from the cytoplasm at all times on their journey. You may be wondering why not translate at the Golgi if you're supposed to end up in the Golgi, but as we'll see, the Golgi is busy enough already with its own jobs. So it really does "obey" the efficiency theory that you suggested. But just because it's as efficient as possible doesn't make it easy!

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