in the mRNA we know that there are codons and you have tRNA that contain anti-codons. Fi there is a sequence of three nucleic acids that represents an amino acid the precise anti codon will recognize it, bind to it and in the process chaining the amino acid to the tRNA.

What happens then when a ribosome has this synthesis of peptides started? Your first sequence is usually 6-8 hydrophobic amino acids. Which constitute the signal peptide. So the sequence comes out. So what we have at this point, is a mRNA, ribosome, tRNA and a signal sequence coming through from the complex. Now how does this complex find its way to the ER. This whole process that we just talked about is happening in the cytosol and not in the ER. Well the complex is brought to the ER by SRP(signal recongnition particle).

So why doesn't the ribosome go on to synthesize more amino acids? I will tell you very soon. Well the SRP is a protein that floats around in the cytosol. What happens is that this signal recognition particle wiil recognize both the signal sequence and the ribosome. So when this complex is formed only when you have the mrNA , tRNA, RNA and the signal sequence can the SRP bind to it. So the SRP will bind to this complex and after it is bound to the complex it is still in the cytosol. After this complex binds to the SRP, translation stops. Now this is still in the cytosol, so how does this SRP and the complex brought to the ER? This is because at the ER you have the SRP receptor. It has specificity to the signal recognition particle only after the SRP has been bound to the ribosomal complex. Now this binding is very important now you have the ribosome bound to the ER, what it will do is that it will align the whole complex (SRP+ ribosomal complex) to the translocator protein.

Preview from Notesale.co.uk
Page 2 of 4

So what is the translocator protein. This is also an ER membrane protein. Well the binding of this whole complex with the SRP receptor , what happens is that it will align this whole complex with the translocator protein. First the translocater protein will bind to the ribosome. The SRP binds to the signal recognition particle but the receptor brings it to a point where the ribosome will bind to the protein membrane of the ER membrane. Why is this so important? Once the ribosome is bound to the translocater protein, there is a pore in the ribosome which contains the mRNA and the nascent peptide. And there is a pore in the membrane . The pore in the transolcator protein of the membrane only appears after the signal sequence binds to the translocator protein. If the signal sequence binds to the translocator protein, then all of a sudden between the ribosome and the translocator protein and the ribosome you have a continuous channel. The ribosome will be continuous with a channel that actually goes through the membrane. Now this passage will not appear until the signal peptide sequence binds to the translocator protein. Once this happens then you have a continuous channel where the synthesized signal sequence will go through. And the signal sequence as I said are hydrophobic amino acids. Once it goes in it gets imbedded in to the hydrophobic part of the membrane. After it gets through, the signal sequence that is imbedded in the ER membrane, then translation will continue. What happens is that once the signal sequence gets imbedded in the ER membrane you have an enzyme that cuts off the signal sequence from the nascent peptide. This event is caused by signal peptidase. It is a membrane protein that functions as an enzyme and it is close to the translocator protein. So you have the insertion of the signal sequence in the membrane and signal peptidase cuts it off and the protein is allowed to move into the lumen of the ER and the last event deals with chaperon proteins. What you have to ask, the nascent peptide is already in the membrane, but you must have something to pull the