Every day, every moment each cell of our body makes thousands and millions of chemical molecules and among others –PROTEINS. These molecules are build of the smaller units named amino acids. Some proteins are engineers – they know how to build molecules. But even these clever proteins need a blueprint to join right number of right amino acids in right order. The blueprints are encoded in DNA in a very simple way: there are four nucleotides (named in brief A, C, G and T) in DNA and twenty amino acids in proteins, therefore each amino acid has its name written in DNA and this name (codon) is composed of three nucleotides. There is 64 names and 20 amino acids, so some amino acids have two or even more different names. Genes are fragments of DNA where names of all amino acids of the protein are written in right order – these are blueprints. There are more players necessary to properly reed the blueprints (we call this process GENE EXPRESSION), named RNAs – a special molecules, similar to DNA and also made of nucleotides. One of them works like a messenger (mRNA) – takes a blueprint from DNA in a process named TRANSCRIPTION. There are special proteins, also engineers, who are specialized in making decisions which blueprint should be transcribed in a given moment, in a given cell. One of such engineers is ELONGATOR - the hero of this story, but let me explain more, before I will focus on him. mRNA brings the blueprint to RIBOSOMES – highly specialized engineers who know how to build proteins – they take a blueprint, read it carefully and co-work with special helpers – tRNAs who bring amino acids. This process is named TRANSLATION. tRNAs are small, shaped like the L letter and carry the amino acid on one arm, while the other one have a special key-anticodon– three nucleotides matching the name of this amino acid- we say they are complementary. tRNAs put amino acids in the right place according to the blueprint. But tRNAs have a problem – they are small and very similar to each other, ribosomes could easily mix them up. To avoid it, tRNAs have attached a lot of small chemical moieties - simply to make them different. There are special proteins making this moieties – and… guess what! One of them is… ELONGATOR! Yes, the same protein works in TRANSCRIPTION and TRANSLATION. Elongator is particularly needed to modify tRNAs which carry amino acids with names ending with AA. To match such names tRNAs have anticodons with very special nucleotide U in particular 'wobble" position which means that it has a lot of freedom to move. When this wobbling U is not modified by ELONGATOR and other proteins, it wobbles a lot and tRNAs work less efficiently, ribosomes still work but translation is slowed-down and there is less of important proteins! The consequences are serious, people and animals with such condition, get ill, plants have deformed leaves and roots and cannot defend against pathogens. We know all of this about ELONGATOR but usually, when we learn something, it is only about its role in TRANSCRIPTION or only about TRANSLATION. Finally, we are not sure what exactly and how exactly Elongator is doing. So far, in our lab we were also busy only with investigating the Elongator role in transcription but recently we have noticed something interesting – when looked at plant named Arabidopsis where Elongator was demaged, we saw it was different than normal plants – had longer stem and more upward leaves – just what plants do while having problems to see the light. We call it "photomorphogenesis defect". We compared our mutant to plants with spoiled proteins which normally work together with Elongator to modify tRNAs at special U. We noticed that such plants have upward leaves but normal stem which means that whatever Elongator is doing in translation, is required only for leaves but what Elongator does during transcription – is important for stem growth. We want to use special computer programs to check all blueprints in Arabidopsis, to find these containing particularly abundant names matched by tRNAs modified by Elongator. We will then make experiment named RNA-seq to read all blueprints in the MUTANT and normal plant to see which are changed in number in MUTANT (because Elongator does not help in transcription). We will also do so-called Ribo-seq to to check which mRNAs are slowed-down during translation (ribosomes work slowly). Finally, we will also isolate and compare all proteins of MUTANT and normal plants using the technique named DIFFERENTIAL PROTEOMICS, to know which proteins are missing. When we put all our results together, we will know what really ELONGATOR is doing in TRANSCRIPTION and what keeps him busy in TRANSLATION. So, we have a perfect opportunity to find out how ELONGATOR works to integrate TRANSCRIPTION and TRANSLATION which will be something new.