**Version 05042022**

1. **Download an unknown sequence for this version:**

CTCTAAACCTTATGACAGAGCAATTGCAAGATTCTGGGCAGACTTTCTGGACAAGAAGTTTTATGAGGCGGGGGCACGCTTATTAATGAGCAAAGGGGAAGCACAGGAGGAAGCGAAGAGAGATGTAATCGAAAACCTGGGAATAATGGAAGGAGCTCTGAAAGAGGTTTCTGGCGGGAAGCCGTATTTCGGGGGAGAAACGTTTGGATTGATAGATATTGCGTTCATACCGTTTACTGCTTGGTTTCTTACCTACGAAACCCTTGGAAACTTCAAGATATCGTTGGATGAGAAGTTTCCAAGGTTGGGGGCGTGGGCTAAGAAATGTATGGAGAGGAAGAGCGTTAGCACCCGACTGGAAAGCGGGCAGTGAGCGCAACGCAATTAATGTGAGTTAGCTCACTCATTAGGCACCCCAGGCTTTACACTTTATGCTTCCGGCTCGTATGTTGTGTGGAATTGTGAGCGGATAACAATTTCACACAGGAAA

• Determine if the sequence is „contaminated“ with any plasmid.



• If this sequence is contaminated, "clean up" and write the clean sequence in **FASTA format**.



>clean protein

CTCTAAACCTTATGACAGAGCAATTGCAAGATTCTGGGCAGACTTTCTGGACAAGAAGTT

TTATGAGGCGGGGGCACGCTTATTAATGAGCAAAGGGGAAGCACAGGAGGAAGCGAAGAG

AGATGTAATCGAAAACCTGGGAATAATGGAAGGAGCTCTGAAAGAGGTTTCTGGCGGGAA

GCCGTATTTCGGGGGAGAAACGTTTGGATTGATAGATATTGCGTTCATACCGTTTACTGC

TTGGTTTCTTACCTACGAAACCCTTGGAAACTTCAAGATATCGTTGGATGAGAAGTTTCC

AAGGTTGGGGGCGTGGGCTAAGAAATGTATGGAGAGGAAGAGCGTTAGCA

• Translate the „cleaned“ sequence and find out how long the longest identified peptide is and in which reading frame (ORF) is located? Frame +2, 87aa



• Does this peptide encode a meaningful protein? What? Glutathione S-transferase (GSTp)



• What organism is the sequence likely to come from?

*Ginkgo biloba*

**B) Find a protein sequence called “SUPERMAN” from *Arabidopsis thaliana***

• What is the accession number and function of this protein? NP\_188954 / Q38895





*Probable transcriptional regulator considered as cadastral protein that acts indirectly to prevent the B class homeotic proteins APETALA3 and perhaps PISTILLATA from acting in the gynoecial whorl. Principal function is to balance cell proliferation in the third and fourth whorls of developing flowers thereby maintaining the boundary between stamens and carpels. May fulfill this role by repressing genes implicated in cell division. Plays equally a role in the determinacy of the floral meristem. Is also required for normal ovule development.*

• How many times would this sequence be digested with pepsin (pH1.3)? 35 times



• Does the sequence have any probable transmembrane helices? None



• Design primers to **detect this gene** (so that the amplification product is no longer than 500 bp).

e.g.: 

• Is there a **human homologue** of SUPERMAN? None

