**Version I 19.5.2023**

**A: Download the sequence NM\_000946.3**

1. What does this sequence encode?
2. How long is the coding sequence and how long will the translated protein be?
3. Manually design primers for PCR amplification of the CDS.
4. Compare the designed primers with the sequence of the mRNA and the CDS.
5. Is there a restriction enzyme that would cut the sequence of the third exon exactly once?

**B: Work with following peptide sequence:**

LALASVFWSISYYSSPFAFFYLYRKGYLSLSKVVPFSHYAGTLLLLLAGVACLRGIGRWT

NPQYRQFITILEATHRNQSSENKRQLANYNFDFRSWPVDFHWEEPSSRKESRGGPSRRGV

ALLRPEPLHRGTADTLLNRVKKLPCQITSYLVAHTLGRRMLYPGSVYLLQKALMPVLLQG

QARLVEECNGRRAKLLACDGNEIDTMFVDRRGTAEPQGQKLVICCEGNAGFYEVGCVSTP

LEACYSVLGWNHPGFAGSTGVPFPQNEANAMDVVVQFAIHRLGFQPQDIIIYAWSIGGFT

1. To which human protein this peptide probably belongs?
2. Does this peptide contain any transmembrane helices?
3. What is molecular weigth of this peptide?
4. How does a given peptide sequence differ from an identified (human) sequence (within the same segment)?
5. Write down the identified mutation.

* **2025:** we did not cover these parts, they won´t appear in the exam