1. (2 points) Find the protein associated with accession number NP_001776. What is the name of this protein and in what species is this protein found?

Questions 2-6 are related (1 point each)
2. What disease is associated with the PRPF8 gene?


4. What name is given to the protein product of this gene?

5. Give a refseq accession number for the protein product of that gene.

6. What is the degree of amino acid identity between that human protein (your answer to number 5) and the corresponding mouse protein? (give the number of identical amino acids / length of match for the entire alignment).

7. (1 point) What is the map position for the gene encoding the protein in question 1 (NP_001776) in humans (e.g. 10q11 would be a map position)

8. (2 points in two parts) Use tblastn -- protein query and nucleotide database -- to search the Homo sapiens genomic DNA sequence (with the protein sequence CAA57975. (1 point) What result do you get (describe your top hits and report their E values)? (1 point) What gene is the best match (use ABC1 format)?

9. (2 points) Now use blastn -- nucleotide query and nucleotide database -- to search the same database with the nucleotide accession X82649 (the nucleotide sequence from which the protein accession used in 8 was generated). (1 point) What result do you get (describe your top hits and report their E values)? (1 point) Does this query find the same region? Why or why not? Which is more accurate?

10. (2 points) The human U1A protein (NP_004587) binds U1 snRNA while the homologous human U1B" protein (NP_003083) binds U2 snRNA. What is the evidence for this statement? *

11. (6 points in four parts) In some species there is a single homolog for U1A and U2B". An example is Drosophila melanogaster. (1 point) What is the refseq accession number for the Drosophila protein that is homologous to both? (1 point) Does this protein bind U1 snRNA, U2 snRNA or both? (2 points) What is the evidence for this statement? * (2 points) Make an alignment of these three proteins (e.g. with clustalw). Attach your result.

* Evidence. Please write between 100 and 400 words (no more) including a citation to the primary literature and a description of the experiment that makes the point. Failure to cite primary literature and describe the nature of the evidence will result in no credit for these questions.