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Bioinformatics

Assignment 6

1.) How many splice variants does the human BRCA2 gene have? 15

2.) How many exons are in the longest splice variant(s) of BRCA2? 27

3.) How many introns are in the longest splice variant(s) of BRCA2? 11

4.) What chromosome is this gene on? Chromosome 13

5.) What are the gene synonyms of BRCA2?

Gene synonyms: BRCC2, FACD, FAD, FAD1, FANCD, FANCD1, XRCC11

6.) How many orthologs of human BRCA2 are found in the African ostrich? 23 orthologues

7.) In the human hemoglobin transcript ENST00000330597.5 HBG1-201, what is the sequence of the second exon? 7. GCTCCTGGTTGTCTACCCATGGACCCAGAGGTTCTTTGACAGCTTTGGCAACCTGTCCTCTGCCTCTGCCATCATGGGCAACCCCAAAGTCAAGGCACATGGCAAGAAGGTGCTGACTTCCTTGGGAGATGCCACAAAGCACCTGGATGATCTCAAGGGCACCTTTGCCCAGCTGAGTGAACTGCACTGTGACAAGCTGCATGTGGATCCTGAGAACTTCAAG

8.) What is the length of the first intron of this hemoglobin transcript? The length is 86bp

9.) How many pseudogenes are in the narwal genome annotation (NGI\_Narwhal\_1, INSDC Assembly GCA\_005190385.2)? 723

Using Genomicus web-code version 2021-08-15 and database version 109.01, answer the following questions:

10.) What two genes flank BRCA2 in the human genome? N4BP2L1 and ZARIL

11.) What genes flank the sonic hedgehog gene(s) in the betta fish? Rnf32 and rbm33a

12.) How many copies of shh are in the betta fish? 19,556,708 – 19,563,316

13.) How many copies of shh are in Atlantic salmon? 9,678,850 – 9,686,853

Using NCBI answer the following questions:

14.) How many genome assemblies are available for Bos taurus on NCBI? 26 genome assemblies

15.) How many of the above assemblies are assembled into chromosomes? 8 are assembled into chromosomes

16.) How many chromosomes does Bos taurus have excluding sex chromosomes? 29

17.) Which cow chromosome is the longest? Chromosome 1

18.) How many microRNAs are annotated on chromosome the assembly: Bos taurus ARS-UCD2.0? 1115

19.) If I am interested in learning more about the gene associate with the transcript: NM\_001104822, what is a good publication to read on PubMed?

Gene evolution and gene expression after whole genome duplication in fish: the PhyloFish database

20.) What is the translated coding sequence of NM\_001104822?

mRNA linear VRT 03-APR-2024