The Gene Report – Bio315

Before starting to write this report, please read this sheet completely and carefully.

Please:	**Please do NOT**:
Use whatever font you want.	Use a silly, tiny, or huge font
Double-space, one-inch margins	Unnecessarily waste page space
Print on both sides	Use a title page (total waste of paper)

Style – The report should be a *narrative*, meaning easily readable prose organized into complete sentences and structured paragraphs. No bullet lists or unexplained images. Most or all sections should include figures such as images, charts, data, etc., but these should never be assumed to stand alone without explanation. The figures/images are there to *support* what the text says, not stand in place of text. All figures must be referred to in the text and contain a title and, if necessary, a legend.

Headings guide the reader through the report and the narrative sections below should all be marked with headings (**bold**, on their own line). All sections should be one full paragraph, except the introduction, which should be two. Paragraphs are 3-6 complete readable statements with a topic sentence.

Introduction – Before you begin with technical details, please write two paragraphs that introduce the reader to your gene of interest. The first paragraph should provide general information about the protein your gene encodes, what it does and how it does it, when and where it operates, major structural features (include an image of the structure, if known), diseases it has been linked to, and any other information that is striking or interesting. The second paragraph should be a brief summary of the discovery of this gene and any major findings about its connection to human health and disease. References needed! (Please refer to the "tips" section for help in how to find key articles about your gene of interest.)

Genomics – Summarize the genomic location of your gene. Say what chromosome it is on and give the exact coordinates. Indicate the overall size of the gene as well as how many exons it has and how many splice forms have been described. Does it share its promoter region with another gene? What are the closest neighbors? Are there CpG islands, Chromatin modifications, DNase I hypersensitivity? At least one graphical representation would help here. More is better.

Expression – Describe in which tissues this gene is expressed and any transcription factor binding sites that are found in the gene. Images are crucial here, but require explanation. If you can find at least one article that definitely shows regulation by a specific transcription factor, say so and include the reference.

Variation – Write up a brief summary of some of the known variants in the human population for your gene, specifically mentioning at least two types of variations. Are there different alleles? If so, describe them. If any of this variation contributes to diseases, this should definitely be mentioned here, again, cite the article in which this was discovered/described.

Evolutionary Conservation – Is this gene found broadly across animals and other kinds of organisms, or more narrowly in primates or mammals or what? Is it highly conserved or does it show a lot of divergence in different species. No need to be highly detailed, but some quick numbers and examples will help. Once again, an image would also help.

References – For this report, you don't need to reference every piece of information, since almost all of it will come from the genome browser. However, for the statements in the introduction and other sentences that reference a specific discovery, you will need to cite research articles. Format in any style you want, but use a standard academic style and be consistent.

Appendices – Include the following as appendices:

1. Full genomic sequence, with coordinates listed, with exons and introns clearly marked through font color or other means. (Yes, you can simply copy from the Genome Browser, but make sure you include a header that gives coordinates.)
2. mRNA/cDNA sequence of the most abundant or important splice form.
3. Protein sequence

Tips for finding articles for the introduction

- The Entrez Gene page at the NCBI has a list of important articles about the gene. You can scan through these and read the abstracts and introductions to learn important things about the gene. You don't need to do hours and hours of reading. 20-30 minutes of reading abstracts and introductions will give you a good sense of what is known about your gene. When you write the introduction, you should cite specific articles for each thing you say. (Try not to rely on "review articles," and instead cite primary research as much as possible.)
- Search Google Scholar for articles about your gene. Google scholar sorts its results roughly by how many times the articles have been cited, which means the most important and earliest papers about your gene should be in the first page or two of results.
- In Google Scholar (and other databases), you can also restrict your search results to a specific date range. This is often helpful for finding the paper that first announced discovery or characterization of your gene and other early discoveries.

Good luck!