Title: <result> associated with <phenomenon> in this <context>

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# Abstract

The beginning of the abstract sets up the problem that you are addressing in this manuscript. You go on to state how you tried to address this problem (approach, super brief summary of how you went about doing this). Then you summarize the results you are presenting, about a sentence for each major result. Then you conclude by stating the overall significance of the work and/or why it is important moving forward.

# Introduction

The introduction is where you set the reader up to know what has been done to lead up to the results you are presenting. Your introduction should be specific to the results you include, not broadly discuss the entire history of any work ever done in this field. The idea is to provide the reader with a background knowledge that will help them to understand and appreciate the work you are presenting in the manuscript.

The majority of your citations will be included in this section. When you make a summary statement, you should have citations to back those statements up. The format of the citations and references vary from journal to journal and requirements are found in the submission instructions, but for this manuscript we will be using in-text citations (parentheticals with the author and publication date, not footnotes) in APA or Chicago style (see this link for more information <https://www.bibguru.com/blog/citation-styles-for-science/>). We highly encourage the use of citation managers, which will allow you to drop in-text citations easily and then automatically generate the list of references those citations go with at the end of the document.

Suggested Paragraph 1: background on the topic you are studying in this project

Suggested Paragraph 2: background on the approach you are taking in this project

Suggested Paragraph 3: brief summary of the project tying the introduction to the results coming up next

# Materials and Methods

This section includes details on how you did your studies, just enough for someone to replicate what you did. This is not the place to use flowery language, rather you want to be clear and direct in exactly what steps you took. This section does not include results, but rather how you did the experiments or analysis to get the results in the next section. This is the section people would read carefully so they can apply the same techniques to address the research question they are studying, so let them know. Each section in the Materials and Methods starts with a header that talks about what that short paragraph is about so people can easily look through to find the information they need.

Suggested Section 1: **Model system.** How cells or tissues used in this study were collected or the publication or repository you downloaded your data from. *Example sentence:*  Tissue samples from brain biopsies in glioblastoma tumors were flash frozen in liquid nitrogen.

Suggested Section 2: **Data processing.**  What raw data files did you have, how were these processed (what software and version) to get the main input file that you were working with, including which reference genome you used. *Example sentence*: Raw sequencing reads (.fastq format) were downloaded from Yale Sequencing Center, trimmed for high quality sequencing using bbduk (v 0.39, trimq = 30, minlen = 30), and aligned to the human reference genome (CHM13) using Hisat2 (v 2.2.1).

Suggested Section 3: **Analysis technique.** Specific software/packages/code you used with versions to get results, the hardware used to do that work (for example, supercomputer at Arizona State University). *Example sentence*: The edgeR package (v 3.18 in R v3.6) was used to calculate normalization factors for each sample’s gene expression profile (calcNormFactors function).

***[Examples sentences provided describe one element of what each section is about. Each section should have a sentence on every part or step for the overall concept/technique in that section. Include a section for each data set, data processing protocol, analysis technique you employed, etc. such that together the Materials and Methods briefly lists everything necessary to generate the results below.]***

# Results

This is the most important section of the manuscript. This tells the reader what you found out from your work.

For this section, you can basically include one paragraph for each set of related figures. Each paragraph should include an introduction sentence stating the main result you got, several sentences describing the result you got, complete with interpretation of how you concluded what you concluded, and then end with a brief summary of the result. Here you want to refer to the figures you generated (which should be numbered as Figure 1, 2, 3), with minimal citing of other people’s publications. You do not need to have software names and versions and such in this section since you will have included all of those practical details in the Materials and Methods section.

You want to have one paragraph for every set of related figures and present the paragraph (and figures) in a logical order. The idea is for the results to tell a story and justify the conclusions you are presenting.

# Discussion

This last section is to tell the reader about why this study is important in science. You can include ideas that came up as a result of your work and where the project is headed in the future.

Suggested paragraph 1: Quick summary of the discoveries overall and what was surprising or interesting about them. Can bring light to unexpected results and talk about why they are unexpected, and/or how the results build on what has already been discovered.

Suggested paragraph 2: Follow-up studies that will be conducted next

# References

This section should list all the materials included as in-text citations throughout the manuscript.