MURC | MULTIDISCIPLINARY UNDERGRADUATE RESEARCH CONFERENCE

How to Write an Abstract

MURC 2022 | students.ubc.ca/murc

First, what is an abstract?

An abstract is generally a short, concise paragraph ranging from 200-500 words that provides the reader with an overview of your project. For MURC, the abstract word limit is 250 words, which is fairly typical for most conference submissions. This is an opportunity for you to capture the interest of the reader and create a strong impression. Your abstract is where you can really showcase the significance and implications of your research and convince the audience to read further into your study. It usually includes a brief summary of background research, methods used in the study, the results and the implications of the results.

Structuring your abstract:

1. *What is the significance of my study?*
    - What does my study contribute to the field?
    - You can also explain the rationale for why you conducted your study

2. *Background/hypothesis*
    - What is your study trying to address?
    - What is your problem and knowledge gap?
    - This can be thought of as the question your study aims to help answer

3. *Methods*
    - How did you try to answer this question/address this problem?

4. *Results*
    - What did you find?
    - NOTE: if you are doing a theoretical project in which you have not obtained results, you can include your expected results in this section. E.g. “We expect to see…”

5. *Implications/discussions*
    - What are the implications of your results in the context of your field?
    - Why is your study important/why does your research matter?

Tips:

- Create a concise title that is interesting and descriptive of the research.
- Express the importance and relevance of your research in a concise manner
- Use, describe and explain relevant keywords for your topic
- Make sure you are writing for your intended audience - MURC is a conference catered towards undergraduates and is for a generalist audience, meaning that research must be able to be understood by and presented for people with no background in the subject matter.
- Have someone proofread your abstract - look to attend the abstract writing workshops hosted by the Centre for Writing and Scholarly Communication (CWSC) as well as the Peer Review workshop being held in January!
- If you would like further review of your abstract, you can sign up for office hours with the Workshops and Presentations portfolio of the MURC 2022 planning committee! The sign up link will be up on the website in January!
- If you have any further questions feel free to reach out and email us at murc.researchpresentations@ubc.ca

Things you should avoid:

- Avoid going into too much detail about statistical methods
- Don't use too much jargon or field specific language
    - If there are terms essential to your project, be sure to clearly define them and their relevance – as they would be part of the relevant keywords
- Including reference citations
- Exceeding the allotted word count (250 words in the case of your MURC abstract)

Modified from:
Koopman P. (1997). How to Write an Abstract. Retrieved from: https://users.ece.cmu.edu/~koopman/essays/abstract.html

Example Abstracts:

Background
Knowledge gap
Hypothesis
Methods
Results/Expected results
Implications of findings

Sample Abstract from Undergraduate Theoretical Research Projects:

- In an abstract for a theoretical project, there is a greater emphasis on background and methods, as these projects have no current results.

Example 1:

Amyotrophic lateral sclerosis (ALS) is characterized by the progressive degeneration of motor neurons, with the most common mutation in familial ALS occuring in the C9orf72 gene. In the central nervous system, astrocytes are glial cells critical to maintaining homeostasis and trophic support for motor neurons. Astrocytes switch to a reactive pro-inflammatory state during ALS pathogenesis, losing their supportive neuronal functions. Astrocytic pro-inflammatory cytokines, or immune signalling molecules, have been implicated in ALS, although their specific role in disease onset is currently unknown. We hypothesize that astrocytes exist in a pro-inflammatory state during early disease pathogenesis. We will use transgenic zebrafish, with astrocytes labeled by a green fluorescent protein. To model the ALS-like phenotype in zebrafish, we will introduce the C9orf72 gene mutation. To examine the reactivity of astrocytes during early pathogenesis, we will use live imaging techniques to characterize their reactive morphology. To investigate the inflammatory state, we will isolate astrocytes using fluorescence-activated cell sorting (FACS) at three time points during early disease pathogenesis. We will quantify levels of pro-inflammatory and anti-inflammatory cytokines to determine the inflammatory state of astrocytes at each time point. We expect to observe that astrocytes will be in a reactive morphology during early stages of ALS pathogenesis and will present a predominantly pro-inflammatory phenotype. These results will elucidate the inflammatory profile of astrocytes underlying pathogenesis which may provide novel insights regarding initiating factors in ALS. Future research may lead to therapeutic strategies targeting the pro-inflammatory state of astrocytes during early stages of motor neuron degeneration.

Imani Farahani N, Li M, Morris J. (2018) A Proposed Study Investigating the Inflammatory State of Astrocytes During Early Onset of Amyotrophic Lateral Sclerosis (ALS). Poster presented at: 2018 UBC Multidisciplinary Undergraduate Research Conference (MURC)

Example 2:

Hong Kong and many other Asian cultures desire mianzi, a concept of social perception and one's status in society. Mianzi is an important social construct and most collectivist societies often strive to maintain mianzi as it reflects social acceptance and inclusion within the society. Hong Kong continually and consistently has a prominent stigma around mental illness. Hong Kong families often neglect relatives that have mental health issues to preserve mianzi within the society. Consistent exposure to stigmatization can heavily affect the recovery of people living with mental illness (PLMI). This study aims to determine the relationship between social desire for mianzi and the recurring stigmatization around mental health. The data were collected by interviewing patients with mental illness and their families using the Face Gain/Loss measure. The Face Gain measure quantifies the desire one has for gaining mianzi and the Face Loss measure quantifies the fear one has for losing mianzi. It was determined that there is a positive correlation between high Face Gain scores and increased stigmatization towards mental health. There was also a slight positive correlation in the Face Gain score and the family's negligence of family relatives with mental health issues. Through the results of this study, the correlation between the social desire of mianzi and stigmatization of mental health can better inform future steps of reducing stigmatization. This study suggests that treatments for PLMI can be greatly improved by minimizing stigmatization in Hong Kong.

Samantha Pang. (2021). The effect of mianzi on mental health stigmatization and PLMI recovery in Hong Kong. Poster presented online at the 2021 UBC Multidisciplinary Undergraduate Research Conference (MURC).

Example 3:

Warming oceans are a distinguished marker of climate change expected to influence an organism's entire physiology. Arguably the most essential physiological system, the cardiovascular system's performance is heavily influenced by the temperature of its environment. Fundulus heteroclitus, or Atlantic killifish, is used in this study to analyze the effect of temperature on heart rate throughout embryonic development. This will be probed further through a molecular analysis of cardiac genes and their activity throughout development. Temperature is known to produce an effect on heart rate in adult killifish but its impact on heart rate throughout embryonic development is unknown. We hypothesize that heart rate will increase over development and exposure to higher temperatures will increase heart rate. Embryos were reared in conditions representing a low, middle and high temperature within their normal range: 21°C, 24°C, and 30°C until hatch. Videos of embryos were taken using video microscopy on a temperature-controlled microscope stage to collect heart beats per minute. To assess acute temperature exposure, embryos reared at 30°C were exposed to 21°C and 24°C treatments. Embryos reared at 24°C were exposed to 21°C and 24°C, and embryos reared at 21°C were exposed to 24°C and 30°C. Heart rate was found to increase over development. In higher temperature conditions (24°C and 30°C) heart rate was significantly faster than the same development point in the low temperature condition (21°C). This research offers applications to the likelihood of survival and stress responses of fish exposed to increased environmental temperatures as a result of climate change.

Ariel Shatsky. (2021). Adapting to a warming world: the effect of temperature on heart rate throughout killifish embryonic development. Online oral abstract presentation at the 2021 UBC Multidisciplinary Undergraduate Research Conference (MURC)

Sample abstract from a published paper

The ability of insects to learn and navigate to specific locations in the environment has fascinated naturalists for decades. The impressive navigational abilities of ants, bees, wasps and other insects demonstrate that insects are capable of visual place learning 1– 4, but little is known about the underlying neural circuits that mediate these behaviours. Drosophila melanogaster (common fruit fly) is a powerful model organism for dissecting the neural circuitry underlying complex behaviours, from sensory perception to learning and memory. Drosophila can identify and remember visual features such as size, colour and contour orientation 5,6. However, the extent to which they use vision to recall specific locations remains unclear. Here we describe a visual place learning platform and demonstrate that Drosophila are capable of forming and retaining visual place memories to guide selective navigation. By targeted genetic silencing of small subsets of cells in the Drosophila brain, we show that neurons in the ellipsoid body, but not in the mushroom bodies, are necessary for visual place learning. Together, these studies reveal distinct neuroanatomical substrates for spatial versus non-spatial learning, and establish Drosophila as a powerful model for the study of spatial memories.

Ofstad, T., Zuker, C., & Reiser, M. (2011). Visual place learning in drosophila melanogaster. Nature, 474(7350), 204-U240. doi:10.1038/nature10131

Other resources with tips to help improve your abstract:

How to Write an Abstract

Guidelines for Abstract Preparation

Tips That Will Make Your Abstract a Success

Do’s and Don'ts for Abstracts