

# MEDIC FOUNDATION

NOVEMBER 2023



**M.E.D.I.C**  
TECHNOLOGY | CULTURE | HEALTHCARE



# NOVEMBER 2023

---

We are the MEDIC Foundation!



## REINTRODUCING: THE MEDIC FOUNDATION

The MEDIC Foundation is UBC's non-profit student-led chronic disease research and advocacy hub. Founded and led by UBC biomedical engineering students and partnered with the UBC School of Biomedical Engineering, we are finding new ways to conduct innovative research and solve real-world problems through our projects that look to create devices that tackle different chronic diagnoses.

Our organization was founded by our cofounders Anjali and Madhini, who connected in 2020 on a personal level, having witnessed important people battle and experience chronic disease in their lives. They drew inspiration from the tenacity of their loved ones to drive their

own passions with medical care. With the help of faculty mentors and principal investigators across UBC, we are undertaking four research projects targeting various chronic conditions. Our team is only growing and we hope to bring change to patients' lives locally and globally. And we could not do this without the support of all our members and partners! A special thank you to the McKeown Lab, the the AIM Lab, Dr. Rajaratnam, and Open Source Medical Supplies BC who gave us the guidance and space to conduct our research.

Together, we are aspiring to revolutionize the way people approach chronic diseases. Our students are passionate and innovative. We have several exciting initiatives coming this semester, so make sure to stay tuned for future updates and events!

# SNEAK PEEK INTO THE LAB

---

## LOW-COST DIABETES MEDICAL TECHNOLOGY

Our Diabetes team has moved into the second phase of the project, with the goal of developing a non-invasive and continuous monitoring system to detect early diabetic ketoacidosis (DKA). The team is working on compiling a scope review to highlight the lack of existing research in biomarkers which can be used for early DKA diagnosis.

## GALVANIC VESTIBULAR TECHNOLOGY

GVS is a non-invasive brain stimulation technique that affects the firing of the vestibular system by conducting an electrical current to the mastoid process behind the ears through electrodes (2-pole system). The research has since evolved into a 3-pole system and our team aims to determine if 3-pole GVS induces improvement in motor performance when compared to 2-pole GVS.

## MULTIMODAL CANCER PROFILER PRECISION MEDICINE

Our Cancer Research Team (CREPE) is contributing to work that attempts to identify biological patterns within cancer patients of various types. The team is progressing a software pipeline that works with pathological image representations from different types of cancer, which supports future analysis of the images to discover underlying patterns.

## IBD/CROHN'S MONITOR PREDICTION SYSTEM

Our Crohn's and IBD Team have completed the preliminary rounds of research and have been hard at work contacting doctors and professors for stakeholder engagement. Patients will soon be contacted to be a part of our technological advances. Our team is looking for financial support and sponsorship. If you are interested in working with us, please reach out on our website!



# FUTURE EVENTS

---

Looking for an opportunity to volunteer? The Care Companion program is launching soon! Thanks to the hard work of our Directors, Eliana and Kellie, the novel program is opening applications this December. If you are compassionate, are patient, or have experience when working with seniors. Expect opportunities to interacting with seniors, forming compassionate relationships, and gaining community service hours. A link to the Care Companion's Hiring Package can be found below!

The Care Companions Program will primarily be interactions with senior homes. Activities can include teaching technology, going on leisurely walks, or playing recreational games with seniors. Training and orientation will be provided by experts from the field. Regardless of your experience with working with seniors, apply to provide rewarding community service!

Our first major event of the year will be taking place this January. The Events team has been hard at work preparing and presenting ideas for entertaining activities for participants of all ages. These activities include, but are not limited to, computer engineering, biomedical innovation, and computer coding. Additional information and details about the event will follow soon. Be sure to keep a lookout for additional updates.

## CARE COMPANIONS PROGRAM

Applications open: December 2nd

Commitment: Weekly Saturday  
Afternoons, from 2:00PM-4:00PM

QR Code to the hiring package:





# INDIGENOUS DISABILITIES: A LOST VOICE IGNORED

---

By: Gina Zhang

Indigenous communities in Canada have long faced and endured immense colonial pressure and challenges from the national government and society. The term “disability” itself is rooted in colonial underlines. Due to the oral nature of many Indigenous communities, the term does not even exist, as the culture focuses on the strengths and determinations of individuals. However, this does not strive away from the lack of accountability from the government when supporting the accessibility needs of the Indigenous community.

According to Statistics Canada, close to one in three First Nations peoples living off reserve had a disability. These disabilities can be connected back to intersectional discrimination experienced by the Indigenous Peoples, with ramifications stretching back to the horrors inflicted by a colonial and modern state. These atrocities include forced sterilization of Indigenous women, the kidnapping and relocation of Indigenous children from their families, and the cultural genocide promoted by the implementation of residential schools. For many, these atrocities may seem like distant ideations of the past, but many of these horrors continued their operations into the mid-1990s. The last residential school to cease its operations was the Gordon Reserve Indian Residential School, only to close its doors in 1996.



The federal and provincial governments of Canada have only recently begun to reconcile with the Indigenous communities of the nation. However, these efforts have repeatedly been short-sighted and disappointing. A major disability that is cited by Indigenous Peoples is related to pain or mental difficulties. These obstacles, which are often an oversight even in colonial societies, are particularly amplified in Indigenous communities due to the intersectional and intergenerational trauma experienced by their members. This, in addition to the lower rates of income and health inequities experienced by Indigenous Peoples, there is a large gap to be bridged. This lack of resources has led to increased discomfort and struggles within the communities and creates an inescapable loop that inflicts insurmountable challenges. The government has done little in the past years to atone for these inequalities, and current poses no plans to change such.

In many Indigenous communities, disabilities, are in fact, celebrated for their unique gifts. The negative connotations that are oftentimes associated with the word are removed in Indigenous language, as it does not reflect how the community views and values their contributions. Relationships are oftentimes viewed in a completely different lens, and are oftentimes related in stability, love, and connection with each other and the land.

The colonial view of disability is such as far cry from the perspective of Indigenous communities. This has resulted in a lack of action by the federal government, whose empty promises have not yet delivered the adequate level of care required by Indigenous communities. Not only the government, but the Canadian people themselves have lived in blissful ignorance of the history of Indigenous people, and as a result, their related and current obstacles faced by the community.

UBC, as a community, has a role to play in supporting Indigenous communities. Situated on stolen land, the university directly benefits from the suffering experienced by the Indigenous peoples who were the first caretakers of the land. The institution has long ignored the pain of the Indigenous community, and should begin its own education through intense reflection of the past, but more importantly, a re-evaluation of how support can be drawn in the future.

Learn more here:

<https://www.rickhansen.com/news-stories/blog/indigenous-disability-awareness-month-conversation-dr-rheanna-robinson-and-lisa>

<https://www.cle.bc.ca/november-is-indigenous-disability-awareness-month/>

<https://www150.statcan.gc.ca/n1/pub/89-653-x/89-653-x2019005-eng.htm>







# MOVEMBER: MEN'S HEALTH AWARENESS FOR ALL, TOGETHER

---

By: Mihika Mishra

Every November, individuals worldwide grow and style their moustaches in a movement known as Movember. This annual event transcends facial hair aesthetics; it serves as a powerful symbol to raise awareness about men's health issues, including suicide, prostate cancer, and testicular cancer. The charity, aptly named Movember, highlights these statistics: 3 out of 4 suicides in Canada are committed by men, more than 217,000 men are currently affected by prostate cancer including the serious side effects from treatments, and despite the survival rate for testicular cancer being around 95%, the long-term treatment related side effects severely deteriorate the quality of life.

Beyond the symbolic act of cultivating moustaches, Movember encourages a holistic approach to well-being. They advocate for global participation in



physical activities, recognizing their importance in bettering mental health. The organization also emphasizes education as the first line of defense, aiming to equip men and boys with the tools to maintain their mental well-being and educating everyone about the signs, symptoms, and risk factors associated with prostate and testicular cancer.

Movember's multifaceted strategy extends to facilitating open discussions about both mental and physical health. By breaking down societal barriers and fostering dialogue, the initiative aims to create an environment where individuals feel empowered to seek support and share their struggles.

In addition to raising awareness and fostering dialogue, Movember actively



supports research initiatives aimed at discovering breakthroughs in cancer treatment. It recognizes the need to address the challenging side effects that often accompany these treatments, with a focus on enhancing the overall quality of life for those affected.

Movember's impact in Canada is evident through various actions and initiatives, as showcased in the provided links. Whether through direct donations, fundraising efforts, or active participation in physical activities, individuals are encouraged to contribute to the cause. The organization urges people to connect with their loved ones, promote open communication, and advocate for men's health issues globally.

Movember goes beyond the realm of facial hair growth; it is a movement that focuses on positive change by addressing mental health, cancer awareness, and overall well-being for men around the world.

Learn more here:

<https://ca.movember.com/about/mental-health>



CR: CANVA



CR: CANVA

## DID YOU KNOW?

Movember focuses on male mental health, focusing on prevention, intervention, and health promotion. Men struggle to reach out for help, in the anxiety of feeling insecure about their personal image. Conversations about personal life details can be intimidating and uncomfortable, and many men struggle to cope with.

Learn more here:

<https://us.movember.com/about/cause>

# SEASONAL SADNESS: THE WEATHERING GREY AND CLOUD

---

By: Simone Abraham

Seasonal Affective Disorder or SAD is a type of depression that happens during certain seasons of the year - most often during fall or winter. It is thought that shorter days and less daylight may trigger a chemical change in the brain leading to symptoms of depression, which may start mild and become more severe as the season progresses. Some of the symptoms may include: feeling sad most of the day almost every day, reduced energy levels, difficulty concentrating, increased need for sleep, feeling hopeless, and losing interest in activities you once enjoyed.

When you have SAD, it can interfere with your sleep health, which can also affect how long you spend in the sunlight each day. This makes it important to prioritize going to sleep and waking up on schedule, which helps maintain melatonin levels - the hormone responsible for maintaining a regular sleep-wake cycle. It also becomes important to develop good strategies to manage your stress and this could include meditation, avoiding procrastination, and practicing mindfulness. Make sure to prioritize self-care. Studies have also shown that spending time outdoors can help manage depression and boost your mood significantly.

The symptoms of SAD may look different for each person, so a coping strategy that works for one may not work for another.



Keeping yourself warm with hot food and drinks and wearing warm clothes can help you feel better. A healthy diet can improve energy levels and thereby boost your mood throughout the day. Another way to fight seasonal depression is light therapy, where one sits in front of a lightbox for up to 2 hours a day. Taking up a new hobby, something to keep your mind active could give you something to look forward to and focus on. It is not uncommon to want to isolate yourself when feeling depressed, so it becomes especially important to maintain touch with the people you care about and make sure not to isolate yourself during these periods. Talking through your feelings in therapy or a support group can also help you cope with your symptoms.

There is no known way to prevent the development of seasonal affective disorder. However, taking steps early on to manage your symptoms can help prevent

your symptoms from worsening over time. Living with seasonal affective disorder is not easy, but by implementing self-care strategies, you can help ease symptoms and boost your energy and mood. When dealing with SAD, it is important to remember to focus on what you can do to make yourself feel better. The tips offered are not treatment options and if you notice that your symptoms are more severe and you are unable to manage them, it is important to seek support from a mental health professional, who can help you develop a treatment plan that is catered to your specific needs.

Learn more here:

<https://www.mayoclinic.org/diseases-conditions/seasonal-affective-disorder/symptoms-causes/syc-20364651>



CR: CANVA



## DID YOU KNOW?

SAD can disproportionately affect women. It is much more common during the winter months and can be reflected by the bleary weather in the environment or the shorter hours of daylight. The more north the individual lives, the more likely that SAD can affect them. This means that Vancouver, a city that commonly experiences rain, cloudy weather, and snow, has citizens who are more likely to experience SAD. Common symptoms can include intense insomnia, unnatural behaviour changes and unexpected mood swings.

Learn more here:

<https://www.nimh.nih.gov/health/publications/seasonal-affective-disorder>



# LUNG CANCER AWARENESS: A BREATH OF AIR

---

By: Mihika Mishra

The Canadian Cancer Society's disheartening estimate writes that 85 Canadians will receive a lung cancer diagnosis every day. Lung cancer, divided into small cell and non-small cell, predominantly constitutes the latter, which encompasses 85% of cases. Non-small cell lung cancer involves the cells lining lung airways, including squamous cell carcinoma, large cell carcinoma, and adenocarcinoma.

Enter Tagrisso, also known as Osimertinib, a tyrosine kinase inhibitor targeting epidermal growth factor receptor proteins (EGFR). Mutations in the EGFR gene can trigger an abnormal increase in EGFR production on cancer cells, resulting in accelerated cell division. Tagrisso works by counteracting this process. In October 2023, AstraZeneca's Tagrisso demonstrated its efficacy as an adjuvant to chemotherapy for metastatic non-small cell lung cancer with EGFR mutations and brain metastases. Building upon prior trials, the collective evidence reinforced Tagrisso as a treatment that enhances survival outcomes across both early and late stage cancer. ADAURA Phase III trials showed improved overall survival when Tagrisso was used as an adjuvant therapy with chemotherapy. The more recent FLAURA2 Phase III trials indicated that combining Tagrisso with chemotherapy led to a 42% reduction in central nervous system



metastasis progression, particularly in the brain, and associated mortality. This effect strengthened over two years, with 74% of patients on the dual treatment regimen experiencing a halt in central nervous system disease progression or death. Furthermore, 59% of these patients exhibited a complete response, i.e the absence of detectable cancer.

These findings emphasize Tagrisso's pivotal role in lung cancer treatment, displaying its effectiveness across both stages of cancer progression. The combination of Tagrisso with chemotherapy presents a promising path in improving patient outcomes for those suffering from the pervasive disease of non small cell lung cancer.

Learn more here:

<https://www.astrazeneca.com/media-centre/press-releases/2023/tagrisso-demonstrated-strong-overall-survival-benefit-in-the-adaura-phase-iii-trial.html>

# WORLD DIABETES DAY: MAKING PROGRESS

---

By: Simone Abraham

World Diabetes Day, observed annually on November 14th, serves as a global call to action to raise awareness about diabetes and its impact on millions of lives worldwide. This year the theme was to highlight the need for equitable access to essential care, including raising awareness of ways people with diabetes can minimise their risk of complications. About 100 years ago, Frederick Grant Banting and Professor John James Richard Macleod won the Nobel Prize for their discovery of insulin. Since then, there have been incredible breakthroughs from helping people with type 1 diabetes create their own insulin to putting type 2 diabetes in remission.

Diabetes is a chronic condition characterized by high blood sugar levels caused by the inability of the pancreas to produce sufficient insulin to convert the glucose to energy, leading to a buildup in the bloodstream. Over time, this could lead to serious damage to the heart, kidneys, eyes, and nerves. There are 3 types of diabetes: Type 1, Type 2, and gestational diabetes. Over 3 million people living in Canada, or 8.9% of the population, have been diagnosed with diabetes and after adjusting for the aging population, the prevalence is increasing at an average rate of 3.3% per year. Furthermore, 6.1% of Canadian adults between the ages of 20 and 79 have prediabetes, putting them at a high risk of developing type 2 diabetes. This



upward trend is expected to continue with the aging of Canada's population increasing the need for dedicated research into the treatment of diabetes.

Type 1 diabetes is an autoimmune condition that destroys the insulin-producing cells in your pancreas, which is more common in children and young adults. A recent study showed that children diagnosed with type 1 diabetes require less supplemental insulin to maintain healthy blood sugar levels when treated with teplizumab. Teplizumab reduces the destruction of beta cells and helps preserve the remaining cells at the time of diagnosis of type 1 diabetes which makes it more feasible to manage it.

For the past century, the only approved treatment for U.S. patients with type 1 diabetes had been insulin injections. Teplizumab, an immunotherapy drug was approved by the FDA in 2022 thanks to a

UCSF study that showed that a 14-day dose of the drug delayed the onset of type 1 diabetes in at-risk children and adults by an average of three years.

Published in the New England Journal of Medicine in October 2023, the PROTECT study led by UCSF researchers, including Dr. Stephen Gitelman, investigated the effects of teplizumab in children between the ages of 8 and 17 diagnosed with type 1 diabetes. Participants who received Teplizumab showed preserved insulin-producing beta cells and required lower doses of supplemental insulin. This study marked the first successful phase 3 trial of immunotherapy after type 1 diabetes diagnosis, demonstrating sustained benefits for 18 months post-treatment. Additionally, this was conducted during the COVID-19 pandemic, and participants did not exhibit increased susceptibility to the virus. It also revealed a higher incidence of “clinical remission” in teplizumab-treated

patients with the potential for insulin independence.

Looking ahead, Dr. Gitelman emphasizes the ongoing efforts to extend the benefits of teplizumab and study its efficacy in children and potential combinations with other drugs. This has the potential to revolutionize treatment options for type 1 diabetes and mark a significant step forward in enhancing future outcomes for individuals with the disease.

Learn more here:

<https://healthmatch.io/diabetes/what-type-of-diabetes-is-the-worst#types-of-diabetes>

<https://www.ucsf.edu/news/2023/10/426396/breakthrough-drug-helps-children-new-onset-type-1-diabetes#:~:text=The%20findings%2C%20published%20October%202018,but%20are%20not%20yet%20diagnosed.>



CR: CANVA



# YEAR IN REVIEW

---

## JANUARY - MARCH

The Diabetes team made leaps and bounds in their innovation! They were involved in the UBC TiM MedTech sprint competition and won first place.

## JULY - SEPTEMBER

Massive calibration and hiring of the MEDIC team! Expansion of subteams and the establishment of the IBD/Crohn's team, led by Ivan and Justin!

## APRIL - JUNE

Prototypes were made for all teams, most notably for the Diabetes team. The low-cost project was sent overseas to be tested in Sri Lanka.

## OCTOBER - DECEMBER

The Cancer team had incredible fruition with their project, which has begun launch on the GSCs. The Care Companion program is well underway!



CR: CANVA

## SEE YOU NEXT YEAR!

This will be the final MEDIC newsletter for 2023! Thank you all for your continued support for the past year. The success of our team would not have been possible without the encouragement of our community. We will continue to strive for innovative medical excellence for the 2024 year and aim to better the lives of people with chronic diseases.

Happy Holidays and happy New Year!



# CREDITS

---

Thank you for reading!

**GINA ZHANG: DIRECTOR OF CONTENT CREATION**

**MIHIKA MISHRA: CONTENT WRITER**

**SIMONE ABRAHAM: CONTENT WRITER**

**MADHINI VIGNESWARAN: CO-FOUNDER**

**ANJALI MENON: CO-FOUNDER**

**OUR WEBSITE: [HTTPS://WWW.MEDICFOUNDATION.ORG/](https://www.medicfoundation.org/)**

**OUR EMAIL: [CONTACT.TEAMMEDIC@GMAIL.COM](mailto:CONTACT.TEAMMEDIC@GMAIL.COM)**

**FOLLOW US!**



**@medicfoundation**



**@medicfoundation**

[Read More](#)