Canadian Cancer Society

Challenge Grants (CHA-24)
Award Recipients

Applicant Institution	Project Title & Summary	Award Duration

Shabbir Alibhai | **$500,826**
Princess Margaret Cancer Centre, UHN | **2023-2025**

Predicting the side effects of cancer treatment using artificial intelligence

A team led by Dr Shabbir Alibhai is developing a tool to identify the risk of toxic side effects of treatment in older people with cancer, to improve their outcomes.

Although chemotherapy is similarly effective in older and younger people with cancer, those who are older are more likely to experience toxic side effects from treatment. Using artificial intelligence, this new tool will help this population and their clinicians make more informed decisions about treatments, as well as identify people who might need more supportive care or treatment modifications to reduce risk.

With funding from the Canadian Cancer Society, a team led by Dr Shabbir Alibhai is using treatment and toxicity data from tens of thousands of people already treated for cancer to program the new predictive tool. They will then compare it to other methods currently used to predict whether older people will experience treatment related side effects. By using data already collected from other older people with cancer, the team hopes to find a better way of predicting who will experience side effects in the future.

If successful, this project could help clinicians avoid over- or under-treatment and improve the care of many older people with cancer in Canada.

Fawzi Aoudjit | **$525,000**
Laval University | **2023-2025**

Blocking leukemias from becoming resistant to chemotherapy

A team led by Dr Fawzi Aoudjit is exploring how blocking a type of protein found in T cell acute leukemias can prevent people in treatment from developing resistance to chemotherapy. About a quarter of children and 4 in 10 adults with T cell acute leukemias (T-ALL) will relapse because their cancer becomes resistant to treatment. People with relapsed T-ALL have much poorer outcomes and survival rates, and new ways to treat them are urgently needed.

With funding from the Canadian Cancer Society, a team led by Dr Fawzi Aoudjit is analyzing an abundant protein in T-ALL cells that regulates how cells interact with each other and their external environment. By blocking this protein in laboratory experiments the team hopes to make the T-ALL cells more sensitive to chemotherapy, which may lead to new treatment options for people with T-ALL who relapse after treatment.

If successful, this project could lead to clinical trials and new ways to make chemotherapy more effective for people with T-ALL.

Julie Bennett **$524,825**
The Hospital for Sick Children 2023-2025

Improving outcomes for young people with brain tumours

A team led by Dr Julie Bennett is analyzing brain tumour samples from teenagers and young adults and linking this data with how this population responds to treatment to improve outcomes.

Brain tumours in adolescents and young adults between ages 15 and 39 can have biological similarities with either childhood or adult brain tumours. This status results in a lack of knowledge that is specific to the biology of the tumours in young people and how they respond to treatment.

With funding from the Canadian Cancer Society, Dr Julie Bennett is working with patient advocates and researchers across Canada to form a national database for these brain tumours in young people. The team will also look at genetic information from brain tumour samples and spinal fluid samples throughout treatment. Their goal is to find out more about the genetic changes that cause these tumours and influence how they respond to treatments.

If successful, this project may lead to more effective treatment options for young people with brain tumours and, ultimately, better outcomes.

Kevin Bennewith **$510,000**
BC Cancer, part of the Provincial Health Services Authority 2023-2025

Improving responses to immunotherapy

A team led by Dr Kevin Bennewith is analyzing whether drugs used to treat high blood pressure can make immunotherapy drugs more effective.

Immunotherapies that unleash the immune system on tumours have been very effective for many people with cancer. Despite this success some tumours do not respond to these treatments, and new ways of making these therapies work for more people with cancer are needed.

With funding from the Canadian Cancer Society, a team led by Dr Kevin Bennewith is building on their past work investigating commonly used drugs they believe could improve responses to immunotherapy. By using genetic approaches and laboratory models of breast cancer, the researchers will explore how these drugs influence immune cells involved in anti-tumour responses.

If successful, this work could lead to clinical trials aiming to make immunotherapy more effective for people with cancer.

Kristin Campbell
University of British Columbia
Dr Sarah Neil-Sztramko
McMaster University

$521,791
2023-2025

Improving supportive care for people with breast cancer

A team led by Dr Kristin Campbell and Dr Sarah Neil-Sztramko is developing a community training resource for healthcare providers to help them provide better supportive care to breast cancer survivors across Canada.

About 28,000 people in Canada are diagnosed with breast cancer every year. Although survival has been increasing over several decades, the treatments people receive often leave them with chronic physical and psychological side effects. Healthcare providers with specialized training in supportive care can greatly help breast cancer survivors manage these health conditions, but the few that exist in Canada are primarily located in large urban cancer centres. In addition, many healthcare professionals working in the community have limited opportunities to expand their knowledge and training to effectively provide supportive cancer care.

With funding from the Canadian Cancer Society, a team led by Dr Kristin Campbell and Dr Sarah Neil-Sztramko is creating innovative training hubs where healthcare providers can access mentoring, training, and guidance about supporting breast cancer survivors in their local communities.

This project hopes to improve access to high-quality supportive care for thousands of people living with and beyond breast cancer across Canada, improving their health and quality of life.

Marcelo Cypel
Toronto General Hospital

$524,988
2023-2025

Improving treatment for people with cancer that has spread to the lungs

A team led by Dr Marcelo Cypel is conducting a clinical trial to deliver chemotherapy directly to the lungs of people whose cancer has spread to both improve outcomes and minimize toxicity.

More than one third of people with cancer experience the spread of their cancer to the lungs. Surgery may be able to remove these additional tumours, but often they regrow and significantly affect survival. Chemotherapy is effective at treating these lung tumours but is highly toxic and comes with many side effects.

With funding from the Canadian Cancer Society (CCS), a team led by Dr Marcelo Cypel is building on previous CCS-funded work to conduct a clinical trial where people with cancer which has spread to the lungs will receive chemotherapy directly to their lung tissue, sparing the rest of their body from its toxic effects. The researchers have previously run a small trial and established that the method was safe. Now, this team will expand the trial to more people to evaluate whether the chemotherapy is effective for their tumours.

If successful, this project could lead to better treatment for people with cancer which has spread to the lungs, improving their chances of survival and quality of life.

Sean Egan | **$524,985**
The Hospital for Sick Children | **2023-2025**

Figuring out the causes of breast cancer

A team led by Dr Sean Egan is investigating how proteins that normally help the body fight viruses might be involved in the development of breast cancer in some people.

Breast cancer is the most common cancer type in women in Canada and the second-most common cause of death from cancer. Despite these statistics, very little is known about what factors influence the risk of a person developing breast cancer. Recent research has shown that some aggressive forms of breast cancers contain a genetic fingerprint of damage indicating that a protein known to help the body respond to viruses might be involved in breast cancer development.

With funding from the Canadian Cancer Society, a team led by Dr Sean Egan is investigating how this virus-response protein (APOBEC3A) interacts with other cancer-causing proteins that influence the risk of breast cancer development. The researchers will use laboratory models of breast cancer and genetic modification experiments to understand how this protein promotes breast cancer.

If successful, the researchers could ultimately come up with better ways to treat and even prevent some types of aggressive breast cancer.

Vivianne Freitas | **$525,000**
Lunenfeld-Tanenbaum Research Institute | **2023-2025**

Using artificial intelligence to predict responses to breast cancer treatment

A team led by Dr Vivianne Freitas is developing an artificial intelligence tool to help predict how people with breast cancer will respond to therapies given to shrink tumours prior to surgery.

People with breast cancer often get systemic treatment to make their tumours smaller before surgery. These treatments can sometimes help this population to receive a less radical surgery than mastectomy or have surgery when they were previously deemed ineligible. However, up to 30% of people with breast cancer who receive these therapies do not get enough benefit to give them more surgical options, despite enduring the side effects of therapy.

With funding from the Canadian Cancer Society, a team led by Dr Vivianne Freitas is developing an artificial intelligence tool to predict which people with breast cancer are likely to respond to therapy before surgery. The researchers will train the tool using MRI data from 20,000 breast cancer scans and information about how these people responded to treatment.

By using this tool on newly diagnosed people with breast cancer, the team hopes to predict in advance who will respond to therapy, reducing unnecessary treatment for those who won't benefit while saving the healthcare system money.

Cathie Garnis
BC Cancer, part of the Provincial Health Services Authority

$442,450
2023-2025

A blood test for earlier detection of recurrent head and neck cancer

A team led by Dr Cathie Garnis is developing a blood test to detect earlier recurrence of head and neck cancer, so people can get treatment faster and improve their chance of survival.

While the incidence of head and neck cancers caused by tobacco and alcohol has been in decline, there has been an increase in cases related to HPV infections, which normally affect younger people. Less than half of people survive 5 years after being diagnosed with head and neck cancer, with up to one quarter of them having their disease recur after treatment.

With funding from the Canadian Cancer Society, a team led by Dr Cathie Garnis is developing a blood test to detect a molecular signal that indicates the return of head and neck cancer more than a year earlier than conventional scans can pick it up. The researchers will optimize their previous work on this test and hope to make it available for clinical use in the future.

If successful, this project could lead to earlier detection of recurrent disease in people with head and neck cancer, allowing this population to access treatment earlier and increasing their chances of survival.

Livia Garzia
Research Institute of the McGill University Health Centre
With funding from the CCS and the Cole Foundation

$519,395
2023-2025

Finding out why bone cancers become resistant to therapy

A team led by Livia Garzia, PhD, is analyzing how bone cancers in children and young adults become resistant to chemotherapy in order to improve treatment strategies.

Osteosarcoma is the most common type of bone cancer found in children and young adults, and most people with this cancer are treated with chemotherapy and surgery. Although 7 in 10 people respond well to initial chemotherapy, some do not, meaning their cancer is more likely to spread and result in poorer survival.

With funding from the Canadian Cancer Society and the Cole Foundation, a team led by Livia Garzia, PhD, is working to find out why osteosarcoma in some young people does not respond well to this initial treatment. The researchers think that some cells within osteosarcomas might be more resistant to chemotherapy than others due to their genetic programming. Using tumour samples donated by people with osteosarcoma and laboratory models, the team will analyze different samples with novel high-resolution techniques to find molecular changes that influence how osteosarcomas respond to chemotherapy.

If successful, this project could lead to new treatment strategies for young people with osteosarcoma, increasing their chances of survival.

Michelle Ghert **$525,000**
McMaster University 2023-2025

Improving quality of life for people whose cancer has spread to the hip bones

A team led by Dr Michelle Ghert is investigating better surgical approaches to treat people whose cancer has spread to their hip bones to improve their mobility and quality of life.

Advanced cancer can spread to the bones, causing them to become fragile and break easily. This is often treated with surgery to put in screws and plates to stabilize the bone, allowing the person to be mobile and pain-free for the rest of their life. But advances in treatment mean that people living with cancer survive for much longer than they used to, and the hardware can wear out and break.

With funding from the Canadian Cancer Society, a team led by Dr Michelle Ghert is investigating whether a different surgery involving a large hip replacement will reduce the risk of cancer recurring and provide a more sustainable option to preserve mobility and quality of life. The researchers aim to recruit 100 people with cancer that has spread to the bones, giving them either the conventional surgery or the new one to compare the pros and cons of each.

If successful, this project could lead to a better way of surgically treating people with cancer that has spread to their hip bones, prolonging their quality of life and mobility.

Chelsia Gillis **$518,789**
McGill University 2023-2025

Preventing treatment-related side effects in people with ovarian cancer

A team led by Dr Chelsia Gillis is developing a program to help people with ovarian cancer prepare for surgery while they are receiving chemotherapy.

People with cancer who exercise frequently and eat well are less likely to experience significant side effects from chemotherapy and recover more quickly than those who don't.

With funding from the Canadian Cancer Society, a team led by Dr Chelsia Gillis is developing a prehabilitation program aimed at helping people with ovarian cancer to improve their physical fitness and nutrition as well as muscle mass and strength during chemotherapy. The team will guide study participants with a program that provides exercise, nutritious snacks and tools to help them stay calm when experiencing emotional distress. The researchers will compare outcomes of people who complete the program to those who don't to determine whether this program is effective.

If successful, this project could lead to a better approach for preventing treatment-related side effects in people with ovarian cancer, improving their outcomes and quality of life.

Rebecca Gladdy
Lunenfeld-Tanenbaum Research Institute - Princess Margaret Cancer Centre, UHN

$525,000
2023-2025

Understanding why soft tissue cancers spread to other parts of the body

A team led by Dr Rebecca Gladdy is investigating why a specific type of soft tissue cancer spreads to other parts of the body and ways to prevent this.

Most people with the soft tissue cancer myxoid liposarcoma respond very well to chemotherapy and radiation therapy. But for some, the cancer spreads to other unique parts of the body, sometimes years later. When this happens, there are few effective treatment options and the prognosis is poor.

With funding from the Canadian Cancer Society and thanks to a generous donation from the Ursu Bouchard-Phillips family, a team led by Dr Rebecca Gladdy is analysing why some myxoid liposarcomas (MLPS) spread or metastasize to other parts of the body. The team will compare the genetic characteristics of MLPS tumours with metastasis to define what factors may be driving spread. They will then target these factors to block the spread while testing new drugs to find ways to treat this population and hopefully prevent this occurrence from happening.

If successful, this project could lead to better ways of preventing myxoid sarcomas from spreading, increasing the chances of survival for people with this type of rare cancer.

Natalia Gorelik
Research Institute of the McGill University Health Centre

$436,870
2023-2025

Using artificial intelligence to predict if soft tissue cancers will spread

A team led by Dr Natalia Gorelik is using artificial intelligence to predict which people with myxoid liposarcoma will have their cancer spread to other parts of the body.

Some people with the soft tissue cancer myxoid liposarcoma have their tumour spread to other parts of the body, sometimes years after treatment. The best way of detecting if the cancer has spread is through whole-body MRI scans, but this test is expensive and not widely available in Canada.

With funding from the Canadian Cancer Society, a team led by Dr Natalia Gorelik is developing an artificial intelligence model to help predict which people with myxoid liposarcoma will have their cancer spread to other parts of their body. The team will use samples from more than 150 patients, as well as their MRI scan data and clinical data, to help train the artificial intelligence model.

If successful, this project could lead to better ways of predicting cancer spread, enabling this population and their clinical team to decide how frequently they should monitor the tumour with MRI scans.

Michiru Hirasawa — **$524,604**
Memorial University — **2023-2025**

Treating chemotherapy-induced fatigue in people with cancer and survivors

A team led by Dr Michiru Hirasawa is investigating options to prevent severe side effects caused by chemotherapy, allowing people with cancer to continue treatment and improve survival.

Chemotherapy is effective for many people with cancer, but it comes with a variety of toxic side effects during and after treatment. These side effects can be so severe that some people have to reduce or even stop treatment completely. Also, chemotherapy-induced fatigue can leave them feeling physically and mentally exhausted, sometimes for several years after their treatments have finished.

With funding from the Canadian Cancer Society, a team led by Dr Michiru Hirasawa is investigating why chemotherapy causes fatigue in some people with cancer. The team, including a cancer survivor, will test a commonly used chemotherapy to see what effect this treatment has on the brain and cells that regulate activity and fatigue. The researchers will then test a drug that is already used to treat diabetes and determine if it might be effective in preventing chemotherapy-induced fatigue.

If successful, this project could lead to ways of treating chemotherapy-induced fatigue, allowing people with cancer to stay on chemotherapy treatments longer, increasing their chances of survival and improving their quality of life.

Nathalie Johnson — **$525,000**
Jewish General Hospital — **2023-2025**

Giving CAR T-cells earlier to people with relapsed lymphoma

A team led by Dr Nathalie Johnson is developing a test to identify relapse in people with lymphoma earlier, increasing their chances of survival.

CAR T-cell therapy is a customized immunotherapy that has revolutionized the treatment of lymphoma, especially its most aggressive form called diffuse large B-cell lymphoma. But while CAR T-cells can be engineered from people's blood samples, timing of the process is crucial to maximize the chances of a successful therapy.

With funding from the Canadian Cancer Society, a team led by Dr Nathalie Johnson is conducting tests to find the best time for people with lymphoma to have CAR T-cell products made and given to them. The researchers will look for tiny fragments of DNA shed by lymphoma cells in the blood of people who have completed chemotherapy treatment. This will allow the team to detect relapses sooner than by current methods and produce and administer CAR T-cells before people with lymphoma get too sick. The researchers also hope that making CAR T-cells from people who are less sick will mean the therapy is more effective.

If successful, this project could lead to a clinical trial to evaluate the best time for people with relapsed lymphoma to receive CAR T-cells, increasing their chances of survival.

Robert Kridel
Princess Margaret Cancer Centre, UHN

$525,000
2023-2025

Finding new treatments for a rare blood cancer

A team led by Dr Robert Kridel is investigating new treatment options to improve survival for people with a rare form of blood cancer.

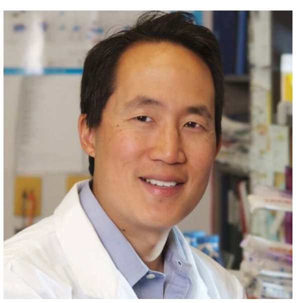
Adult T-cell leukemia/lymphoma (ATLL) is a rare blood cancer caused by a virus that is common in some parts of the world, such as the Caribbean, Asia, South America and Africa. It can also affect people in Canada who have immigrated from these countries. There are currently very few effective treatments for this type of blood cancer, which often becomes quickly resistant to available chemotherapies. As such, new options are urgently needed.

With funding from the Canadian Cancer Society, a team led by Dr Robert Kridel is finding new treatment combinations for people with ATLL. The researchers will use genetic techniques and laboratory models to test hundreds of potentially useful drugs that can work with a drug that has shown promising initial responses.

If successful, this project could lead to clinical trials and additional treatment options for people with ATLL, potentially improving outcomes.

Stanley Liu
Sunnybrook Research Institute
Dr Thomas Kislinger
University Health Network

$524,880
2023-2025



Overcoming therapy resistance in advanced prostate cancer that has spread

A team led by Drs Stanley Liu and Thomas Kislinger is finding new ways to treat people with advanced prostate cancer, improving their outcomes.

For some people with advanced prostate cancer, their tumour has spread to other parts of the body at the time of diagnosis. While many initially respond to treatments, their cancer becomes resistant to therapy, and there are currently no curative options available for this population.

With funding from the Canadian Cancer Society, a team led by Dr Stanley Liu and Dr Thomas Kislinger is developing laboratory models from tumour samples donated by people with advanced prostate cancer. Using these models, the researchers will test hundreds of drugs to find potentially useful therapies. They will also use advanced analysis techniques to identify targets for immune-based therapies.

If successful, this project could lead to clinical trials to test new treatment options for people with advanced prostate cancer that has spread to other parts of the body, improving the prognosis for this population.

Catrina Loucks **$524,252**
University of British Columbia 2023-2025

Better pain management for children with cancer

A team led by Dr Catrina Loucks is developing better ways to predict which children with cancer will experience a painful side effect and how to most effectively treat their pain.

Treatments for children with cancer often come with significant short- and long-term side effects that are painful. For example, many children develop bleeding and ulcers along their digestive tract, which can affect eating and speaking and even result in delays in treatment. Children respond differently to pain medications, and new ways of figuring out which medications will be effective for each child are urgently needed.

With funding from the Canadian Cancer Society, a team led by Dr Catrina Loucks is looking for genetic patterns that may influence how children with cancer respond to pain medication. The researchers will look at DNA from samples donated by children with cancer and their families and compare the data from children who did and did not experience painful side effects from their treatments.

If successful, the team could work with children with cancer, survivors and their families to develop guidelines for pain medication prescription based on genetic factors. The researchers hope the work will lead to more effective pain relief and fewer treatment interruptions for children with cancer.

Zaid Mammo **$525,000**
University of British Columbia 2023-2025

Improving early detection of cancerous tumours in the eye

A team led by Dr Zaid Mammo is conducting a clinical study to investigate a better scanning method of identifying rare cancerous eye tumours, increasing the prognosis for people affected by the disease.

Benign eye tumours are much more common than malignant ones, but it is currently very difficult for clinicians to tell whether a tumour is cancerous or not. Effective diagnosis often requires invasive techniques that can damage the eye and affect eyesight, and tumours that are cancerous often spread to other parts of the body during treatment delays.

With funding from the Canadian Cancer Society, a team led by Dr Zaid Mammo is optimizing a new scanning method for identifying cancerous tumours in the eye. The researchers will build upon their previous work to conduct a longitudinal study to further test their scanning method, figuring out how effective this approach is at identifying cancerous eye tumours.

If successful, this project could result in a new, non-invasive way to help clinicians diagnose this type of eye tumour, meaning that those with cancerous tumours receive treatment earlier, improving outcomes.

Andrew Matthew **$523,628**
Princess Margaret Cancer Centre, UHN **2023-2025**

Providing sexual health support for people with prostate cancer

A team led by Dr Andrew Matthew is evaluating the national implementation of an innovative online virtual clinic designed to support the sexual health of people with prostate cancer and their partners.

Sexual dysfunction is common after treatment for prostate cancer. As such, people cite sexual health concerns as the most significant unmet need following treatment for this type of cancer. Support is urgently needed, but in-person clinics are unlikely to be able to provide help to everyone who needs it due to inadequate funding and healthcare resources. To address this, a team led by Dr Andrew Matthew has developed an online sexual health clinic that offers people who have received prostate cancer treatment and their partners access to a virtual education and support platform with personalized guidance from highly trained sexual health counsellors. This team has already achieved promising preliminary results from pilot-testing of the program.

With funding from the Canadian Cancer Society, the team is rolling out the program to 9 major cancer centres across Canada. The researchers will recruit people with prostate cancer and their partners, and ultimately evaluate the success and sustainability of the program.

If successful, this project will enhance optimal sexual recovery, improve the overall quality of life of people with prostate cancer and their partners, and lay the groundwork for continued national expansion, increasing access and decreasing potential disparities.

Hassan Mir
University of Ottawa Heart Institute

$525,000
2023-2025

Developing culturally sensitive programs to address smoking in Indigenous communities

A team led by Dr Hassan Mir is developing and implementing a culturally sensitive smoking cessation program aimed at helping Indigenous people reduce or quit commercial (non-traditional) tobacco use.

Smoking is a significant cause of death, disability and a major risk factor for several types of cancer. Around 10% of the people in Canada smoke. However, rates of commercial tobacco use are much higher among Indigenous communities, where more than half of adults smoke. There is an urgent need to develop and implement new, culturally sensitive and systematic approaches to help Indigenous people reduce or quit smoking.

With funding from the Canadian Cancer Society, a team led by Dr Hassan Mir is working with Indigenous communities to develop and implement evidence-based and culturally sensitive support programs to help members of the Indigenous community to reduce or stop commercial tobacco use. The research team will analyze how satisfied participants are with the program and how successful this approach is at helping them quit or reduce smoking.

If successful, this project could provide new evidence-based and culturally tailored programs to help support Indigenous people, reducing their risk of several cancers and increasing their overall health and quality of life.

William Muller
McGill University

$525,000
2023-2025

Improving treatment options for breast cancer by studying recurrence

A team led by Dr William Muller is investigating why some breast cancers recur and are difficult to treat, hoping to improve treatment options for people with relapsed breast cancer.

Despite recent treatment advances, breast cancer remains a significant cause of mortality for people in Canada. Many of these deaths are from relapsed disease where the cancer initially responds to therapy but comes back many years later. Some breast cancer cells can stop dividing and remain dormant, making them resistant to therapy and much harder to treat. Currently, research into breast cancer dormancy has been limited by the lack of available laboratory models to study this phenomenon.

With funding from the Canadian Cancer Society, a team led by Dr William Muller is working to find out more about why some breast cancer cells are dormant and resistant to treatments. Using laboratory models previously developed by the team, the researchers are using genetic manipulation techniques to evaluate the role of a particular protein they think is involved in breast cancer recurrence. The team is also investigating whether it is possible to target this protein to stop breast cancer cells from becoming dormant during treatment.

If successful, this project could lead to new ways of treating people with breast cancer that recurs, improving survival.

Cheryl Peters — **$517,077**
University of British Columbia — **2023-2025**

Combating online misinformation about cancer causes and prevention

A team led by Dr Cheryl Peters is investigating how people in Canada get cancer prevention information online, helping them access evidence-based, reliable information.

Cancer is the leading cause of death in Canada and some cancers are preventable through lifestyle modifications such as smoking cessation, maintaining a healthy weight and moderating alcohol intake. But misinformation about what increases the risk of cancer is very common online, including on social media platforms. Understanding how and why this misinformation spreads is key to reducing it and providing people in Canada with evidence-based reliable information about cancer prevention.

With funding from the Canadian Cancer Society, a team led by Dr Cheryl Peters is learning more about why misinformation about cancer prevention is so prevalent online. The researchers will conduct focus groups to find out more about how people in Canada access and understand information about cancer prevention. The team will survey social media platforms and online stores to analyze information and misinformation about cancer prevention. They will also develop an innovative digital strategy to improve people’s health literacy about cancer prevention based on the results of this analysis.

This project will provide new information about how people in Canada access information on cancer prevention and ways to counter misinformation online, empowering people to make informed lifestyle choices and decrease their cancer risk based on the best possible evidence-based information.

Eitan Prisman | **$525,000**
University of British Columbia | **2023-2025**

Optimizing jaw reconstruction surgery for people with head and neck cancer

A team led by Dr Eitan Prisman is developing an improved virtual surgical planning platform to help guide surgeons during jaw reconstruction surgery for people with head and neck cancer.

Many people with head and neck cancer may be treated with surgery to remove parts of their jaw, which is then recreated with a piece of their leg or shoulder bone to restore oral function and improve quality of life. Since 2015, Dr Eitan Prisman has led a team of researchers and engineers working to develop a virtual surgical planning platform that can be used to help surgeons plan the reconstruction alongside 3D-print cutting guides to be used in the operating room. Although this approach has been shown to help decrease operating time and improve surgical outcomes, drawbacks include the additional planning time and the possibility of tumours growing between planning and the day of the surgery. Thus, a way to provide more rapid information to the surgical team is urgently needed.

With funding from the Canadian Cancer Society, Dr Prisman and his team are developing an innovative image-guided hardware and software technology with the ability to provide real-time guidance for upper and lower jaw reconstruction. This proposed approach provides the benefits of improving surgical accuracy and outcomes while addressing the limitations of the 3D-printed guides. The research team will first test the system on cadavers and 3D-printed models to evaluate its feasibility and accuracy as well as to provide preliminary data prior to implementing the system clinically.

If successful, this project could improve surgery for people with head and neck cancer, increasing their quality of life.

Maria (Martine) Puts
University of Toronto

$520,359
2023-2025

Improving quality of life for older people with cancer in Canada

A team led by Dr Martine Puts is improving the way health issues in older adults with cancer are managed while they are on cancer treatment.

More than half of cases and around 4 in 5 deaths from cancer in Canada occur in people over 65 years of age, and this number is expected to rise as the population ages. All older people with cancer should have a detailed geriatric health assessment done to identify any health concerns that should be taken into account when deciding upon their cancer treatments. When used, geriatric assessment and management reduces cancer treatment-related side effects and improves quality of life for older people with cancer. However, this assessment is not frequently used in Canada.

With funding from the Canadian Cancer Society, a team led by Dr Martine Puts, including researchers, clinicians and older people with cancer and their caregivers, is working to improve the geriatric assessment and management plan for older people with cancer. The team will first analyze how the geriatric assessment and management plan is currently being used in Canada before working with the patient advocates to make improvements to it. Once the team have developed a new version of the plan, they will test it in 5 clinics and collect data to analyze how well-used and effective it is.

If successful, this project could lead to an improved way of assessing and managing health conditions older people experience during cancer treatment, minimizing the side effects they experience and improving their quality of life.

Laszlo Radvanyi **$524,873**
Ontario Institute for Cancer Research **2023-2025**

Investigating new ways of detecting and treating cancer

A team led by Dr Laszlo Radvanyi is looking at how parts of the "non-coding" genome might influence the development of cancer to provide new opportunities for cancer prevention, detection and treatment.

A third of our genetic information tells cells how to produce proteins, and until recently, researchers thought the other two-thirds were mostly "junk" with no important function. Now, researchers have found that these largely ignored areas do have important functions, particularly in cancer where some of this genetic information is active in tumour cells but not healthy ones. This presents exciting opportunities for the detection and treatment of cancers.

With funding from the Canadian Cancer Society, a team led by Dr Laszlo Radvanyi is investigating how particular parts of the so-called "non-coding" genome influence cancer development. The team is building on previous work in both childhood and adult cancers where they found that these elements could be recognized by the immune system, leading them to think that the elements could be detected to diagnose cancers and targeted as the foundation of new treatments.

If successful, this project could lead to new ways of detecting and preventing cancer and creating better treatments, improving outcomes for people affected by this disease.

Christian Steidl **$524,878**
BC Cancer, part of the Provincial Health Services Authority **2023-2025**

Improving understanding of a rare type of lymphoma

A team led by Dr Christian Steidl is using advanced techniques on a rare type of blood cancer to provide better treatment options for people affected.

Mediastinal gray zone lymphoma is a rare type of blood cancer that primarily affects young adults and occurs in the chest. This disease has a poorer prognosis than many other types of lymphoma diagnosed in this location. Because there aren't many cases diagnosed each year, there is a lack of understanding about how this type of lymphoma behaves and how to effectively tailor treatments for people affected by the disease.

With funding from the Canadian Cancer Society, a team led by Dr Christian Steidl is investigating the specific genetic and cellular changes that control how this rare type of lymphoma cells behave and interact with surrounding healthy cells and tissues. The researchers will study samples from people with the disease and compare them to other types of lymphoma.

If successful, this project could lead to a greater understanding of mediastinal gray zone lymphoma, resulting in new treatment options for people affected by this cancer.

Isabella Tai | **$525,000**
BC Cancer, part of the Provincial Health Services Authority | **2023-2025**

Using artificial intelligence to identify people at risk of early onset colorectal cancer

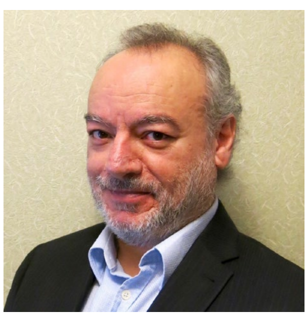
A team led by Dr Isabella Tai is creating a new screening tool to identify young people most at risk of developing colorectal cancer, enabling them to receive earlier diagnosis and treatment.

The number of young people diagnosed with colorectal cancer is quickly increasing, but there are currently no available screening programs in Canada for people under the age of 50. Due to cost and lack of access to a tool that can identify those at risk of early colorectal cancer development, people are often diagnosed with this cancer at a late stage, when treatments are less effective, and outcomes are poor. New ways of predicting which young people are at risk of colorectal cancer are urgently needed.

With funding from the Canadian Cancer Society, a team led by Dr Isabella Tai is working to identify people at risk of early onset colorectal cancer so that they can be given earlier treatment and achieve better outcomes. The researchers will use colonoscopy and blood samples donated by people between the ages of 40 and 45, genetic analysis techniques and artificial intelligence to identify genetic patterns that are predictive of colorectal cancer development.

If successful, this work could lead to a new screening tool to identify younger people most at risk of colorectal cancer, enabling them to undergo screening and earlier intervention if they should develop colorectal cancer.

Hasan Uludag | **$522,125**
University of Alberta | **2023-2025**



Developing genetically tailored therapies for childhood blood cancers

A team led by Dr Hasan Uludag is developing a new type of genetic-targeted therapy for children with difficult-to-treat blood cancers, with the goal of achieving better outcomes.

Some harder-to-treat blood cancers in children are caused by fusion genes, where two bits of DNA get incorrectly stuck together, causing cells to behave abnormally. Conventional chemotherapy treatments are not effective for many of these children and new ways to treat them are urgently needed.

With funding from the Canadian Cancer Society, a team led by Dr Hasan Uludag is developing a new type of targeted therapy to treat these children. The research team will engineer tiny nanoparticles that will contain genetically tailored therapies to interfere with the fusion genes found in children with these types of blood cancer. Because these genetic therapies are designed to target only the fusion genes in the cancer cell, the researchers hope there will be minimal side effects. They will test the therapy in laboratory models, both on their own and in combination with chemotherapy.

If successful, this project could lead to clinical trials and new targeted therapies for children with hard-to-treat blood cancers.

Mandana Vahabi
Toronto Metropolitan University

$525,000
2023-2025

Promoting cervical cancer screening and education in underserved communities

A team led by Dr Mandana Vahabi is running an arts-based program to promote HPV testing and cervical cancer screening and education in people who face significant barriers to access this type of healthcare.

Human papilloma virus (HPV) is the cause of almost all cervical cancers and many people with a cervix undergo regular pap tests to identify the presence of abnormal cells. Early detection of these abnormal cells means people can be given treatment sooner, when it is more likely to be effective. However, some groups, who face inequitable access to health care, are much less likely to undergo pap tests, despite being at a higher risk of cervical cancer.

With funding from the Canadian Cancer Society, a team led by Dr Mandana Vahabi is running an arts-based program to promote HPV testing and cervical cancer screening and education in women from underserved populations. Working with local community partner organizations, the researchers aim to recruit 300 people who are current or former sex workers or have been incarcerated. The study participants will be provided with online arts-based educational sessions about HPV and cervical cancer and given the option to use a kit to self-collect samples for HPV screening as a method of identifying those who should be offered cervical cancer screening via pap test. The researchers will also collect information from the participants about their views on cervical cancer screening and any concerns they have about self-sampling.

If successful, this project could help women from underserved communities access HPV testing and cervical cancer screening and increase knowledge about HPV and cervical cancer among these communities.

Elijah Van Houten
Université de Sherbrooke

$525,000
2023-2025

Developing a specialized bra for breast cancer screening

A team led by Dr Elijah Van Houten is developing a bra-like device to provide more accessible, comfortable breast cancer screening.

Breast cancer screening such as mammography is very effective at diagnosing many cases of breast cancer early, allowing for timely treatment and maximizing the chances of survival. However, current screening techniques require significant infrastructure, can be uncomfortable and have to be done in a hospital or specialized clinic, creating barriers to access for some people.

With funding from the Canadian Cancer Society, a team led by Dr Elijah Van Houten is continuing their work in developing a high-tech bra that can detect cancerous tissue in the breast. The team have recently completed a small pilot study on 22 people, both with and without breast cancer, and their device was able to pick up the presence or absence of cancer 100% of the time. The researchers are now testing the device on up to 300 women with different types of breast tumours as well as those with normal mammograms and no evidence of tumours.

If successful, this project could lead to a new way for screening for breast cancer in Canada, allowing some people to undergo screening outside of specialist clinics and hospitals and minimizing pain and discomfort from the procedure.

Abi Vijenthira **$523,441**
Princess Margaret Cancer Centre, UHN **2023-2025**

Supporting gut health to improve outcomes for people with cancer

A team led by Dr Abi Vijenthira is investigating whether gut microbiome transplants for people with cancer are safe and can improve their gut health to maximize the effectiveness of some types of cancer treatment.

The microorganisms that naturally reside in digestive systems are important for regulating the immune response. Many people with cancer have had antibiotic treatments to treat or prevent bacterial infections when their immune systems are compromised. This treatment may affect the likelihood of cellular therapies – including stem cell transplants – working for people with cancer as well as increase treatment-related side effects. So, new ways of addressing this to improve outcomes are urgently needed.

With funding from the Canadian Cancer Society, a team led by Dr Abi Vijenthira is conducting an innovative clinical trial – offering gut microbiome transplants from healthy donors to people with cancer – to increase the number and diversity of beneficial microorganisms in the gut. The team is recruiting 20 people with blood cancers who will undergo cellular therapies, including chimeric antigen receptor (CAR-T) therapy or stem cell transplants, to the trial. The researchers aim to assess the feasibility and safety of this approach, with the hope of running a larger clinical trial in the future.

If successful, this project could provide a new way to maximize the effectiveness of therapy and minimize toxicities for people with blood cancers undergoing cellular therapies.

Anargyros Xenocostas **$522,474**
London Health Sciences Centre Research Inc **2023-2025**

Using robotics to improve personalized treatment for acute myeloid leukemia

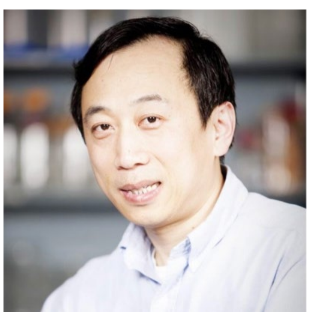
A team led by Dr Anagyros Xenocostas is using robotics to test dozens of drugs on cells from people with acute myeloid leukemia to find the best therapeutic options for people with this type of cancer.

Despite the approval of new treatments for acute myeloid leukemia (AML) in the last decade, many people still relapse. This is partly due to a lack of information about which drugs, or combination of drugs, are the best option for each individual based on the unique characteristics of their disease.

With funding from the Canadian Cancer Society, a team led by Dr Anargyros Xenocostas is working to find better treatments by optimizing a way to test potential drugs on tumour cells taken directly from people with AML. Building on their previous work, the researchers will enrol 25 people with AML to donate their leukemia cells. The team will then use robotic techniques to quickly test more than 30 drugs that might be beneficial for these patients. The study will tell the research team if they can do this analysis quickly enough to benefit people with AML and provide better outcomes than with current treatment approaches.

If successful, this study could provide more personalized treatment for people with AML and get them closer to remission, where they will be eligible for stem cell transplantation to control their leukemia over the long term.

Xiaolong Yang **$525,000**
Queen's University **2023-2025**



Evaluating a new possible therapeutic target in breast cancer

A team led by Dr Xiaolong Yang is evaluating a promising new drug target for breast cancer treatment to provide more treatment options for people with hard-to-treat breast cancers.

Although there have been many recent advances in breast cancer treatment, it remains the most common cause of death from cancer in woman in Canada. The need for new therapeutic approaches is particularly pressing for people who have their cancer spread to other parts of the body and those who have types of breast cancer that are harder to treat due to genetic mutations.

With funding from the Canadian Cancer Society, a team led by Dr Xiaolong Yang is investigating a specific protein found in excess in many breast cancer cells. Building on previous work, the team is creating laboratory models of breast cancer to investigate how this protein influences tumour development. They will study tissue samples donated by people with breast cancer to see whether levels of this protein are correlated to breast cancer survival. Finally, the researchers will evaluate potential drugs to target this protein and better treat some types of breast cancer.

If successful, this project could lead to clinical trials for new therapies, improving outcomes for people with breast cancer.