



# RESEARCH REPORT



**BC  
CANCER**

RESEARCH  
INSTITUTE

Provincial Health Services Authority

# Contents

3 ..... Message from the Senior Executive Director of Research, Dr. François Bénard

4 ..... Message from BC Cancer Foundation President & CEO, Sarah Roth

5 ..... Fast facts

6 ..... Awards and funding

14 ..... BC Cancer competitions

18 ..... Student awards

22 ..... Research highlights

    22 ..... Enhancing cancer screening and diagnosis

    23 ..... Improving cancer treatment

    28 ..... Exploring biology and genetics

    32 ..... Utilizing artificial intelligence to support further discoveries

    34 ..... Expanding cutting-edge clinical research

38 ..... New recruits

## ON THE COVER

Featured here is Caroline Baril, research assistant/technician with the Aparicio Lab. In 2024, the Aparicio Lab collaborated with international researchers to pinpoint what could be the early genetic origins of breast cancer – cancer-like mutations appearing in the cells of healthy women.

*Story on page 28*



## Message from the Senior Executive Director of Research Dr. François Bénard

At BC Cancer, collaboration is at the root of every discovery and breakthrough that impacts patient care. Research is a long-haul process, based on science and guided by a passion to improve the lives of those affected by cancer. We learn from other researchers, contribute to the global scientific effort to eradicate cancer, and train the next generation of scientists that will continue our work.

We have been building on our close relationship with the University of British Columbia (UBC) through the recruitment of internationally recognized researchers. We partnered with UBC to recruit Dr. Katey Enfield, who returned to British Columbia after a research fellowship at the Francis Crick Institute in London, England. Dr. Enfield is an expert in spatial biology, and her research studies how cancer cells interact with each other and normal cells in the context of lung cancer development. We partnered with UBC Science and the Faculty of Medicine to recruit Dr. Corinna Schindler and Dr. Corey Stephenson, world-renowned experts in synthetic chemistry, to set up a medicinal chemistry laboratory at the BC Cancer Research Institute to support early cancer drug discovery.

In 2024, we started to see the benefits of strategic investments to grow and enhance clinical research at BC Cancer. With the support of the BC Cancer Foundation and the Government of British Columbia, we allocated strategic funding to support clinician-scientists and clinical investigators in their quests to address critical priorities across the province. Through open, highly selective peer-reviewed programs, we secured and awarded funding to top applicants that conduct multidisciplinary research in hard-to-treat cancers, run clinical studies to improve patient care, and research improved methods of delivering radiation therapy.

This year’s report highlights the extraordinary talent emerging from across our research programs. Our rising stars – early-career scientists and trainees – are shining brightly by publishing important work in leading academic journals and earning prestigious awards, while gaining invaluable guidance and mentorship from our world-renowned senior investigators. They are pushing the boundaries of cancer research from translational science to cutting-edge clinical trials, and exploring new technologies, such as artificial intelligence, to improve patient care.

Notably, 2024 saw the implementation of HPV self-screening in BC – a testament to how collaborative research translates into tangible improvements to the health of British Columbians and the health care system itself.

These achievements are a result of our priority to integrate research and cancer care, and continue collaborations with local, national and international partners. Once again, we have been fortunate to receive the unwavering support of the BC Cancer Foundation, empowering our researchers to dive into new discoveries and expand the pipeline of talent committed to improve cancer prevention, screening, treatment and care.

As we reflect on the past year, we are inspired by what our community has achieved and optimistic for what is to come. Thank you to all who support and contribute to cancer research in BC. Your efforts bring us closer to our vision.

**Dr. François Bénard**  
Senior Executive Director  
Research



# Message from BC Cancer Foundation President & CEO Sarah Roth

Donations to the BC Cancer Foundation do more than advance science. They fuel hope for the thousands of families across British Columbia facing a cancer diagnosis. Hope for longer lives, more time together and futures once thought impossible.

For Marlifel Castillo, hope became a reality in July 2024 when she welcomed her daughter, Madeleine — a dream made possible by a Foundation-funded study focused on preserving fertility in early stage endometrial cancer patients. Led by Dr. Mark Carey, the groundbreaking research safely delays hysterectomy and is set to change practice worldwide.

Donor-supported discoveries are also helping to keep families whole. Thanks to the work of Drs. Poul Sorensen and Michael Lizardo, a promising drug has been identified that could stop the spread of osteosarcoma, a common and aggressive childhood bone cancer, potentially improving survival rates by 50 per cent.

Cancer prevention is a critical focus for our donor community. And why we're proud to invest in Dr. Sam Aparicio's team, whose discovery of cancer-like mutations in healthy breast tissue is shedding new light on the earliest genetic origins of the disease — paving the way for new tools to identify those at higher risk and enable earlier intervention.

The generosity of our donors is also propelling the integration of AI into research. Helping to bridge precision treatment with supportive care, one remarkable project is using natural language processing to analyze oncologists' notes to predict which patients will need future mental health support.

Philanthropy is helping researchers harness technology to unlock new frontiers in highly precise, personalized radiation therapy in ADAPT-25. The clinical trial, led by Dr. Abraham Alexander at BC Cancer – Victoria and Dr. Winkle Kwan at BC Cancer – Surrey, is using a custom AI algorithm to test the efficacy of two doses of SABR on curative prostate patients, offering a glimpse of a future with fewer side effects and faster recovery.



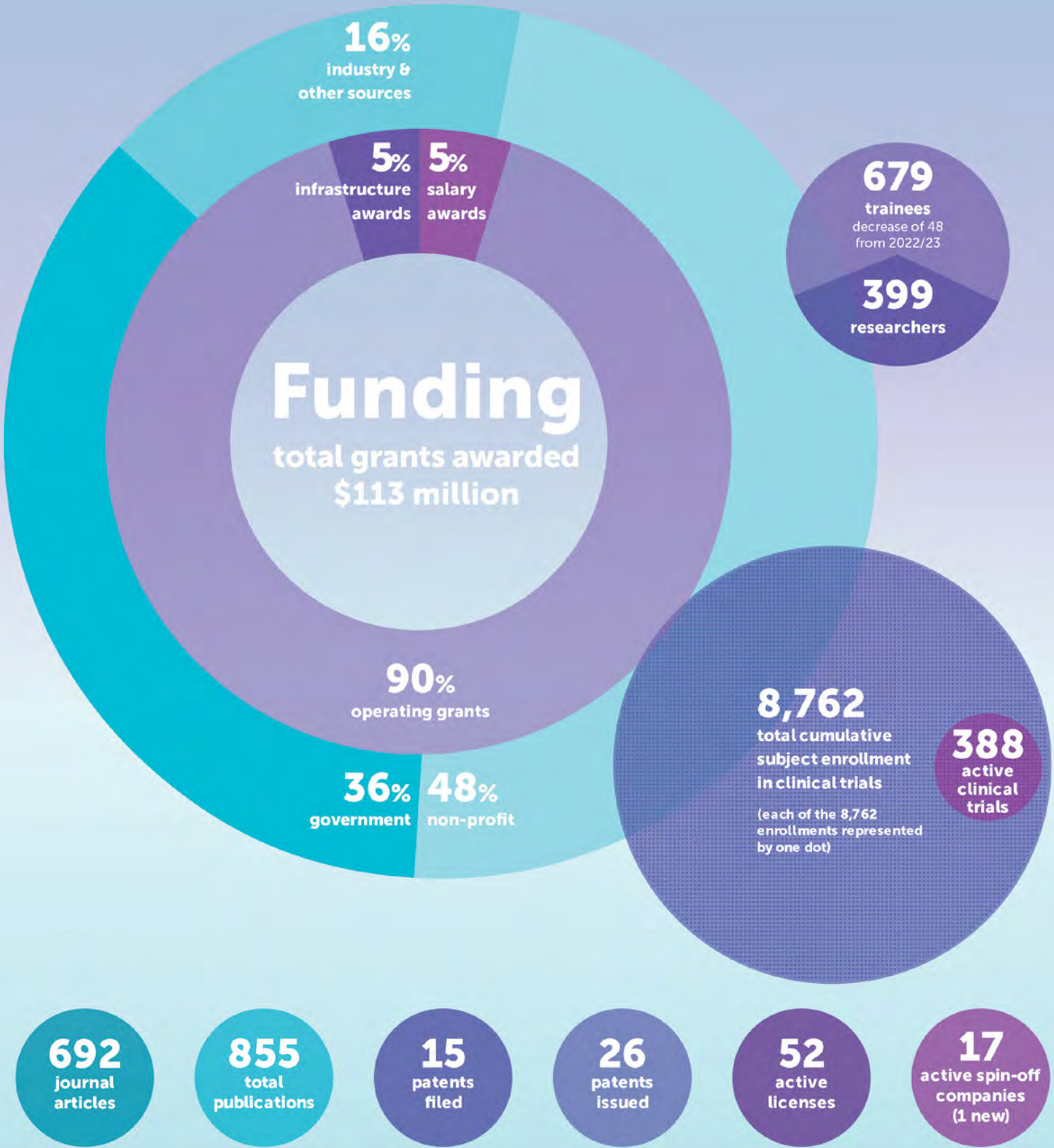
Community investment is fuelling new programs in which BC Cancer scientists can do their best work — including the Krysko Family Foundation's \$2.76 million investment in a new Research & Development Hub and Ken and Gloria Sargent's \$1.5 million support for the first ever Surgical Oncology Research Program at BC Cancer – Kelowna and the Foundation's \$6.8 million campaign to fuel the next phase of immunotherapy research at the Deeley Research Centre in Victoria.

Similarly, in Vancouver a donor-supported Medicinal Chemistry Lab is advancing novel drug development and the recruitment of two world-renowned medical chemists.

These bold initiatives and breakthroughs — and countless others — are possible thanks to the steadfast generosity of our donor community. As BC Cancer continues to push the boundaries in cancer research and care, the Foundation is investing in the scientists, clinicians and innovators who are leading the charge. Together, we are changing lives.

Sarah Roth  
BC Cancer Foundation  
President & CEO

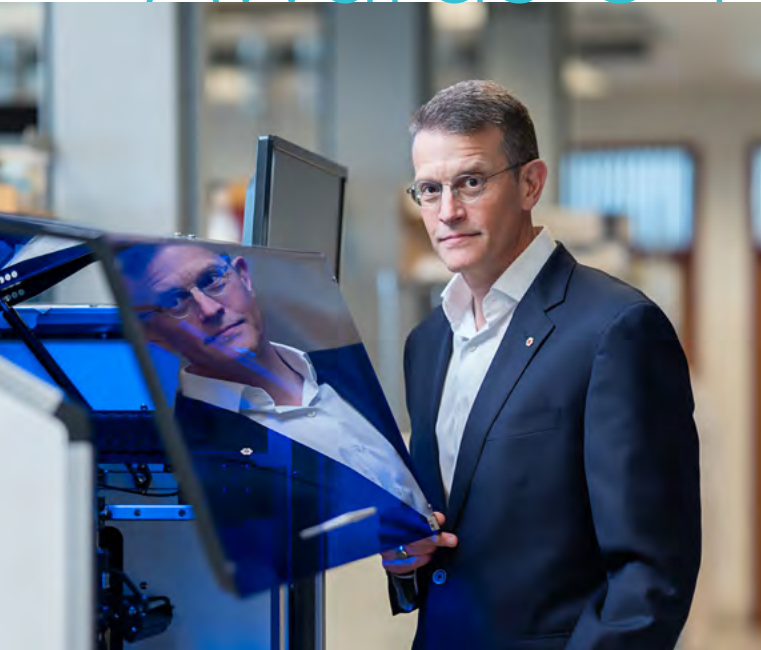
# Fast Facts





# Awards & Funding

# 2024



## **Dr. Marco Marra**

appointed Officer to the Order of Canada

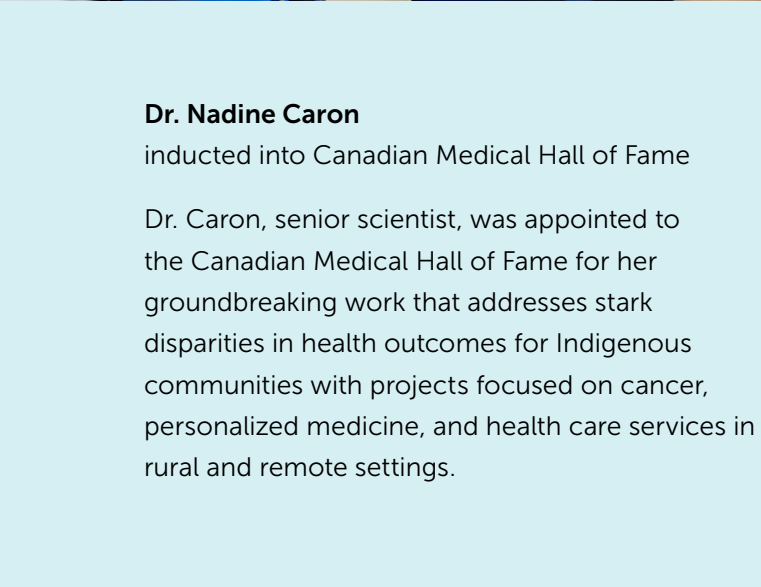
Dr. Marra, distinguished scientist, was appointed to the Order of Canada for his trailblazing research in genomics that propelled Canada to the forefront of genome research.



## **Dr. Yongjin Park**

named Canada Research Chair in Integrative Causality Inference of Cancer Mechanisms

Dr. Park, scientist, has been named Canada Research Chair in Integrative Causality Inference of Cancer Mechanisms (Tier 2). He is investigating what causes cancer to develop and progress by applying genetic analysis and single-cell genomics techniques.



## **Dr. Nadine Caron**

inducted into Canadian Medical Hall of Fame

Dr. Caron, senior scientist, was appointed to the Canadian Medical Hall of Fame for her groundbreaking work that addresses stark disparities in health outcomes for Indigenous communities with projects focused on cancer, personalized medicine, and health care services in rural and remote settings.



Photograph by Martin Dee, UBC



## **Dr. Laura Evgin**

named Canada Research Chair in Cancer Immunotherapy

Dr. Evgin, scientist, has been named Canada Research Chair in Cancer Immunotherapy (Tier 2). She is working to make T-cell therapies more effective and accessible by using techniques to gain insights into how cell-based therapies interact with the systemic cancer ecosystem.

## **Dr. Poul Sorensen**

received Doctors of BC Terry Fox Medal

Dr. Sorensen, distinguished scientist, received the Doctors of BC Terry Fox Medal for his remarkable contributions to the field of pediatric cancer research and in translating scientific discoveries into clinical practice.





AWARDS & FUNDING

JANUARY

 **Dr. Sarah Baker** received a Varian Medical Systems grant for the project titled, "Stereotactic radiotherapy versus palliative radiotherapy for oligoprogressive metastatic cancers: A double-blind randomized phase III trial (The STOP 2 Trial)." \$563,870 (6 years)

 **Dr. Laura Evgin** received a Terry Fox New Investigator award for the project titled, "Optimizing CAR T-cell therapy for the treatment of extranodal lymphoma." \$450,000 (3 years)

 **Dr. Jessica McAlpine** received a Health Care Unburdened grant from the Canadian Medical Association for the project titled, "Survivor advisor: Advancing cancer survivorship care through digital innovation." \$607,200 (2 years)

 **Dr. Rasika Rajapakshe** received a grant from the Washington University at St. Louis for the project titled, "Breast cancer risk prediction based on whole mammogram image." \$147,910 (2 years)

 **Dr. Kasmintan Schrader** received a Craig's Cause Pancreatic Cancer Society Faculty Research grant for the project titled, "Parent-of-origin-aware genomic analysis in pancreatic cancer families." \$75,000 (2 years)

**Dr. Kasmintan Schrader** received a TrovaNOW award for the project titled, "Pancreatic cancer early detection consurtium (precede)." \$160,000 USD (5 years)

FEBRUARY

**Canadian Cancer Society Challenge Grant**  
 **Dr. Alan Bates**, "The Supportive Care Oncology Practice ECHO (SCOPE) to address the challenge of under resourced supportive care services for people living with breast cancer." \$521,791 (3 years)

 **Dr. Kevin Bennewith**, "Improving responses to immunotherapy." \$510,000 (2 years)

 **Dr. Kristin Campbell**, "Improving supportive care for people with breast cancer." \$521,791 (2 years)

 **Dr. Cathie Garnis**, "A blood test for earlier detection of recurrent head and neck cancer." \$442,450 (2 years)

 **Dr. Cheryl Peters**, "Combating online misinformation about cancer causes and prevention." \$517,077 (2 years)

 **Dr. Christian Steidl**, "Improving understanding of a rare type of lymphoma." \$524,878 (2 years)

 **Dr. Isabella Tai**, "Using artificial intelligence to identify people at risk of early onset colorectal cancer." \$525,000 (2 years)

MARCH

**Canada Foundation for Innovation (CFI) Grants**  
 **Dr. François Bérard and Dr. Arman Rahmim**, CFI Innovation Fund for the project titled, "Infrastructure for accelerated in vivo molecular imaging and theranostic research." \$12,455,906 (5 years)

 **Dr. Zu-hua Gao**, John R. Evans Leaders Fund for the project titled, "Hydrogen-based adhesive artificial mucosa (HAAM): a novel versatile platform for cancer therapy and prevention." \$150,000 (1 year)

 **Dr. Haishan Zeng** received a CIHR Priority Announcement award for the project titled, "Advanced raman spectroscopy for exhaled breath analysis for lung cancer detection." \$100,000 (1 year)

Canadian Institutes of Health Research (CIHR) Project Grant: Spring 2024 Results

 **Dr. Marcel Bally and Dr. Laura Evgin**, "Copper associated immunogenic cell death: Improving the therapeutic potential of immune check point inhibitors for the treatment of metastatic bladder cancer." \$1,028,926 (5 years)

 **Dr. Gang Wang** and Dr. Ali Bashashati, "aRtificial intelligence-driven computational pathology platform for bLadder Cancer subTyping (REACT)." \$1,200,000 (3 years)

 **Dr. David Huntsman**, "DICER1 tumour predisposition syndrome: dissecting the oncogenic mechanisms with a novel lineage-trackable genetically engineered mouse model." \$1,120,726 (5 years)

**Dr. Jessica McAlpine**, "STRIVE study: STRatification of Vulvar squamous cell carcinoma by HPV and p53 status to guide Excision." \$1,166,628 (7 years)

 **Dr. Peter Stirling**, "Development and application of novel FEN1 endonuclease inhibitors." \$1,044,226 (5 years)

 **Dr. Poul Sorensen and Dr. Kevin Hay**, "Targeting metabolic vulnerabilities in childhood cancers using immunotherapy." \$956,250 (5 years)

APRIL

BC Cancer Sprakkar Physics Research Awards

 **Dr. Amy Frederick**, "The impact of radiation dose to regional lymph nodes on clinical outcomes after breast radiotherapy." \$20,000 (1.5 years)

 **Dr. Samantha Lloyd**, "Surface guided breast radiation therapy in BC – Improving patient experience." \$20,000 (1.5 years)

 **Dr. Calum MacAulay** received a Natural Sciences and Engineering Research Council of Canada Discovery Horizons award for the project titled, "Angular contrast multimodal optical imaging for lung cancer assessment." \$200,000 (2 years)

 **Dr. Brad Nelson** received a US Department of Defense – Ovarian Cancer Research Program (OCRP) award for the project titled, "Harnessing the immune response in exceptionally long-term survivors to develop novel therapeutics." \$399,920 USD (2 years)

**Dr. Poul Sorensen** received a Sarcoma Foundation of America grant for the project titled, "Functional validation and targeting of ENPP1 in Ewing sarcoma." \$50,000 USD (1 year)

 **Dr. Haifeng Zhang** received a young independent investigator grant from the Rally Foundation for Childhood Cancer Research (Rally) for the project titled, "Immunotherapeutic targeting of IL1RAP in rare pediatric cancers." \$50,000 USD (1 year)



MAY

 **Dr. Samuel Aparicio** received a US Department of Defense Breakthrough award for the project titled, "Decoding how distinct mechanisms of genomic instability, found in triple-negative breast cancer TNBC patients, program the tissue microenvironment and therapy response at metastatic sites." \$807,400 USD (3 years)

**Dr. Peter Stirling** received a Brain Cancer Canada grant for the project titled, "Developing new dual function therapies that kill tumour cells and activate immune responses in glioblastomas." \$80,000 (1 year)

Clinical Trials BC Awards

 **Dr. Robert Olson** received the 2024 Leadership & Advocacy Award for his longstanding leadership in the clinical trials and research community.

 **Dr. Bernie Eigl** received the 2024 Service & Support Award for his dedication to supporting clinical trials and enhancing trial participation and efficiency.

 **Dr. Leandro Venturutti** received a Lupus Research Alliance grant for the project titled, "Defining the determinants of Lupus progression and cancerous transformation." \$300,000 (2 years)

JUNE

 **Dr. Jessica Chan** received a UBC Department of Surgery Clinical Faculty Research Support award to support time away from clinical practice to focus on research. \$135,000 (3 years)

 **Dr. Andrew Roth** received a Gynecologic Cancer Initiative Plunge for the Cure Impact grant for the project titled, "Mapping the evolution of resistance to cytotoxic and non-cytotoxic chemotherapies in high grade serous ovarian cancer." \$125,000 (2 years)

 **Dr. David Scott and Dr. Kerry Savage** received a Leukemia & Lymphoma Society of Canada grant for the project titled, "Biology and clinical outcomes of post-transplant lymphoproliferative disorders." \$100,000 (1 year)

**Dr. Poul Sorensen** received a Pediatric Blood Cancer Research Innovation grant from the Leukemia and Lymphoma Society of Canada for the project titled, "Immunotherapeutic targeting of IL1RAP in pediatric ALCL and AML." \$200,000 (2 years)

**Dr. Poul Sorensen** received Mitacs grant for the project titled, "Understanding and targeting stress-related pathways in sarcoma." \$706,666 (3 years)

**Dr. Poul Sorensen** received an innovation grant from Alex's Lemonade Stand Foundation for the project titled, "Investigating mechanistic roles of a novel oncofusion-driven transcript isoform in Ewing sarcoma." \$250,000 USD (2 years)

**Dr. Poul Sorensen, Dr. Philipp Lange and Dr. Steven Jones** received a CIHR/Advancing Childhood Cancer Experience, Science & Survivorship grant for the project titled, "Sarcoma MetAstasis Research Taskforce, SMART." \$311,750 (2 years)

 **Dr. Ly Vu and Dr. Yongjin Park** received a New Frontiers in Research Fund – Exploration Stream award for the project titled, "Decoding cell fate regulatory networks through single cell omics and modelling approaches." \$250,000 (2 years)

JULY

Terry Fox New Frontiers Program Project Grant

**Dr. Brad Nelson**, "Integrated immunotherapy for ovarian cancer." \$2,400,000 (4 years)

 **Dr. Aly Karsan**, "Exploiting pathogenic mechanisms in acute leukemia for clinical translation." \$7,500,000 (5 years)

 **Dr. Yvette Drew** and Dr. Ali Bashashati received a Plunge for the Cure Impact grant via the Gynecologic Cancer Initiative for the project titled, "Role of AI-driven histopathology image analysis in predicting response to PARP inhibitors (PARPi) in high grade serous ovarian cancer." \$125,000 (2 years)

**Dr. Yvette Drew** received a Cancer Research Society and Ovarian Cancer Canada Bridging the Gap award for the project titled, "High grade serous ovarian cancer evolution under targeted therapy." \$600,000 (3 years)

 **Dr. Leah Lambert** received a Scholar Award from the Michael Smith Health Research BC for the project titled, "Advancing equitable cancer care: an innovative approach to transformative action in BC." \$450,000 (5 years)

**Dr. Andy Roth and Dr. Yvette Drew** received a Plunge for the Cure Impact grant via the Gynecologic Cancer Initiative for the project titled, "Mapping the evolution of resistance to cytotoxic and non-cytotoxic chemotherapies in high grade serous ovarian cancer." \$125,000 (2 years)

 **Dr. Roel Schlijper-Bos** received a Collaboration for Health Research in Northern BC grant for the project titled, "Closer to home." \$45,000 (2 years)

**Dr. Kasmintan Schrader** received an Ovarian Cancer Canada/AstraZeneca Ovarian Cancer Prevention Task Force award for the project titled, "Evaluation of novel parent-of-origin detection sequencing tool: improving cascade testing through innovation." \$45,000 (2 years)

**Dr. Poul Sorensen** received a Martha's Better Ewing Sarcoma Treatment (BEST) grant from the St. Baldrick's Foundation for the project titled, "Better Ewing Sarcoma Treatment." \$500,000 USD (2 years)

**Dr. Gang Wang** received a Health Professional-Investigator Award from Michael Smith Health BC for the project titled, "Toward an immunohistochemistry model for molecular subtyping and predicting of treatment response in bladder cancer." \$450,000 (5 years)

**Dr. Gang Wang** received a Genome BC grant for the project titled, "Discovery and validation of urinary metabolic biomarker for early-stage bladder cancer diagnosis." \$240,000 (2 years)

AUGUST

**Dr. Samuel Aparicio** received a Terry Fox Research Institute & Marathon of Hope Cancer Centres Network Technology Development Award for the project titled, "Marathon of Hope Cancer Centres Network: Cell-free whole genome and epigenome sequencing to detect and classify cancers from plasma circulating DNA." \$91,000 (2 years)

**Dr. Kasmintan Schrader** received an AstraZeneca Cybergrants award for the project titled, "Project PATTERN (Parent-of-origin & cAscade Testing To Expedite BRCA ideNtification)." \$89,600 USD (2 years)



**Dr. Kasmintan Schrader** received a Terry Fox Research Institute MOHCCN Technology Development award for the project titled, "Orthogonal pangenome sequencing to unveil genetic cancer susceptibility diagnostic odysseys: a Return of Results Working Group new technology assessment study." \$250,000 (2 years)

SEPTEMBER

CIHR Project Grant: Fall 2024 Results



**Dr. Carol Chen**, "Epigenetic mechanisms of SETD2 neurodevelopmental disorders." \$1,120,725 (5 years)

**Dr. Christian Steidl**, "Cellular ecosystems of nodular lymphocyte predominant Hodgkin lymphoma." \$ 1,147,500 (5 years)



**Dr. Carlos Uribe, Dr. François Bénard and Dr. Arman Rahmim**, "Precision radiopharmaceutical therapies with theranostic digital twins." \$906,525 (5 years)



**Dr. Haishan Zeng and Dr. Stephen Lam**, "Endoscopic laser raman spectroscopy for minimally invasive detection of peripheral lung cancer." \$814,724 (4 years)



**Dr. Parveen Bhatti** received a Canadian Cancer Society Workplace Cancer Research grant for the project titled, "Gut dysbiosis as a mechanism driving increased cancer risks among night shift workers." \$200,000 (2 years)

**Dr. Jessica Chan** received a Health Professional-Investigator Award from Michael Smith Health Research BC for the project titled, "Developing equity-centered language with First Nations, Inuit, and Métis peoples to reduce anti-Indigenous discrimination in healthcare." \$450,000 (5 years)



**Dr. Ryan Morin** was the co-recipient of the 2023 Bernard and Francine Dorval Prize (announced 2024) for the significant progress he has made to advance our understanding of lymphoma biology and improving patient care and outcomes.

**Dr. Kasmintan Schrader** received a Cancer Research Society Operating grant for the project titled, "Functional characterization of tumour suppressor variants through single cell phenotypic profiling." \$130,000 (2 years)

**Dr. Leandro Venturutti** received a US Department of Defense grant for the project titled, "Developing first in-kind models of primary testicular lymphoma." \$109,895 USD (2 years)



**Dr. Andrew Weng** received a CIHR TRANSCAN-3 grant for the project titled, "EPI\_T-ALL unveiling the epigenetic landscape and therapeutic implications of epigenetic modifiers in human T-cell leukemia initiation and progression." \$448,770 (3 years)

UBC Faculty of Medicine Awards



**Dr. Paris-Ann Ingledew** received the Killam Teaching Award for her outstanding contributions to medical education.

**Dr. Samuel Aparicio** received the Overall Excellence – Senior Faculty award for outstanding contributions in the areas of research, education and service.

OCTOBER

**Dr. Samuel Aparicio** received a Breast Cancer Research Foundation renewal of award for the project titled, "Developing predictive biomarkers for genome targeting agents in TNBC, to single cell resolution." \$225,000 USD (1 year)

**Dr. Poul Sorensen and Dr. Samuel Aparicio** received an Osteosarcoma Institute High-Risk/High-Impact grant for the project titled, "G-quadruplex binders as a promising therapeutic strategy in metastatic osteosarcoma." \$100,000 USD (1 year)

**Dr. Yvette Drew** received a Sumiko Kobayashi Marks Memorial Research grant for the project titled, "Investigating the expression of trophoblast cell surface antigen 2 (TROP2) in vulvar squamous cell carcinomas and its relationship to immune biomarkers and survival outcomes." \$15,000 (2 years)

**Dr. Laura Evgin** received a Gairdner Early Career Investigators award from the Gairdner Foundation, alongside four other early career investigators across Canada.

**Dr. Leah Lambert** received a Canadian Partnership Against Cancer grant for the project titled, "Equity-oriented model of care (E-MOC) Phase 2." \$500,000 (2.5 years)

**Dr. Brad Nelson** received a National Research Council – Next-generation solid tumour cell therapies grant for the project titled, "Breaking the solid tumour barrier with mesothelin-specific CAR T-cells and engineered cytokine signaling to enable effective, safe and affordable cancer therapy." \$400,000 (1.5 years)

**Dr. Kasmintan Schrader** received an AstraZeneca Cybergrants Award for the project titled, "The value of digital solutions to improve rates of cascade genetic testing." \$50,750 USD (1 year)

**Dr. Christian Steidl** received the Karl Musshoff Prize from the International Symposium on Hodgkin Lymphoma for outstanding results and contributions to the field of Hodgkin lymphoma.

NOVEMBER

**Dr. Sarah Baker** received the Radiation Oncology: Hjalmar Johnson Early-Career Investigator Award from UBC Department of Surgery.



**Dr. Helen McTaggart-Cowan** received a Marathon of Hope Cancer Centres Network Patient Voice in Research Initiative award for the project titled, "Exploring the perspectives of stakeholders for homologous recombination deficient (HRD) biomarker testing to guide precision medicine for advanced ovarian cancer treatment." \$183,500 (1 year)

**Dr. Roel Schlijper-Bos** received a 3CTN - Equity, Diversity and Inclusion Demonstration Project grant for the project titled, "EDI T-CUPS project (Equity, Diversity & Inclusion in Clinical Trials Community Unlearning Platform Series)." \$19,240 (5 months)



## BC Cancer Emerging Multidisciplinary Research Programs Competition

BC Cancer’s 2024 Cancer Emerging Multidisciplinary Research Programs competition supports research teams with initiating novel multidisciplinary research projects that tackle well-defined issues or problems that affect patients living with cancer or at risk of developing cancer. Funding for the programs was provided through the BC Ministry of Health in collaboration with the BC Cancer Foundation.

### THE 2024 RECIPIENTS WERE:

- 

**Dr. Nicole Chau**, “Minimal residual disease detection and recurrence disease monitoring using ctDNA in head and neck cancers as part of PATH (Personalized Approaches in the Treatment of Head and Neck Cancer).” \$1,200,000 (3 years)
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**Dr. Carol Chen**, “ReCoN – Targeting drivers of lethal glioma brain tumours.” \$1,200,000 (3 years)
- 

**Dr. Kerry Savage**, “Metagenomics, metabolomics and immune profiling in melanoma: An integrative analysis platform for patients receiving immunotherapy.” \$1,200,000 (3 years)
- 

**Dr. Maryam Soleimani**, “The BC Cancer provincial von Hippel Lindau registry and biobank.” \$1,115,083 (3 years)
- 

**Dr. Adi Steif**, “The BC liver cancer program (LivBC): understanding disease at the single cell.” \$1,200,000 (3 years) eEF2K for therapeutic targeting in pediatric medulloblastoma. \$290,000 USD (3 years)

## BC Cancer Clinician Researcher Start Up Competition

The inaugural BC Cancer Clinician Researcher Start Up Competition took place in 2024. Funded through the BC Ministry of Health and in collaboration with the BC Cancer Foundation, the competition helped facilitate stand-alone research projects for clinician researchers at BC Cancer to support future grant or investigator-initiated studies to be funded by other organizations.

### THE 2024 RECIPIENTS WERE:

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**Dr. Mathieos Belayneh**, “Methadone to treat painful chemotherapy-induced peripheral neuropathy: A randomized double-blind controlled trial.”
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**Dr. Brandon Bernard**, “Sexual function and male breast cancer.”
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**Dr. Jessica Chan**, “Developing the linguistic indicators of framing tool: creating equity-oriented language to improve cultural safety in cancer care for First Nations, Inuit, and Métis peoples.”
- 

**Dr. Emily Jackson**, “Understanding and overcoming disparity in care of breast cancer patients in rural British Columbia: Development of a virtual nurse-led model of care.”
- Dr. Jean-Michel Lavoie**, “Predictive biomarkers for patients with genitourinary cancers receiving checkpoint inhibitors: new insights into gamma-delta T-cells.”

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**Dr. Jonathan Loree**, “Liver transplantation in metastatic colorectal cancer (CRC) – a pilot study (Prometheus) and correlative analysis characterizing tumour heterogeneity to inform ctDNA assays in CRC.”
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**Dr. Andrew Lytle**, “Multiomic characterization of TFH lymphomas and PTCL-NOS for biomarker discovery.”
- 

**Dr. Justin McGinnis**, “Advancing gynecologic cancer survivorship through digital innovation.”
- 

**Dr. Lucia Nappi**, “Unveiling B-cell receptor heterogeneity to predict immunotherapy response in patients with metastatic renal cell carcinoma.”
- 

**Dr. Justin Oh**, “Population-based outcomes of stereotactic radiation treatment for brain metastasis.”
- 

**Dr. Robert Olson**, “Single vs hypofractionated irradiation for timely access to partial breast radiotherapy – SHIFTPB.”
- 

**Dr. Ying Wang**, “Mitigation of lung cancer decline with virtual platforms to deliver exercise therapy across British Columbia (MoVE-BC) – Phase Two.”
- 

**Dr. Ren Yuan**, “Artificial intelligence models to predict response and survival in advanced NSCLC patients with PD-L1  $\geq$  50% receiving 1st-line Pembrolizumab monotherapy.”

- 

**Dr. Alan Nichol**, “Predicting upgrades from non-invasive core biopsy specimens to invasive ductal carcinoma in surgical specimens using histology-based DNA organization analysis.”
- 

**Dr. Alison Weppler**, “The utility of ctDNA to detect and monitor minimal residual disease in resected stage IIB-IV melanoma.”
- 

**Dr. Bernhard (Bernie) Eigl**, “Evaluation of early ctDNA reduction as a surrogate marker of response in urothelial cancer.”
- 

**Dr. Deepesh Lad**, “Impact of inner engineering yoga (no mind-body) program on distress in recipients undergoing hematopoietic cell transplantation (IMNoT).”
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**Dr. Diego Villa**, “Characterization of the intestinal microbiome in patients with mantle cell lymphoma.”
- 

**Dr. Juanita Crook**, “Multi-omic approach to study high dose rate (HDR) brachytherapy as monotherapy for favourable and intermediate risk prostate cancer (Brachy Tracks).”
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**Dr. Zu-Hua Gao**, “Hydrogel-based adhesive artificial mucosa (HAAM): a paradigm-shifting platform for postsurgical wound repair and local precision therapy of esophageal cancer.”



BC CANCER RADIATION ONCOLOGY GRANTS

Funded through the BC Ministry of Health and in collaboration with the BC Cancer Foundation, BC Cancer’s radiation oncology grants support investigators starting pilot research, support teams of investigators running clinical trials, enhance clinical trial access, and improve statistical support.

THE 2024 RECIPIENTS WERE:



**Dr. Abraham Alexander**, “Artificial intelligence-driven adaptive prostate stereotactic radiation therapy comparing 2 vs 5 fractions (ADAPT-25 Trial).” \$106,730



**Dr. Sarah Baker**, “An international survey of practice patterns in stereotactic ablative radiotherapy for oligoprogressive cancer.” \$500

**Dr. Sarah Baker**, “Stereotactic ablative radiotherapy versus low dose palliative radiotherapy for oligoprogressive metastatic cancers (SABR).” \$235,000

**Dr. Sarah Baker**, “Development and external validation of a nomogram to predict polymetastatic progression-free survival in patients treated with SABR for oligometastases.” \$3,000



**Dr. Andrew Bang**, “A phase II trial evaluating stereotactic ablative radiotherapy for primary and regional breast tumours (SABR-PRIMeR).” \$150,000



**Dr. Tanya Berrang**, “A phase III clinical trial evaluating de-escalation of breast radiation for conservative treatment of stage 1, hormone sensitive, HER2-negative, oncotype recurrence Score <=18 breast cancer (DEBRA).” \$25,000

**Dr. Tanya Berrang**, “A randomized trial of five-fraction partial breast irradiation (RAPID2 trial).” \$25,000

**Dr. Tanya Berrang**, “Randomized trial of hypofractionated loco regional radiotherapy in breast cancer and lymphedema (RHEAL): Protocol number: OCOG-2019-RHEAL.” \$125,000



**Dr. Matthew Chan**, “Patient-reported outcomes of palliative radiation therapy for multiple myeloma: A population-based retrospective review.” \$125,000



**Dr. Juanita Crook**, “Moderate versus ultra hypofractionation or brachytherapy for primary oligo metastatic prostate cancer treatment (PROMPT).” \$294,469



**Dr. Will Jiang**, “BC thyroid cancer database.” \$7,275



**Dr. Wei Liu**, “A randomized study of high versus standard dose radiotherapy for palliation.” \$268,000



**Dr. Andrea Lo**, “Provincial radiation oncology registry for lymphoma.” \$54,870



**Dr. Islam Mohammed**, “SCION study: A phase II study of circulating tumour DNA directed consolidation Durvalumab (MEDI4736) following induction and concurrent Durvalumab with SABR for stage I NSCLC (SCION: SABR and checkpoint inhibition of NSCLC).” \$316,183



**Dr. Alan Nichol**, “Improving provincial statistical support for clinical trials.” \$154,980



**Dr. Robert Olson**, “Single vs. multiple fraction non-inferiority trial of stereotactic ablative radiotherapy for the comprehensive treatment of Oligo-metastases/progression: SIMPLIFY-SABR-COMET.” \$400,000



**Dr. Hamid Raziee**, “CT-based daily adaptive external-beam radiotherapy for patients with intact uterine cervical cancer, a Phase II trial.” \$15,000



**Dr. Negin Shahid**, “Victoria prospective evaluation of breast-conserving surgery alone in low-risk ductal carcinoma in-situ defined by a molecular expression assay combined with clinico-pathological features (ELISA study).” \$125,000



**Dr. Scott Tyldesley**, “Salvage adaptive radiotherapy for localized prostate cancer post-prostatectomy (SARRP).” \$114,000

**Dr. Scott Tyldesley**, “Adaptive radiotherapy for localized prostate cancer (ARP).” \$114,000

**Dr. Scott Tyldesley**, “Clinical trials support for adaptive radiotherapy trials with Ethos platform.” \$60,000



**Dr. Tina Zhang**, “Population-based outcomes of geriatric men with high-risk non-metastatic prostate cancer who receive definitive radiotherapy with or without ADT.” \$10,000

**Dr. Tina Zhang**, “Stereotactic ablative radiation for metastatic CAstrate REsistant prostate cancer: The SABR-CARE Trial.” \$290,00



# Student Awards

2024

## 2024 BC Cancer Rising Stars Awards

The Rising Stars program honours the legacy of the late Dr. Connie Eaves, who we sadly lost in 2024. Dr. Eaves was a pioneer in her field, a mentor to many young researchers and a long-time advocate for equal opportunities in cancer research. To honour her legacy, the awards are dedicated to the advancement of the next generation of women and Black, Indigenous, and People of Color (BIPOC leaders) in research at BC Cancer. Funding for the awards was made possible through generous donor support via the BC Cancer Foundation.

### MSC AND PHD Awardees:



**Mackenzie Campbell**  
Lymphoid Cancer Research



**Sarah Chae**  
Cancer Control Research



**Diana Djaksigulova**  
Terry Fox Laboratory



**Marissa Foo**  
Terry Fox Laboratory



**Jamie Kwon**  
Integrative Oncology



**Tracy Lee**  
Genome Sciences Centre



**Yilin Liu**  
Terry Fox Laboratory



**Sarah McPhedran**  
Deeley Research Centre



**Sarah Okun**  
Integrative Oncology



**Annalena Renner**  
Molecular Oncology



**Gillian Savage**  
Genome Sciences Centre



**Laurie Short**  
Genome Sciences Centre



**Juliana Sobral de Barros**  
Molecular Oncology



**Rossana Torres-Alvarez**  
Integrative Oncology



**Olga Vishnyakova**  
Genome Sciences Centre



**Lisa Zhan**  
Integrative Oncology

## 2024 BC Cancer Rising Stars Awards

### Post-Doctoral Fellowship Awardees:



**Gurdeep Singh**  
Molecular  
Oncology



**Maryam Sharifiaghdam**  
Experimental  
Therapeutics



**Pauline Loos**  
Genome Sciences  
Centre



**Vahid Akbari**  
Genome Sciences  
Centre



**Zhen Jin**  
Terry Fox  
Laboratory

## BC Cancer 2024 Summer Research Studentship Awards

BC Cancer 2024 Summer Research Studentship competition, sponsored by the BC Cancer Foundation, supports senior undergraduate university students and/or junior medical or dental students seeking hands-on training in cancer research in British Columbia. These summer studentships may address any discipline of cancer research including clinical, translational, basic, behavioural and population research areas.



**Vianne Chang**  
Terry Fox Laboratory



**Van Do**  
Genome Sciences Centre



**Connor Frey**  
Medical Oncology



**Brennan Katsube**  
Genome Sciences Centre



**Athena Wan Qin Li**  
Integrative Oncology



**Samantha Li**  
Integrative Oncology



**Isabella Martin**  
Integrative Oncology



**Namya Sharma**  
Molecular Oncology



**Brooke Wheeldon**  
Deeley Research Centre



**Sangwook Michael Woo**  
Integrative Oncology



## CANCER RESEARCH SOCIETY’S DOCTORAL RESEARCH AWARDS



**Meredith Clark**, “Repurposing the angiotensin II receptor blocker Telmisartan to promote anti-tumour immune responses.”



**Yilin Liu**, “Uncovering the role of the CCR4-NOT transcription complex subunit 4 (CNOT4) in the pathogenesis of Acute Myeloid Leukemia (AML).”



**Sarah McPhedran**, “Uncovering novel metabolic regulators of T cell function.”

## CANADIAN CANCER SOCIETY RESEARCH TRAINING AWARD



**Lorenzo Lindo**, “Engineering CAR-T cells to overcome immune suppression and enhance efficacy in multiple myeloma.”

## LEUKAEMIA UK INTERNATIONAL SCHOLARSHIP



**Yingying Liu**, “Multi-omic single-cell analysis uncovers a blast crisis-like subpopulation in the paired chronic phase cells from CML patients at diagnosis.”

## BANTING POSTDOCTORAL FELLOWSHIP



**Dr. Zhenwei Ma**, “Hydrogel adhesive artificial mucosa: a paradigm-shifting platform for esophageal cancer treatment and management.”

## GENOME SCIENCE AND TECHNOLOGY SUMMER STUDENT SCHOLARSHIP



**Georgia Langdon**, “Translesion synthesis polymerases as a synthetic lethal cancer target.”

## CANADIAN INSTITUTES OF HEALTH RESEARCH (CIHR) CANADA GRADUATE SCHOLARSHIPS



**Leo Escano**, Doctoral Program Award: “Elucidating the mechanisms of immune escape in cytogenetically normal AMLs.”



**Michael Hall**, Doctoral Program Award: “Ex vivo exposure to hypoxia and exogenous pyruvate improves CD8 T cell anti-tumour function and tumour clearance in vivo.”



**Fumiya Inaba**, Master’s Program Award: “Deep learning nuclei segmentation to predict risk groups in prostate cancer.”



**Emily Yeh**, Master’s Program Award: “Investigating contrasting germline mutations: SETD2 associated neurodevelopment syndromes.”



# Research Highlights

## Enhancing Cancer Screening and Diagnosis

### HPV primary screening key to eliminating cervical cancer

*A modelling study led by BC Cancer researchers was published in the Canadian Medical Association Journal, finding that HPV-based screening at current vaccination, participation and follow-up rates can eliminate cervical cancer by 2034.*

The study from senior health economist Dr. Reka Pataky, distinguished scientist Dr. Stuart Peacock, affiliate scientist Dr. Gina Ogilvie and research program manager Ms. Laurie Smith showed that increasing on-time screening and follow-up compliance could achieve the target by 2031.

The research team found that screening for high-risk HPV infection is more effective than cytology screening (Pap testing) to identify cervical pre-cancer, as HPV primary screening has a lower false negative rate than cytology and detects cervical pre-cancer earlier and better than cytology.

The paper's findings coincided with the rollout in BC of HPV primary screening for cervical cancer, featuring the option for self-screening at home – the first such program in Canada.

The findings underscore the need for comprehensive strategies that prioritize access to screening and early detection, noting that adopting HPV primary screening can potentially increase uptake in under-screened or never-screened populations through vaginal self-collection of samples.

The study emphasizes that HPV primary screening is necessary for cervical cancer to be eliminated in Canada by the federal government target date of 2040, as this target cannot be achieved with cytology screening.



Research highlights have been compiled with files from BC Cancer Foundation, UBC Faculty of Medicine, Vancouver Coastal Health Research Institute, and Simon Fraser University.

## Improving Cancer Treatment

### Developing a roadmap for individualized malignant prostate cancer care

*A team led by Dr. Alexander Wyatt, senior scientist, is changing how we understand and treat aggressive prostate cancer. In a study published in Nature Cancer, Dr. Wyatt and collaborators were the first to show that the complexity of cancer cells within the prostate itself may play a greater role in tumour spread than previously understood – especially in patients with de novo metastatic prostate cancer, where the disease has already reached distant parts of the body when diagnosed.*

By analyzing over 600 tissue and blood samples from 43 patients, the team uncovered a diverse pool of cancer cells within individual prostates. This complexity can fuel multiple waves of cancer that spreads throughout the body. These findings also point to potential sources of resistance to treatment.

The research, done in collaboration with Belgian scientists, analyzed full prostates, including pelvic lymph nodes and blood samples, providing an unprecedented opportunity to trace how prostate cancer evolves and spreads.

The result is a detailed roadmap of cancer progression that could inform the development of more personalized treatment strategies – not only for prostate cancer, but for other aggressive cancers as well.

These insights mark an important step toward more precise, individualized cancer care.

*L to R: Sarah Ng, Alexander Wyatt, Andrew Murtha, Karan Parekh, Asli Munzur.*





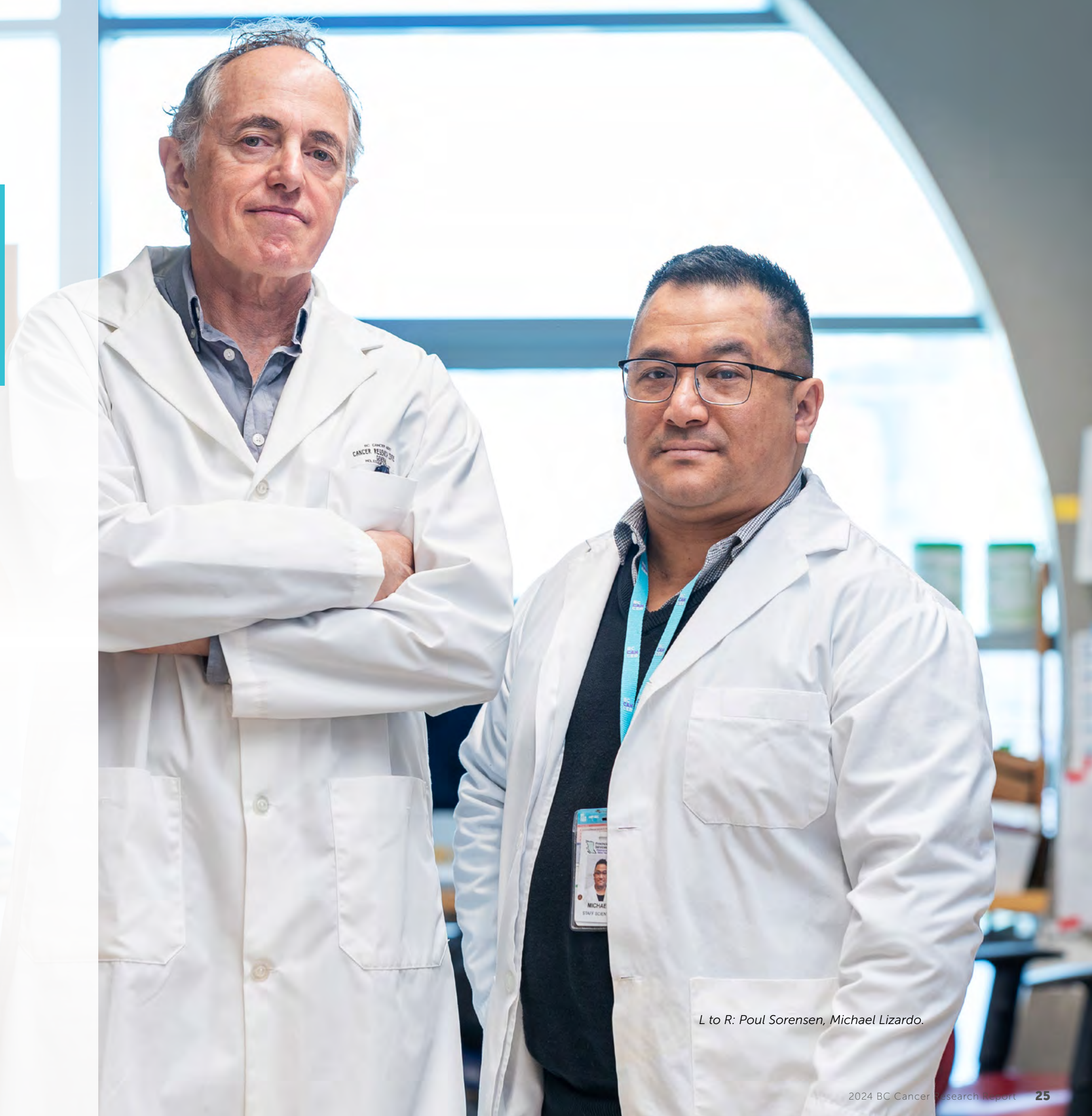
## Drug discovery could prevent spread of childhood bone cancer

*A team of researchers led by Dr. Poul Sorensen, distinguished researcher, and Dr. Michael Lizardo, a staff scientist in the Sorensen Laboratory, have identified a promising drug that could significantly reduce the metastatic spread of osteosarcoma, the most common bone cancer in children and teenagers.*

In a study published in *Clinical Cancer Research*, researchers demonstrated that a new drug, CR-1-31B, can reduce lung metastasis in mice by over 90 per cent, while also shrinking the primary tumour site. The drug, known as an eIF4A1 inhibitor, blocks the ability of osteosarcoma cells to protect themselves and survive when they are exposed to the lung's harsh microenvironment.

As part of the study, the researchers found that a subpopulation of osteosarcoma cells are able to survive within the lung by producing a protein, NRF2, that acts as a protective antioxidant. Notably, a second eIF4A1 inhibitor drug, called Zotatfin, also proved successful in halting lung metastasis and has already shown promise in early clinical trials for other conditions.

The research team hopes to collaborate with clinical researchers to initiate human trials, aiming to offer new hope for children and families affected by osteosarcoma.



*L to R: Poul Sorensen, Michael Lizardo.*





L to R: Samantha Pollard, Deirdre Weymann, Dean Regier.

# Exploring patient preferences to improve data sharing for precision oncology

*Dr. Dean Regier, senior scientist, and Dr. Samantha Pollard, a former postdoctoral fellow at BC Cancer and now an investigator at BC Children's Hospital Research Institute, led a qualitative Canada-wide study to explore how patients feel about sharing their clinical and genomic data to advance precision oncology, a way of treating cancer that is tailored to the individual person.*

Through a series of focus groups involving patients living with cancer from across the country, the JCO Precision Oncology study found that most participants supported data sharing, especially when it could contribute to better cancer care and future research.

However, the study also revealed important concerns about data sharing. Participants called for key safeguards: strong oversight to decide who accesses data and why; dynamic consent that allows patients to update or withdraw their permissions anytime; and clear, ongoing communication about how their data is used.

The authors stress that ongoing efforts to improve cross-jurisdictional data sharing present an opportunity to seek patient and public input and establish trusted oversight practices that reflect patient priorities and concerns.

# New class of biomarker could better predict treatment outcomes for Hodgkin lymphoma



*Dr. Christian Steidl, research director of the Centre for Lymphoid Cancer, and Dr. Tomohiro Aoki, former postdoctoral fellow at the Centre for Lymphoid Cancer, led BC Cancer researchers to discover a way to better predict treatment outcomes in patients with relapsed and treatment-resistant, classic Hodgkin lymphoma.*

A study published in the Journal of Clinical Oncology discovered a new class of "spatial biomarkers" providing prognostic information about salvage treatments used at the time point of cancer recurrence. This new biomarker is significant as it sheds light on the unique interactions between cancer cells and the tumour microenvironment, which includes surrounding cells.

The team, including collaborating researchers from Cedars-Sinai Medical Center, performed imaging mass cytometry on primary diagnostic and relapse biopsies to generate detailed analyses of each cell, before measuring the distance of the nearest cells to the cancer cells and used this spatial information in their prognostic models to predict patient outcomes.

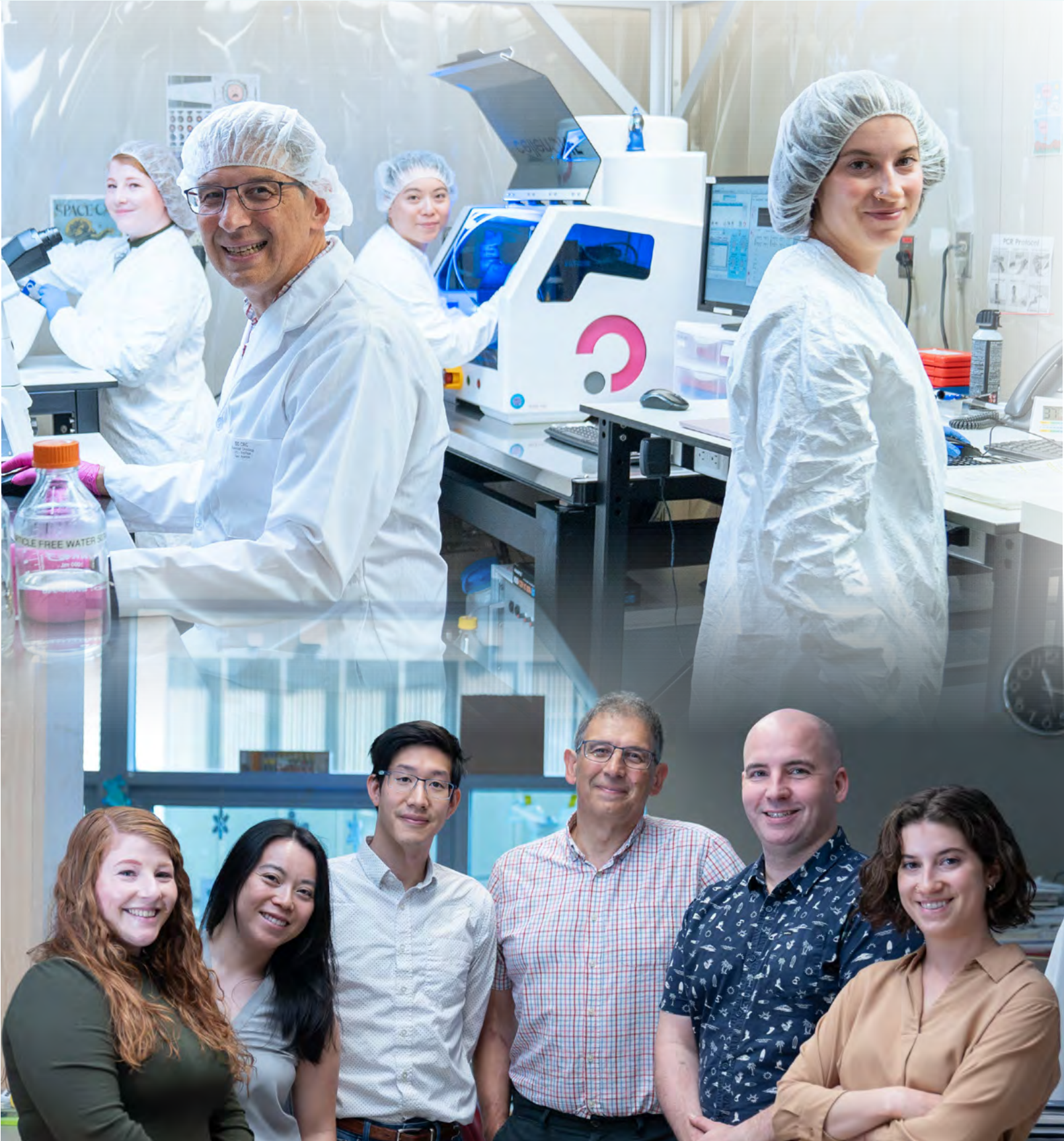
The research team hopes this work will ultimately lead to the ability to profile a patient's tumour, identifying what type it is and which cells it includes, and recommend a suitable treatment based on this profile. Researchers are currently testing various forms of immunotherapy, including immune checkpoint inhibitors, and the new spatial profiling might help with choosing the best available immunotherapy option.





# Cancer-like mutations in healthy cells point to origins of breast cancer

*Dr. Samuel Aparicio, distinguished scientist, and Ms. Vinci Au, research technician in the Aparicio Lab, collaborated with a team of international researchers to analyze the genomes of more than 48,000 individual breast cells from women without cancer, using novel techniques for decoding the genes of single cells. While the vast majority of cells appeared normal, nearly all of the women harboured a small number of breast cells—about three per cent—that carried genetic alterations commonly associated with cancer.*



The findings, published in Nature Genetics, suggest that these rare genetic anomalies may represent some of the earliest steps in a series of events that could culminate in breast cancer development.

The mutations, known as copy number alterations, involve the duplication or loss of large segments of DNA. In most cases, the body’s natural DNA repair mechanisms correct these changes. However, if the body fails to detect these changes or to initiate repair, the mutations could accumulate and over time lead to cancer.

The study raises important new questions about the nature of breast cancer development, including how mutations accumulate and over what timescale, and why the mutations only occur in the luminal cells. It also suggests that examining copy number alterations in other organs could reveal how other forms of cancer develop and progress, and the risk-factors underlying them.

*Top, L to R: Ciara O’Flanagan, Sam Aparicio, Vinci Au, Caroline Baril*  
*Bottom, L to R: Ciara O’Flanagan, Vinci Au, Daniel Lai, Sam Aparicio, Sean Beatty, Caroline Baril*



# Advancing cancer research in BC *through a harmonized provincial biospecimen consenting, collection, processing, storage and distribution platform*

*The collection and use of biological samples – such as blood, urine, cerebrospinal fluid and tissue – is essential for advancing cancer research. To support this need, the BC Cancer BioCancer Program was established as a centralized, province-wide biospecimen research framework to support clinicians and researchers across the province.*

The BioCancer Program plays an important role in bridging the gap between clinical and translational research, aligning with BC’s 10-Year Cancer Action Plan to improve cancer detection, prevention and personalized medicine in the province. The platform benefits research through enabling the acquisition of high-quality biospecimens from as many eligible patients as possible within the research context.

To implement and oversee operations, BioCancer brought a dedicated program manager and a research project coordinator on board, with trained research assistants now active across all six BC Cancer centres. These research assistants facilitate participant screening, recruitment, ethical consenting, and coordination of lab procedures to ensure seamless integration into ongoing clinical workflows.

A core element of the program is the Clinical Acquisition and Sample Administration (CASA) lab with supporting freezer infrastructure. These facilities provide researchers with centralized support for the collection, sample processing and/or storage of specimens. All procedures follow international best practices (ISBER).

A unified cataloguing and tracking system, OpenSpecimen, allows researchers to easily search and access critical samples, promoting efficient use and collaboration. Standard operating procedures, training, and ongoing education support fit-for-use sample handling.

By establishing this seamless infrastructure, the BioCancer Program supports the advancement of population-based, translational research through high-quality biospecimens from BC Cancer patients conforming with the highest ethical standards. Through the acceleration of biomarker discovery and therapeutic development, this initiative directly supports BC Cancer’s goal to enhance cancer care and improve outcomes for patients across the province.



L to R: Bill Chan, Maria Belen



L to R: Corinna Warburton, Susanna Tan, Thomas Devan



# Researchers use AI to identify high-risk form of endometrial cancer



*Researchers have used artificial intelligence (AI) to identify a high-risk subset of endometrial cancer that traditional methods may miss. By analyzing over 2,300 cancer cell images, the AI detected patterns linked to a greater chance of recurrence and death. This discovery, published in Nature Communications, could help doctors better identify patients needing more specialized and comprehensive treatment.*

The study was led by UBC’s Dr. Ali Bashashati, director of AI and bioinformatics research at OVCARE, with BC Cancer’s Dr. Jessica McAlpine, gynaecologic oncologist, and Dr. David Huntsman, director of OVCARE and distinguished scientist. The discovery builds on their work, with colleagues, at BC’s Gynecologic Cancer Initiative – a multi-institutional collaboration between BC Cancer, UBC, Vancouver Coastal Health and BC Women’s Hospital – which helped show that endometrial cancer can be classified into four subtypes based on the molecular characteristics of cancerous cells, with each posing a different level of risk to patients. Now, this AI model has refined this classification by uncovering a distinct subgroup within the largest category that has significantly worse outcomes.

The AI tool works by analyzing routine tissue images, offering a cost-effective and accessible way to improve diagnosis, even in rural areas. Integrating AI with existing diagnostics could allow many patients to receive appropriate care closer to home, reserving specialized treatment for those at highest risk. This breakthrough promises more precise, equitable treatment for patients facing endometrial cancer across Canada and beyond.





# First systemic therapy patient enrolled in a clinical trial in Prince George

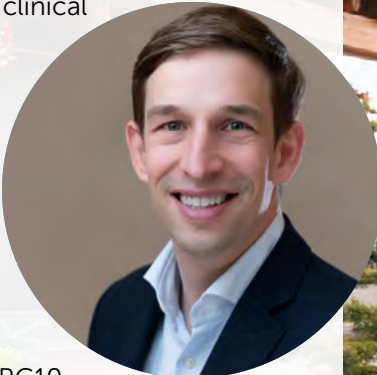
*BC Cancer – Prince George celebrated a significant milestone in early 2024 with the opening of a new clinical trial called CIRCULATE-NORTH-AMERICA, or CRC10, which marked the first time a systemic therapy clinical trial has been offered in northern BC to people with cancer.*

“This is a huge milestone for our centre and clinical trials unit,” said Roel Schlijper-Bos, clinical trials unit manager with BC Cancer – Prince George. “Centre for the North services a large geographic area and opening this systemic therapy trial in our region is the first step to increase access to novel systemic therapy for our patients in northern BC.”



CRC10 uses a blood test to examine the presence of circulating tumour DNA (ctDNA), which is fragmented DNA shed from cancer cells into the bloodstream, after surgery for stage II and III colon cancer. In the trial, ctDNA detection determines if a patient receives further treatment with chemotherapy or starts observation with close monitoring.

CRC10 is an international clinical trial run by the Canadian Cancer Trials Group (CCTG) and chaired in Canada by Dr. Jon Loree, a medical oncologist with BC Cancer and principal investigator in Canada of the CRC10 clinical trial. CRC10 was first offered in BC to patients in Vancouver and expanded to Prince George through a decentralized clinical trial model.





# Transforming prostate cancer care



*Prostate cancer treatment in BC has advanced significantly due to research led by Dr. Abraham Alexander, radiation oncologist with BC Cancer – Victoria, and Dr. Winkle Kwan, radiation oncologist with BC Cancer – Surrey, resulting in the use of a high-precision radiation therapy called Stereotactic Ablative Radiotherapy (SABR). SABR safely delivers higher doses of radiation to the tumour site, while limiting radiation exposure to healthy tissues. This results in a highly effective treatment with fewer side effects.*

“Classically, patients with curative prostate cancer required five to eight weeks of daily radiation treatments. Moving to five doses made a big difference for their quality of life,” said Dr. Alexander.

Cutting-edge triggered imaging technology tracks motion during SABR treatment to ensure the radiation beam accurately targets the prostate gland. This technology has increased targeting accuracy from 83 per cent to 98 per cent, reducing risk to nearby organs.



Building on this progress is the ADAPT-25 clinical trial, which uses AI to test whether just two doses of SABR can effectively treat prostate cancer. The AI will allow radiation to be precisely adapted daily, with the potential to improve the accuracy of radiation for almost any cancer treated with radiation. The trial is currently open in Victoria with plans to expand to Surrey and Abbotsford.

The introduction of shorter, more effective radiation treatments combined with advanced imaging is expected to increase patient access to care, reduce treatment burdens, and create more capacity within the health care system for timely prostate cancer treatment across BC.

# CAR T-cell therapy clinical trial enhances treatment options for people with lymphoma and leukemia

*A pan-Canadian collaboration between BC Cancer, the National Research Council of Canada (NRC), the Ottawa Hospital Research Institute and the Riddell Centre for Cancer Immunotherapy offers renewed hope for patients with certain types of lymphoma and leukemia through a new clinical trial using a Canadian-manufactured chimeric antigen receptor (CAR-) T cell therapy.*

The CLIC-02 clinical trial was led by Dr. Kevin Hay, associate scientist with BC Cancer and medical director of the Conconi Family Immunotherapy Lab at BC Cancer’s Deeley Research Centre. The trial uses CAR-T cell therapy, a type of immunotherapy which uses the body’s own immune system to fight diseases, to target an antigen called CD22 that is present on B cell-derived leukemias and lymphomas in pediatric and adult patients. CLIC-02 builds on the success of CLIC-01, which targeted a different antigen (CD19) on leukemias and lymphomas. Over 90 patients have received the CLIC-01 treatment by the end of 2024, with a good response rate. The CLIC-02 clinical trial incorporates three key differences. First, the “binder” portion of the CLIC-02 CAR was created by the NRC in Ottawa, making this an entirely made-in-Canada product. Second, the manufacturing process for the CLIC-02 trial takes only eight days in total – four days fewer than CLIC-01. Third, CLIC-02 will include seven clinical sites across Canada, including three pediatric hospitals, as opposed to just three adult sites for CLIC-01.



Once a patient enrolls in the trial, they have T cells collected from the blood at their clinical site. The T cells are then couriered to the Conconi Family Immunotherapy Lab in Victoria, where the CAR-T cells are manufactured. This involves genetically engineering the patient’s T cells to produce a surface receptor (called a CAR) that allows them to recognize and kill cancerous B cells. The CAR-T cells are then delivered back to the clinical site for infusion into the patient’s bloodstream. Once there, the CAR-T cells are expected to circulate throughout the patient’s body, destroying cancer cells wherever they reside.

Researchers believe CLIC-02 will not only help children and adults with leukemia and lymphoma today but also pave the way for future clinical trials using Canadian-made T cell products designed to treat other types of cancer.



# New Recruits

## DR. KATEY ENFIELD, SCIENTIST

Dr. Katey Enfield’s research focuses on the relationship between lung cancer cells and their local environment, as well as how applying new technologies that maintain spatial resolution to understand how this information can be harnessed to improve the effectiveness of cancer treatment.



## DR. CORINNA SCHINDLER, DISTINGUISHED SCIENTIST

Dr. Corinna Schindler studies how to create new chemical reactions using abundant metals. Her work helps make natural substances in the lab and explores how these substances – and similar ones – can affect the body. She is a Canada Research Chair in Synthetic Solutions for Bioactive Compounds.

## DR. COREY STEPHENSON, DISTINGUISHED SCIENTIST

Dr. Corey Stephenson uses advanced data analysis to perfect the development of new tools that use light and electricity to create new drugs and improve the effectiveness of plant-protecting chemicals in treating cancer. He is a Canada Excellence Research Chair in Innovative Synthetic Methods for Translational Chemistry.





# 2024

## RESEARCH REPORT

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