CanPath Participant Town Hall

CanPath

Canadian Partnership for Tomorrow's Health

Partenariat canadien pour la santé de demain

Welcome, Overview & Territorial Acknowledgement

Dr. John McLaughlin
Executive Director, CanPath, University of Toronto

CanPath

Canadian Partnership for Tomorrow's Health

Partenariat canadien pour la santé de demain

Outline

CanPath Overview
Dr. Philip Awadalla

Cancer
Dr. Donna Turner

Occupational & Environmental Exposures
Dr. Trevor Dummer

Genomics
Dr. Guillaume Lettre

COVID-19 Study Results
Dr. Robin Urquhart

Physical Activity and Diet
Dr. Jennifer Vena

CanPath Plans for the Future
Dr. Philip Awadalla / Dr. John McLaughlin

Q&A Period Moderated by Dr. John McLaughlin

An Overview of CanPath

Dr. Philip Awadalla
National Scientific Director, CanPath, University of Toronto
Scientific Director, OHS, OICR

CanPath

Canadian Partnership for Tomorrow's Health

Partenariat canadien pour la santé de demain

Rising levels of chronic disease are one of Canada's largest public health challenges

1 in 2 Canadians will die from **cancer or a chronic disease**

1 in 2 Canadians will be diagnosed with **cancer**

1 in 10 Canadians live with **asthma or COPD**

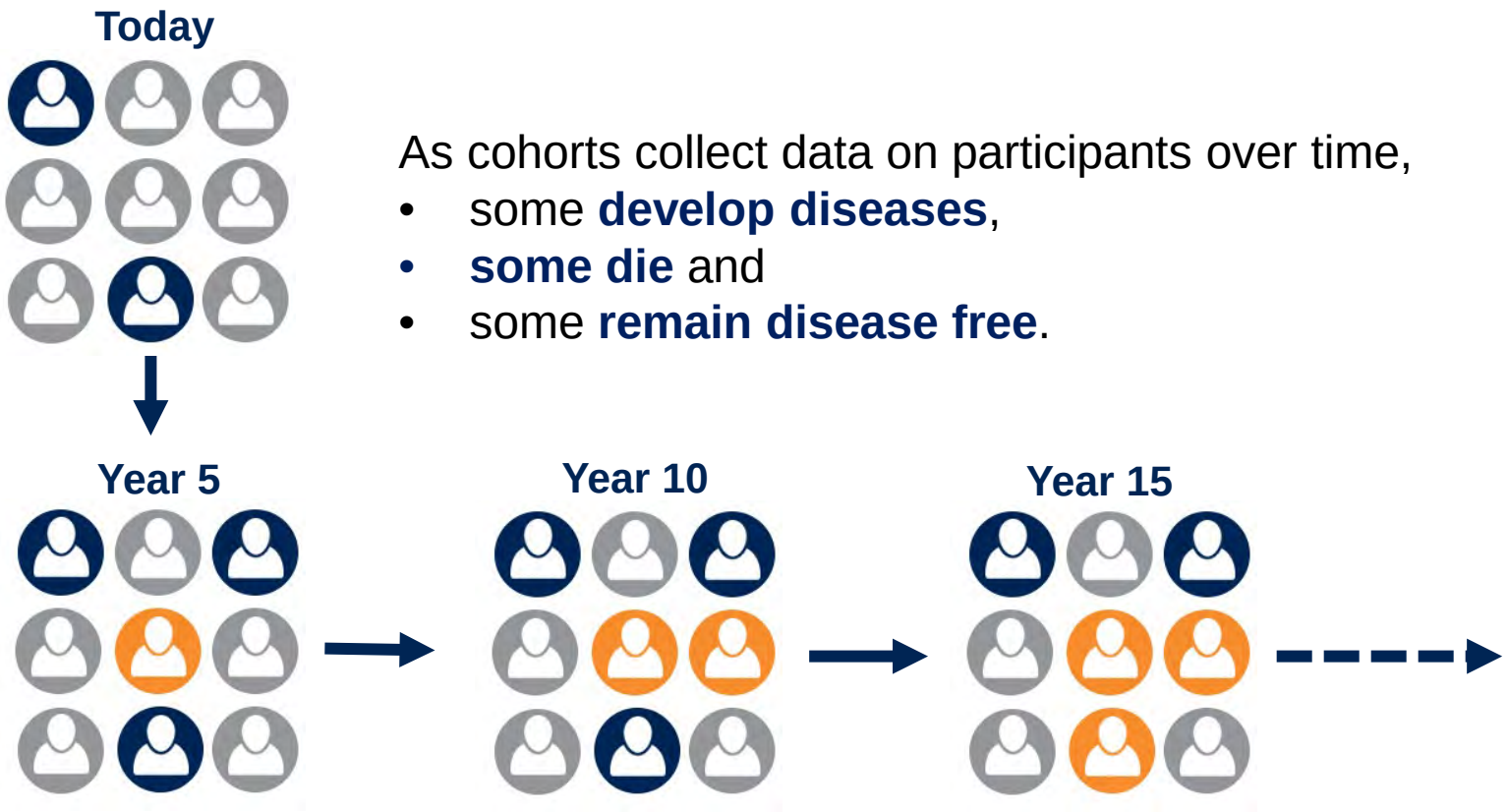
1 in 12 Canadians are with diagnosed with **heart disease**

Questions that need to be answered:*

- How do we address the root causes of health and disease among Canadians?
- What can we do to improve our health?
- What can we do together to build healthier communities?
- Can cancer and other serious illnesses be detected years earlier?
- How do we build health systems that improve outcomes?

*Manolio et al, Nature Reviews Genetics 2006 (re: value of prospective cohorts).

Long-term health studies offer us a chance to understand the causes of health and disease



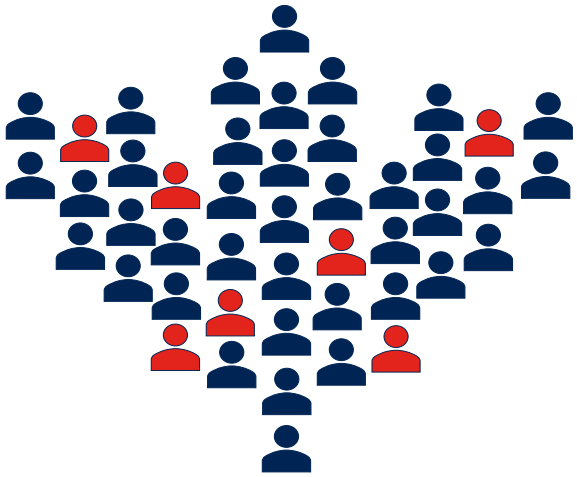
As cohorts collect data on participants over time,

- some **develop diseases**,
- **some die** and
- some **remain disease free**.

**Genes, environment and the value of prospective cohort studies,* Manolio TA, 2006

CanPath is Canada's largest population health research platform

CanPath provides a national platform for population-level health research in Canada and globally.



- CanPath is a **population-health research platform** for assessing the effect of genetics, behaviour, family health history and environment on chronic diseases.
- CanPath collects **real-world data from one in every 100 Canadians** to enable discovery and innovation in **disease detection, treatment, control** and **prevention**.
- Over the past decade, **CanPath has brought together scientists across Canada** and **leveraged over $208 million in investments** to create the nation's largest population cohort and biobank.

CanPath brings together seven cohorts across ten provinces

CanPath is jointly hosted by the University of Toronto in partnership with the Ontario Institute for Cancer Research

BC Generations Project

Alberta's Tomorrow Project

Healthy Future Sask

Manitoba Tomorrow Project

Ontario Health Study

Quebec CARTaGENE

Atlantic PATH

330,000 Canadians are followed for 50+ years

Atlantic PATH
PARTNERSHIP FOR TOMORROW'S HEALTH
For the Benefit of Future Generations

Atlantic PATH

36,003

BC GENERATIONS PROJECT
Your time today builds a healthier tomorrow.

BC Generations Project

29,800

CARTaGENE
USE IT, IT'S YOURS

CARTaGENE (Quebec)

43,609

ALBERTA'S TOMORROW PROJECT
Inspiring research for a healthier tomorrow

Alberta's Tomorrow Project

41,374

Healthy Future Sask

Healthy Future Sask

Pilot begins March 2022

CancerCare Manitoba
ActionCancerManitoba
THE MANITOBA TOMORROW PROJECT

Manitoba Tomorrow Project

Recruiting

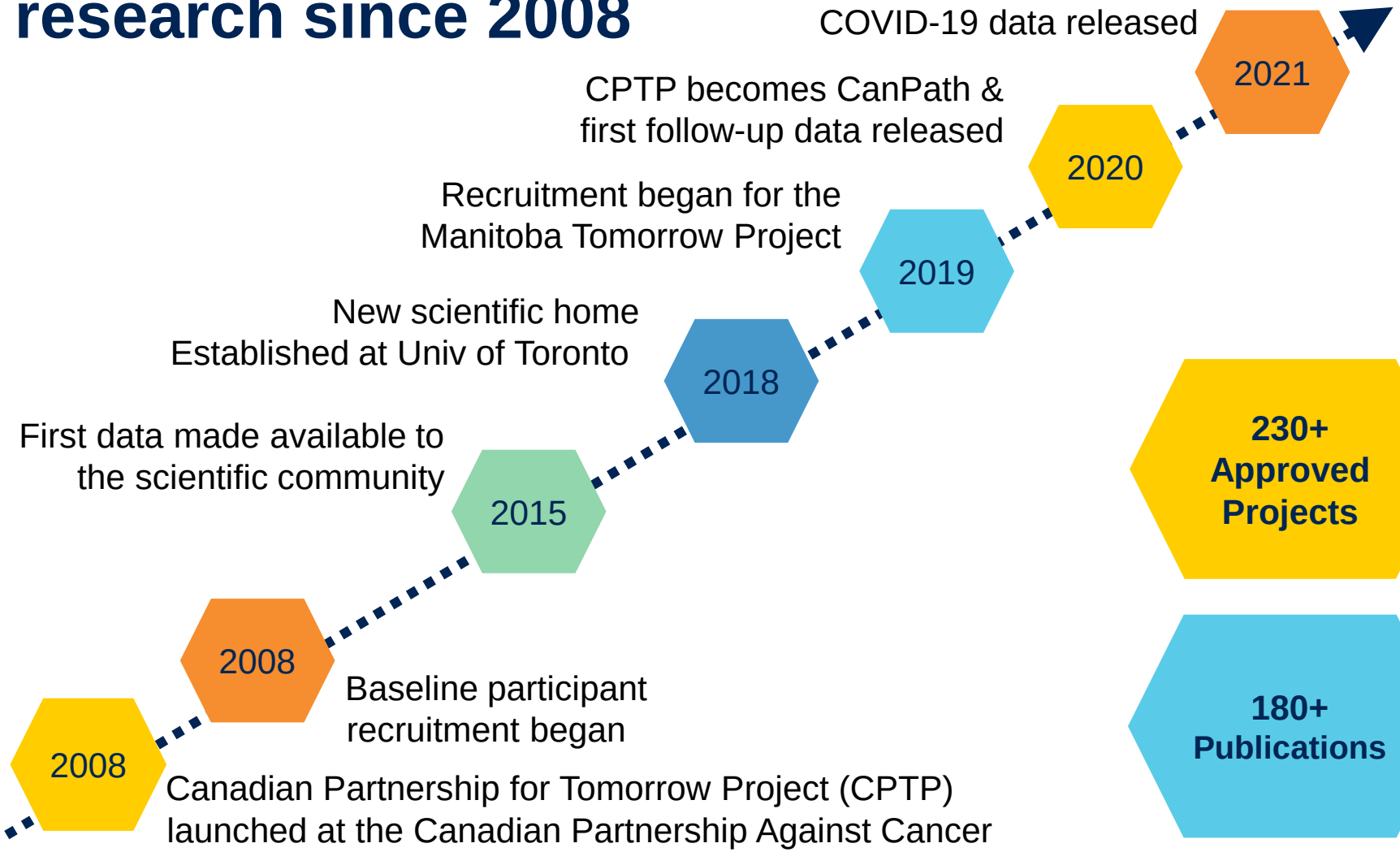
Ontario Health Study
Étude sur la santé Ontario

Ontario Health Study

213,003

CanPath

CanPath has been supporting Canadian research since 2008



CanPath

CanPath participants provide researchers with a wealth of data and biological samples to support cutting-edge health research

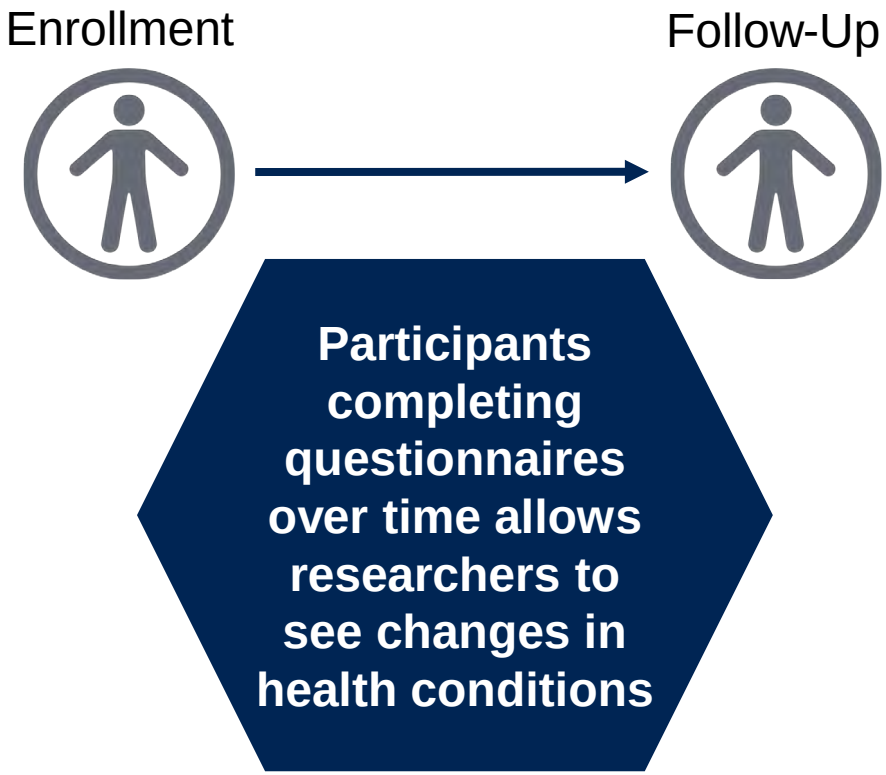
CanPath is following the health of 330,000 adult Canadians for decades

- Questionnaire Data
- Data Linkage
- Long-term Follow Up
- Biological Samples
- Physical Measures
- Genomics

CanPath

Over 330,000 participants have completed detailed questionnaires over the years

- Participant demographics
- Changes in health status
- Mental Health
- Medical history
- Prescribed medication
- Family health history
- Anthropometric measurements
- Working status
- Household income
- Behaviours (sleep, alcohol, tobacco, marijuana use, and e-cigarette use)



Your participation over time means that we can study past and future health outcomes

- CanPath enables research to improve disease **prevention, detection, treatment and health services**
- CanPath data and biological samples are available to researchers to study **a wide range of exposures (environment, lifestyle, etc.)** and **outcomes (common chronic disease, rare disease, infectious disease, etc.)**
- The longitudinal nature of CanPath enable scientists to perform health-related research **today and for years to come**

Over 230 projects supported

Collection and storage of biological data for national-level research

Venous Blood (145,760)

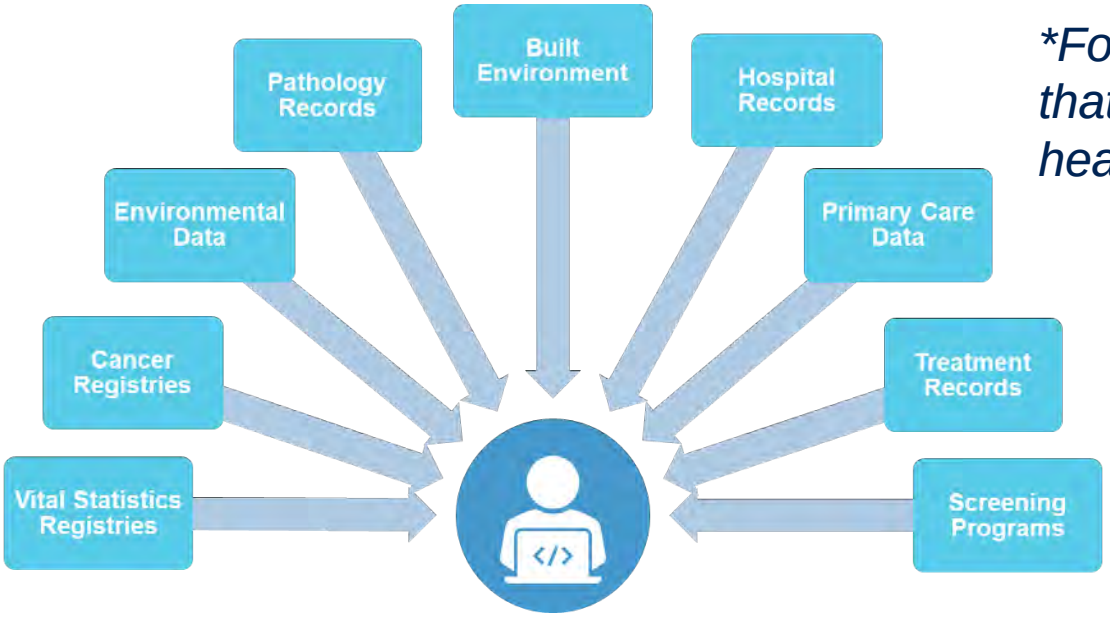
Saliva (18,799)

Urine (99,500)

Blood Spots (10,642)

DNA Source Material (178,065)

CanPath has established Canada as a leader in building national data infrastructure

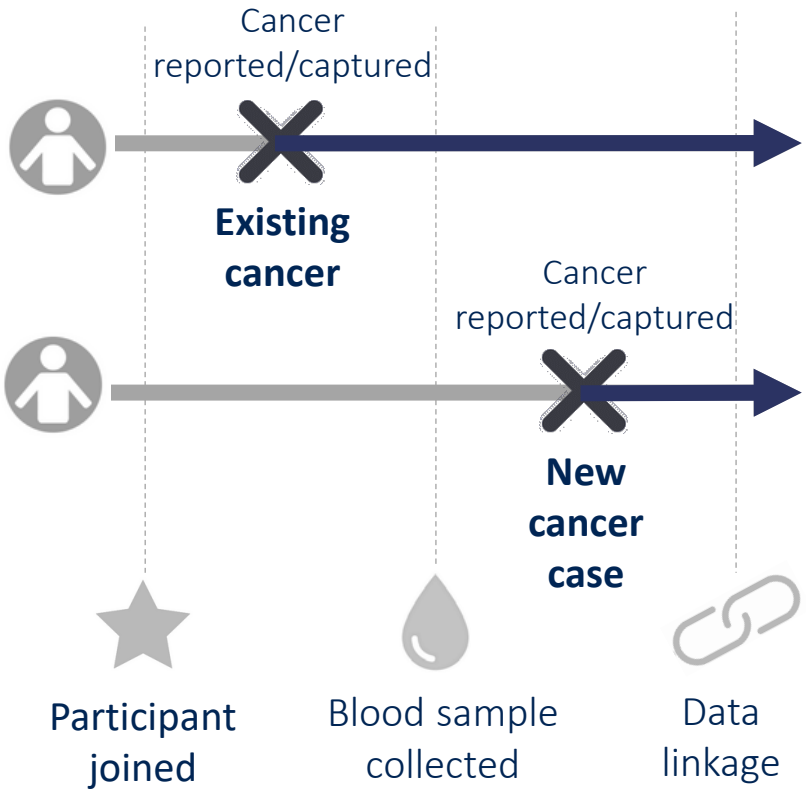


**For participants that provided a health card number*

- **CanPath enables a healthier Canada** by building and hosting national self-reported health data alongside linked administrative health data from all provinces
- Participants consented to linkage of CanPath data with other data sources **enabling the cohort to grow and adapt to Canada's national and local health priorities**

Advancing health research through linking clinical data with cohort data

- With administrative linkages, we can identify which participants joined the cohort **before developing disease**
- Using biological samples collected before disease onset, we are able to develop **novel approaches to detect disease years before current methods**



CanPath is Canada's cohort for prevention and early detection of cancer research

Advancing health research through linking clinical data with environmental data

- CanPath is a partner with CANUE where participant data is enhanced with environmental exposure data
- Every location in Canada can be described by a complex set of environmental factors
- CANUE studies how these multiple **environmental factors are linked to a wide range of health outcomes**

How CanPath is supporting Canada on the international stage

Many developed countries have invested in building large-scale population cohorts like CanPath

CanPath is
Canada's only initiative
working with other
large cohorts around the world
through IHCC
(International Hundred
Thousand Cohort Consortium)

23andMe
Biobank Japan
China Kadoorie Biobank
Canadian Partnership for Tomorrow's Health (CanPath)
EPIC
Kaiser Permanente Research Program
LifeGene
Million Veteran Program
Million Women Study
Multiethnic Cohort Study
MyCode Community Health Initiative
Nurses' Health Study (NHS/NHSII)
US Precision Medicine Initiative/All of Us
Tohoku Medical Megabank Project
UK Biobank

CanPath is a partnership between leading health institutes from coast to coast

CanPath

Hosted by:

University of Toronto Dalla Lana School of Public Health

In partnership with:

OICR Ontario Institute for Cancer Research

National Funder:

Canadian Partnership Against Cancer / Partenariat canadien contre le cancer

Regional cohorts:

BC Generations Project – Your time today builds a healthier tomorrow.

Alberta's Tomorrow Project – Inspiring research for a healthier tomorrow

Healthy Future Sask

CancerCare Manitoba / ActionCancerManitoba – The Manitoba Tomorrow Project

Ontario Health Study / Étude sur la santé Ontario

CARTaGENE – Use it, it's yours

Atlantic PATH – Partnership for Tomorrow's Health – For the Benefit of Future Generations

Hosted by:

BC Cancer

Alberta Health Services

Saskatchewan Cancer Agency

CancerCare Manitoba / ActionCancerManitoba

OICR Ontario Institute for Cancer Research

Centre de recherche CHU Sainte-Justine

Dalhousie University

Regional Funders:

Alberta Government

Alberta Cancer Foundation

OICR Ontario Institute for Cancer Research

GenomeQuébec

GenomeCanada

National Leadership Team

Philip Awadalla
***National Scientific Director,* CanPath;**
Ontario Health Study

John McLaughlin
Executive Director,
CanPath

Trevor Dummer
National Scientific Co-Director,
CanPath;
BC Generations Project

Parveen Bhatti
BC Generations Project

Shandra Harman
Alberta's Tomorrow Project

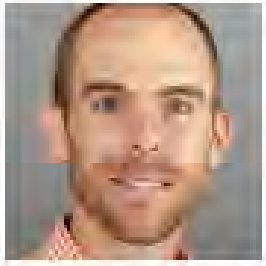
Jennifer Vena
Alberta's Tomorrow Project

Riaz Alvi
Healthy Future Sask

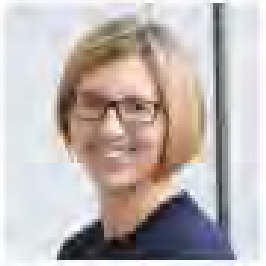
Donna Turner
The Manitoba Tomorrow Project

Philippe Broët
CARTaGENE

Simon Gravel
CARTaGENE



Guillaume Lettre
CARTaGENE

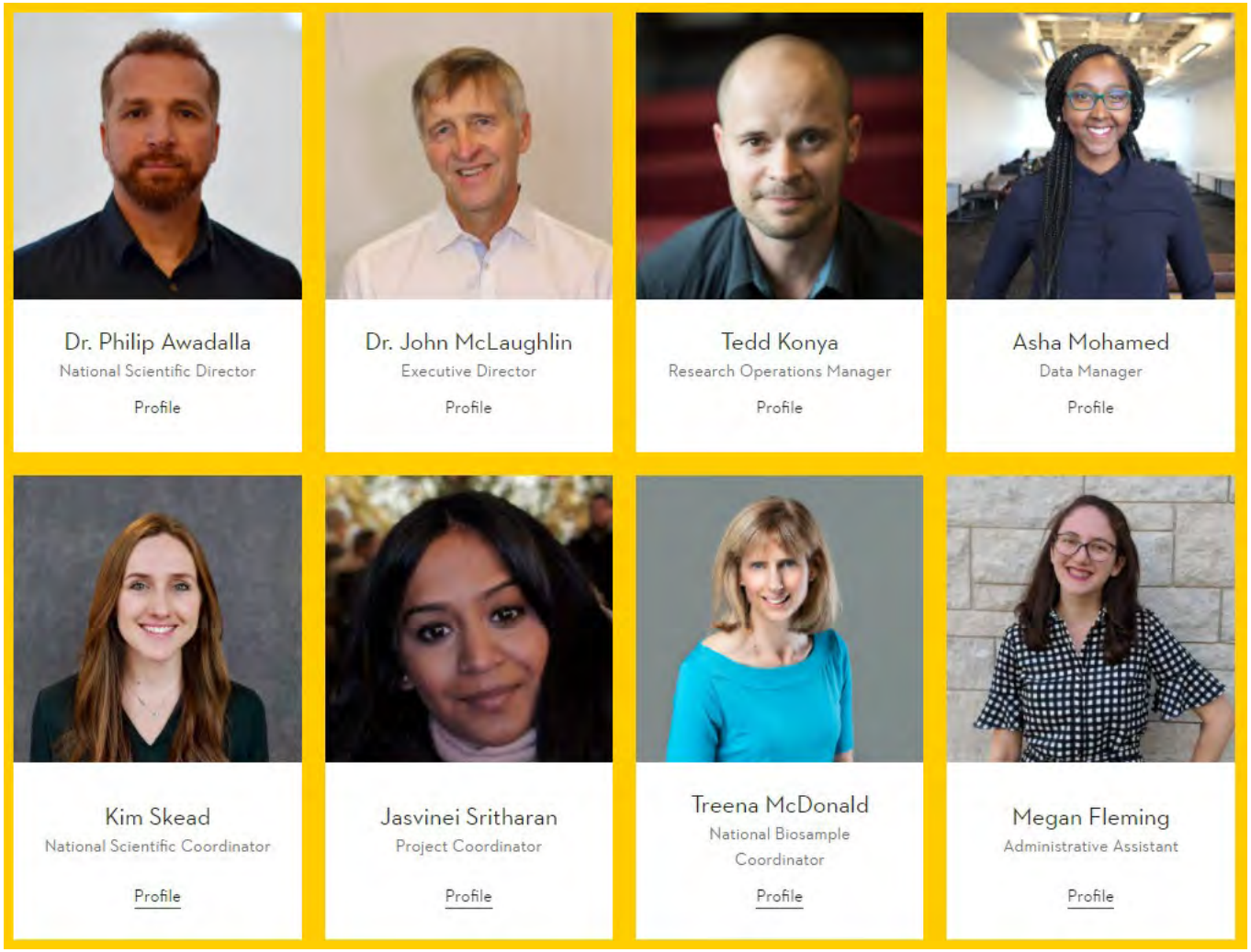


Robin Urquhart
Atlantic PATH

Jason Hicks
Atlantic PATH

National Coordinating Centre

Based at the Dalla Lana School of Public Health, University of Toronto



Ensuring that your data is safe and supports high quality research is our top priority!

All researchers seeking to use CanPath data and biosamples must submit a request to the CanPath Access Office

Projects must obtain and submit proof of **ethics review**

All studies are reviewed by our **access committee** which is comprised of a team of scientists with a broad range of expertise

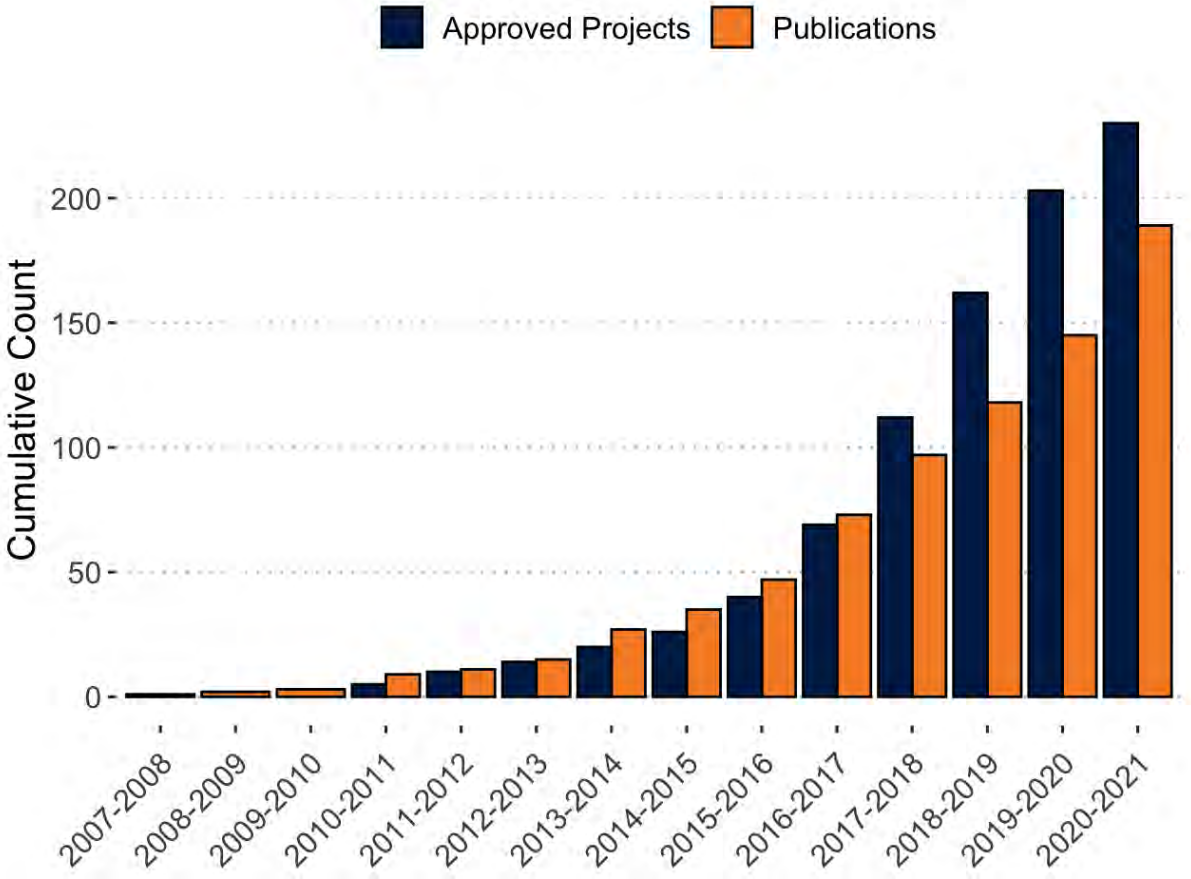
CanPath

CanPath is committed to training the next generation of researchers

- CanPath recently released the **CanPath Student Dataset**
- CanPath's Student Dataset provides students the unique opportunity to **gain hands-on experience working with CanPath data**.
- The CanPath Student Dataset is **available to instructors at a Canadian university or college for use in an academic course,** at no cost.

The CanPath Student Dataset does not include actual data of CanPath participants.

The value of your contributions will only continue to grow as time goes by



CanPath is proud to have supported:

230+ research projects

180+ peer-reviewed publications

CanPath

CanPath research provides health evidence of interest and relevance to all Canadians and has played a key role in the COVID-19 pandemic

THE GLOBE AND MAIL

Globe and Mail, March 6, 2018

Genetic study of Quebec residents finds air pollution trumps ancestry

"That's really what precision health is about," Dr. Awadalla said. "You want to capture these things before people are in the doctor's office and having to be treated."

LE DEVOIR

Une étude pancanadienne assoit l'importance de la deuxième dose

WINDSOR STAR

How Canadian data could hel understand cancer

The Canadian Partnership for Tomorrow Project (C hoping to find out what causes cancer and other chronic diseases

Diana Duong
Jan 18, 2020 • January 18, 2020 •

CBC

Massive Atlantic Canada chronic disease study turns sights on COVID-19

NATIONAL POST

News / Health / Canada

Pfizer is not superior to Moderna and it's 'perfectly okay' to mix COVID vaccines, experts say

While health authorities are reassuring Canadians that it's safe to mix COVID-19 vaccines doses, some appear to be rejecting Moderna for Pfizer

Sharon Kirkey
Jun 24, 2021 • June 24, 2021 • 5 minute read • 130 Comments

Cancer Research

Dr. Donna Turner
Scientific Director, Manitoba Tomorrow Project,
CancerCare Manitoba

CanPath
Canadian Partnership for Tomorrow's Health
Partenariat canadien pour la santé de demain

Cancer is the leading cause of death in Canada

Cancer poses an enormous burden on both the **health of Canadians and the healthcare system**.

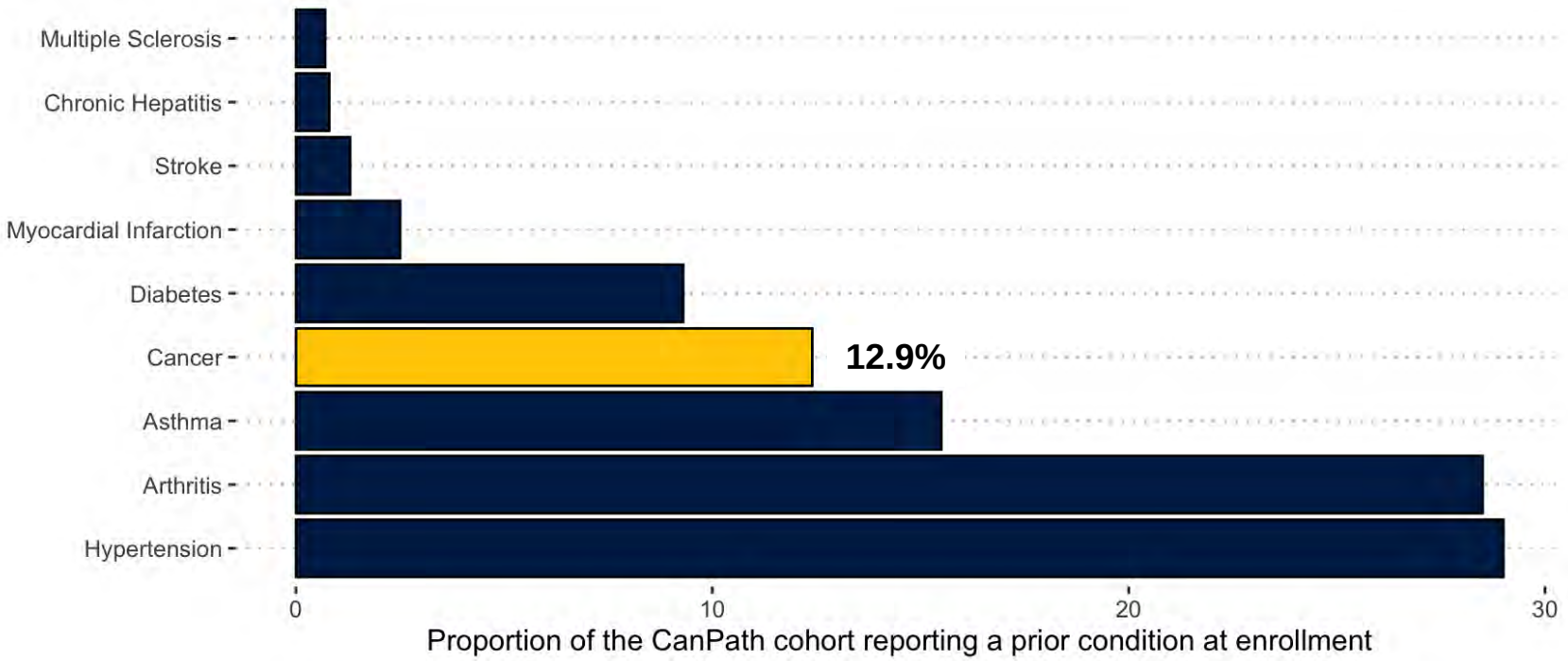
Participants in CanPath provide information about their lifestyle, environments, and family medical history, **to help researchers understand the factors that can increase the risk of cancer**

The longitudinal nature of CanPath enables us to focus on **curing cancer**, but also on how to **prevent cancer entirely or capture it early when treatments are more likely to be effective**

Figure reproduced from the Canadian Cancer Society

CanPath equips researchers to understand the causes of cancer development and progression

- CanPath collects **over 350 variables related to cancer outcomes**
- Over **one in ten CanPath participants report a history of cancer** at enrollment



CanPath tackles a leading cause of death by supporting cancer research from coast to coast

One in four Canadians who develop lung cancer have never smoked.

CanPath data allows researchers to identify actionable lifestyle and behavioral changes to prevent lung cancer in never smokers

Research Lead: Dr. Rachel Murphy (UBC)

Arsenic in drinking water is a public health issue affecting hundreds of millions of people worldwide

CanPath enables researchers to examine the relationship between cancer and arsenic in drinking water

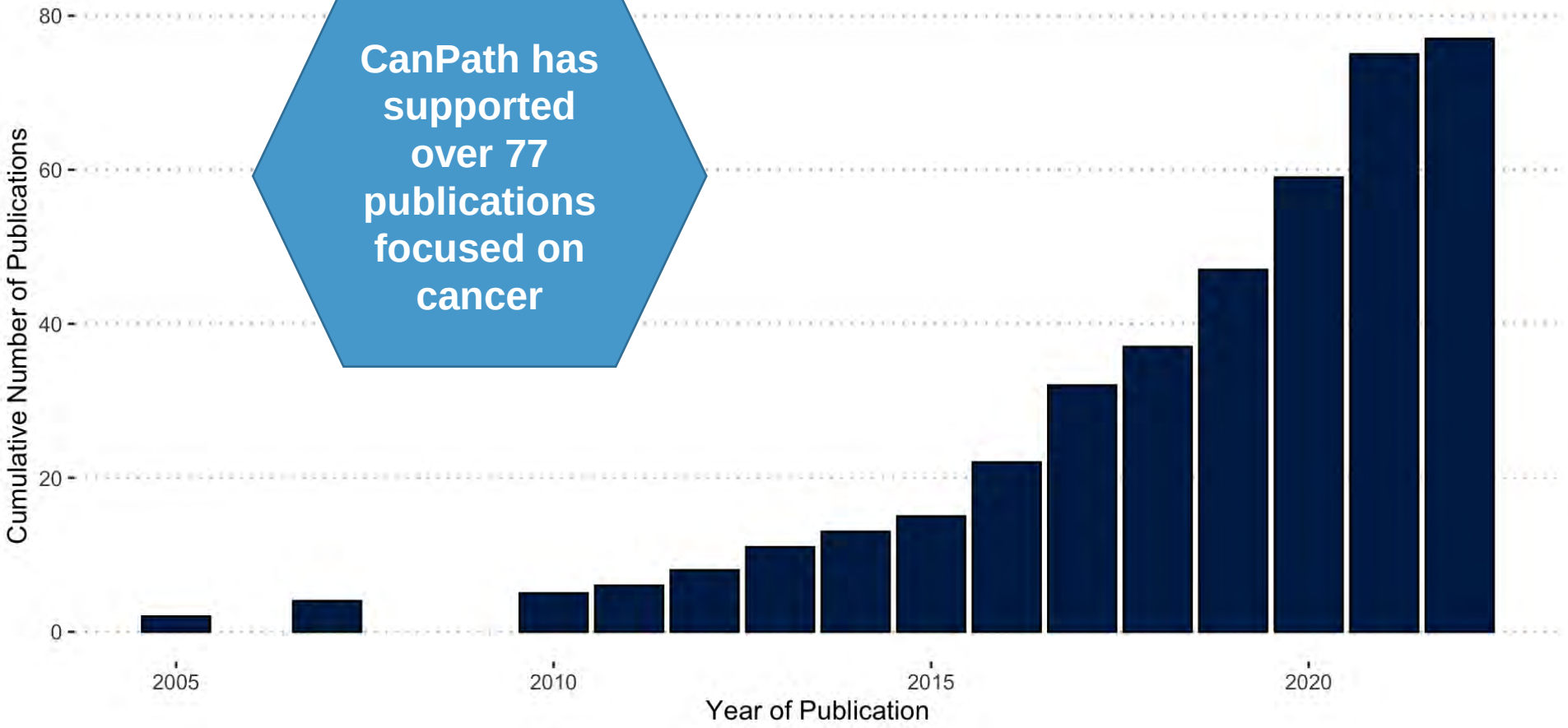
Research Lead: Dr. Trevor Dummer (Dalhousie & UBC)

We enable cutting-edge research to better prevent, diagnose and treat one of the leading causes of death worldwide.

CanPath

The value of CanPath in advancing our understanding of cancer has grown over time

CanPath has supported over 77 publications focused on cancer



Select cancer discoveries supported by CanPath

- Low body mass index, high waist circumference, lower parity, and familial history of breast cancer, were associated with **increased risk of breast cancer diagnosed before age 50.** (Pader J et al., *Cancer Causes Control* 2021)

- Low fruit and vegetable intake and short or long sleep (≤6 or >9 hrs/night) were associated with increased risk of **lung cancer among non-smokers**. (Murphy RA et al., *in submission* 2021)

- A risk score derived from **a small number of genes was found to be predictive of cancer onset** (Duhaze et al. *Frontiers in Genetics* 2021*)*

- **Insufficient fiber intake was found to increase the risk of cancer development** by 6.3-6.8% for men and 5.0-5.5% for women. (Grundy et al. CMAJ 2017)

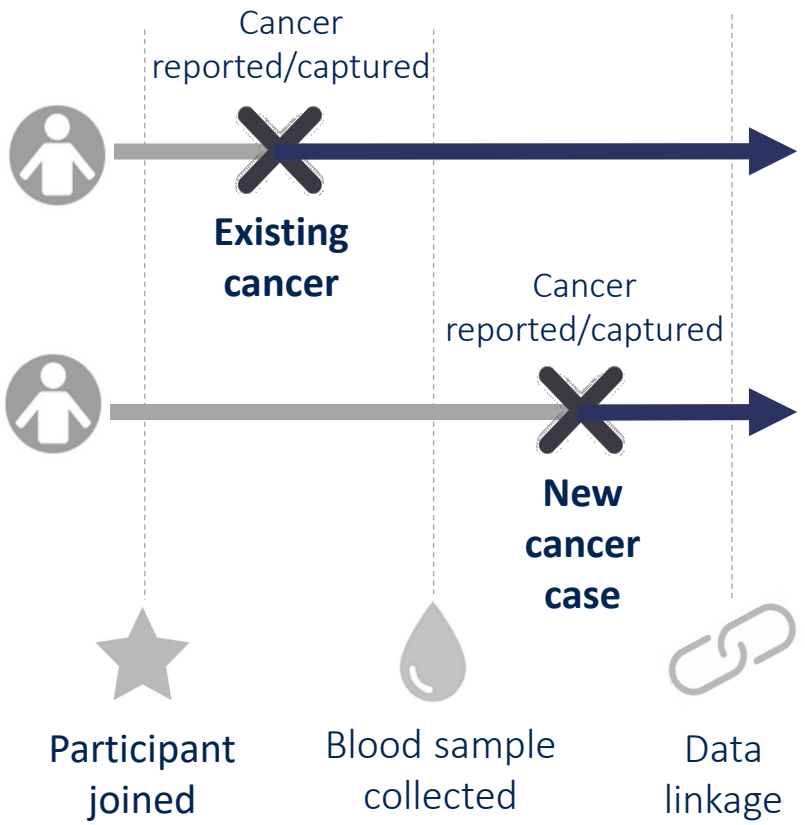
- **Adherence to lifestyle-related cancer prevention recommendations was associated with reduced risk** (13%) of developing cancer. (Whelan HK et al. Public Health Nutr. 2019)

- Genetic sequencing of BRCA1- and BRCA2-Negative Families in Canada **identifies novel risk genes for hereditary breast cancer**. (Glentis S et al. Front Genet. 2019)

…and many more!

Research Spotlight: The Canadian Cancer Study

- CanPath is building the Canadian Cancer Study to advance research and discovery for the leading cause of death in Canada
- With linked clinical information, we can identify which participants joined the cohort **before developing disease**
- Using samples collected before disease onset, we are able to develop **novel approaches to detect disease years before current methods**

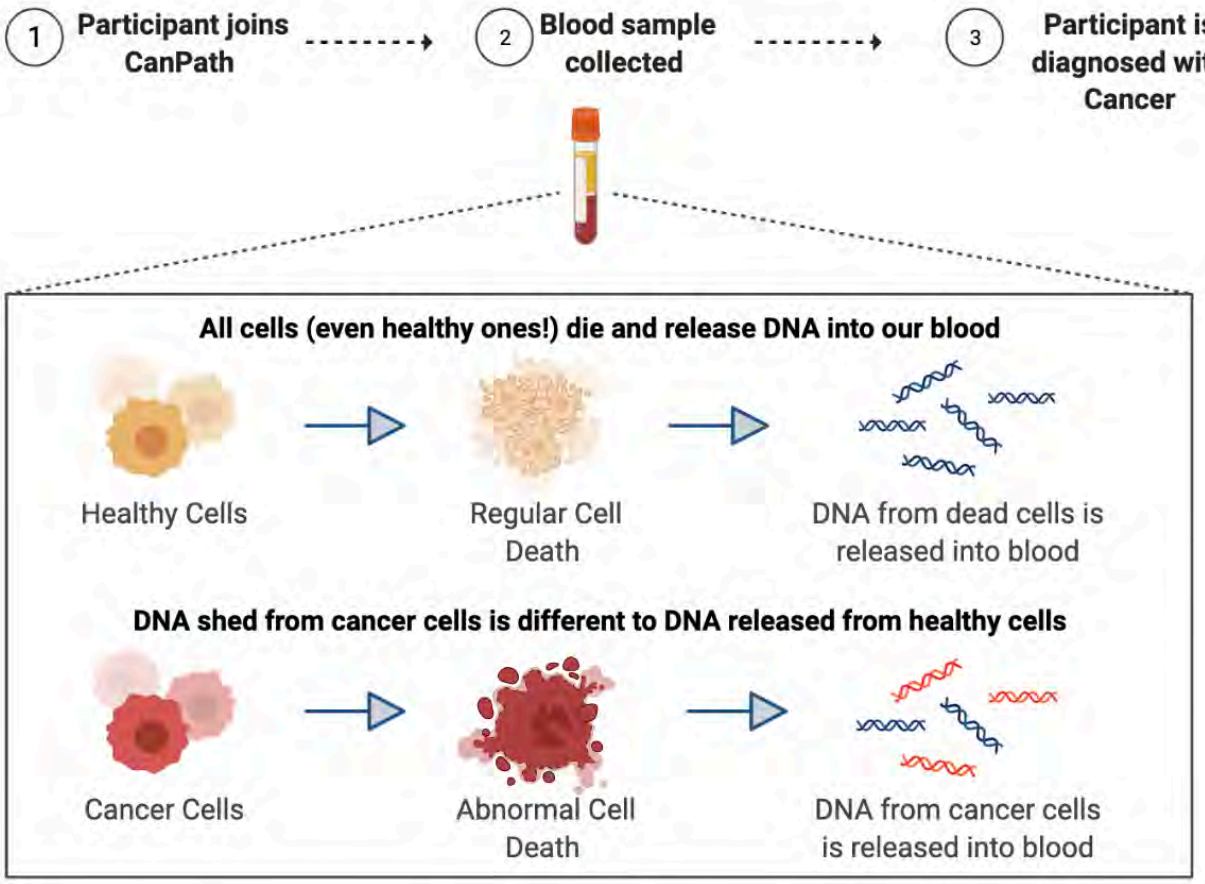


Research Spotlight: Using the Canadian Cancer Study to predict cancer earlier

A team of researchers at the Ontario Institute for Cancer Research are studying **how patterns in DNA that is released into our blood from dying cells can be used to predict cancer up to seven years earlier** than current diagnostic methods

Dr. Philip Awadalla

Nick Cheng (PhD Student)



CanPath

Occupational & Environmental Exposures

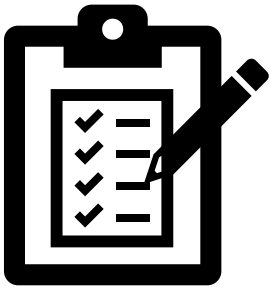
Dr. Trevor Dummer
National Scientific Co-Director, CanPath,
University of British Columbia

CanPath
Canadian Partnership for Tomorrow's Health

Exposure assessment

CanPath - helping us understand how where we live, work and play affects our health

1. Questionnaire information



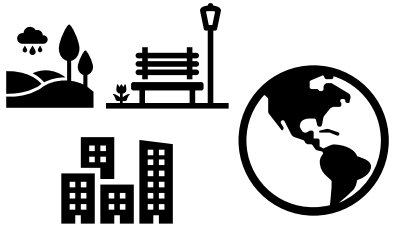
- Baseline
- Follow-up
- Occupational History
- Covid-19 survey

E.g., you all reported - sun exposure, second-hand tobacco smoke exposure, occupation

2. Link to other databases

Occupation reported → Expert system: coded job classification

Postal code reported →



Maintaining your PRIVACY is central

CanPath

Air pollution

Fine Particulates
- PM2.5

Green spaces

Greenness index
- NDVI (vegetation index)

Neighbourhood factors

Walkability
- Active living index

Night time light
- Satellite imagery

And many other datasets related to the built and natural environment and pollution…..

Atlantic PATH toenail collection

Your toenail clippings provide researchers with a window to observe exposure to environmental contaminants, such as arsenic, over the past 8-12 months **AND** provided Atlantic PATH with a Guinness World Record!

Atlantic PATH earns Guinness World Record for world's largest toenail collection

(Originally Published at Dalhousie University)

Left to right: Drs, Trevor Dummer, Louise Parker and David Thompson, and a whole lot of toenail clippings. (Danny Abriel photo)

The record may seem silly, but the science behind it is incredibly important to understanding why Atlantic Canada has such high rates of cancer.

The Atlantic Partnership for Tomorrow's Health, or "PATH," is part of the Canadian Partnership for Tomorrow Project, the largest study of its kind ever undertaken in Canada. Led by a group of Dal researchers, Atlantic PATH is investigating the various factors that contribute to the development of cancer and chronic diseases: everything from the environment, to genetics, to lifestyle and behaviour. It's recruiting tens of thousands men and women, ages 35-69, from across the four Atlantic provinces to take part.

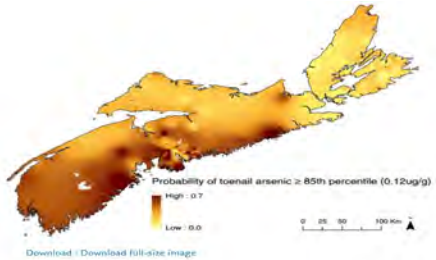


Fig. 4. Predicted probability of arsenic concentrations ≥ 85th percentile (0.12 μg g^{-1}) in toenail clippings.

Journal of Exposure Science and Environmental Epidemiology (2014) 24, 135–144

www.nature.com/jes

ORIGINAL ARTICLE

Relationship between drinking water and toenail arsenic concentrations among a cohort of Nova Scotians

Zhijie M. Yu[1], Trevor J.B. Dummer[1], Aimee Adams[2], John D. Murimboh[2] and Louise Parker[1]

Environment International
Volume 66, May 2014, Pages 115-123

What is the role of obesity in the aetiology of arsenic-related disease?

Zhijie M. Yu [a], Bryan Fung [b], John D. Murimboh [b], Louise Parker [b], Trevor J.B. Dummer [a]

Ecotoxicology and Environmental Safety
Volume 232, 1 March 2022, 113269

Toenail speciation biomarkers in arsenic-related disease: a feasibility study for investigating the association between arsenic exposure and chronic disease

Nathan Kyle Smith [a, b], Erin Keltie [a, b], Ellen Sweeney [c], Swarna Weerasinghe [a], Kathleen MacPherson [a], Jong Sung Kim [a, b]

Science of The Total Environment
Volume 505, 1 February 2015, Pages 1248-1258

Geostatistical modelling of arsenic in drinking water wells and related toenail arsenic concentrations across Nova Scotia, Canada

T.J.B. Dummer [a], Z.M. Yu [a], L. Nauta [a], J.D. Murimboh [b], L. Parker [a]

CanPath

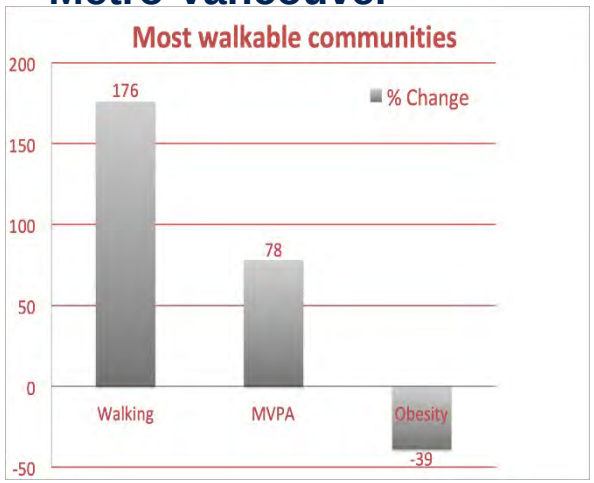
Your information in action

Environment International
Volume 158, January 2022, 106959

Chronic disease and where you live: Built and natural environment relationships with physical activity, obesity, and diabetes

Lawrence D. Frank [a, b], Binay Adhikari [b], Katherine R. White [b], Trevor Dummer [b, c], Jat Sandhu [b, c], Ellen Demlow [c], Yumian Hu [c], Andy Hong [b, d], Matilda Van den Bosch [b]

Metro Vancouver



International Journal of Environmental Research and Public Health
MDPI

Article

Associations between Neighborhood Walkability, Physical Activity, and Chronic Disease in Nova Scotian Adults: An Atlantic PATH Cohort Study

Melanie R. Keats [1,*], Yunsong Cui [2], Vanessa DeClercq [2], Scott A. Grandy [1], Ellen Sweeney [2] and Trevor J. B. Dummer [3]

nutrients
MDPI

Article

Diet Quality and Neighborhood Environment in the Atlantic Partnership for Tomorrow's Health Project

Kaitlyn Gilham [1,†], Qianqian Gu [1,†,‡], Trevor J. B. Dummer [1], John J. Spinelli [1] and Rachel A. Murphy [1,2,*]

Zhao et al. Environmental Health (2020) 19:86
https://doi.org/10.1186/s12940-020-00637-3
Environmental Health
RESEARCH Open Access

Long-term exposure to a mixture of industrial SO_2, NO_2, and $PM_{2.5}$ and anti-citrullinated protein antibody positivity

Naizhuo Zhao[1], Audrey Smargiassi[2,3,4], Marianne Hatzopoulou[5], Ines Colmegna[6,7], Marie Hudson[6,8], Marvin J. Fritzler[9], Philip Awadalla[10,11] and Sasha Bernatsky[1,6,7,12*]

CanPath

Genomics

Dr. Guillaume Lettre
Scientific Co-Director, CARTaGENE, CHU Sainte-Justine

CanPath
Canadian Partnership for Tomorrow's Health

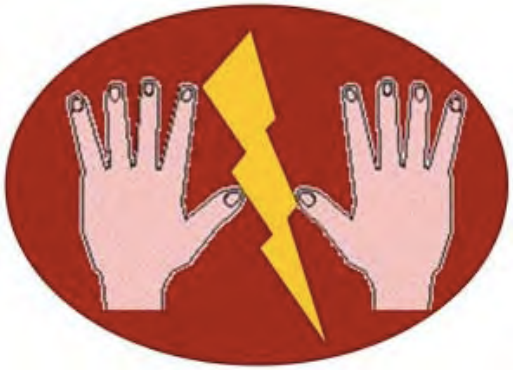
Progression to chronic illness

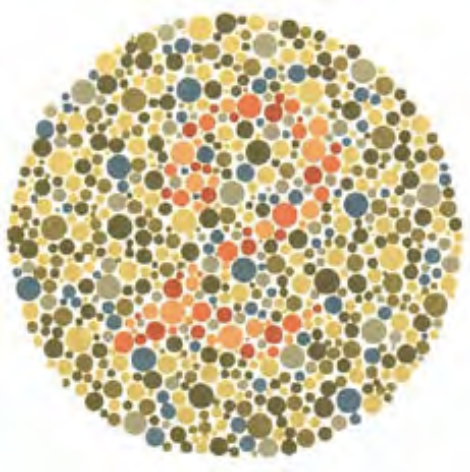
Environment + genetics

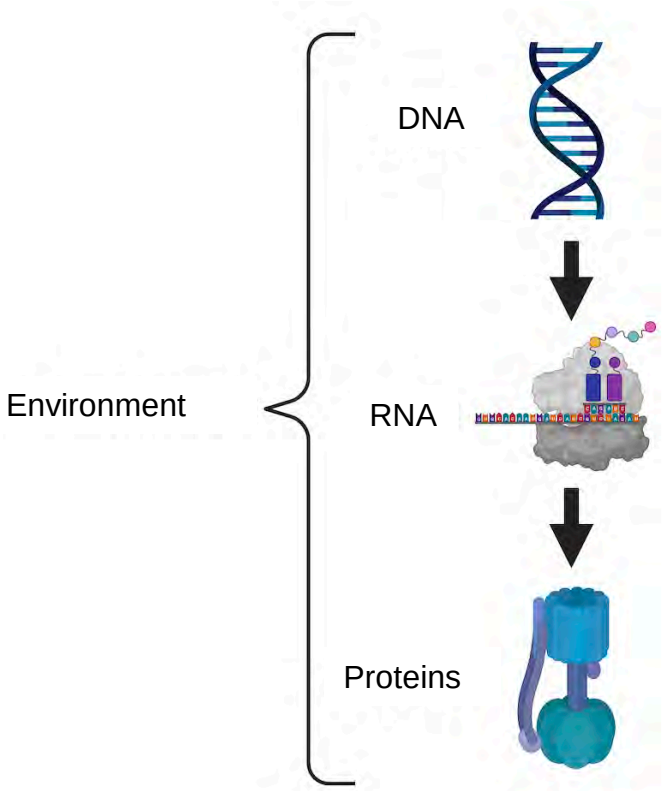
Diabetes
Hypertension
Cancer

Exceptional human diversity

Left-handed vs. Right-handed

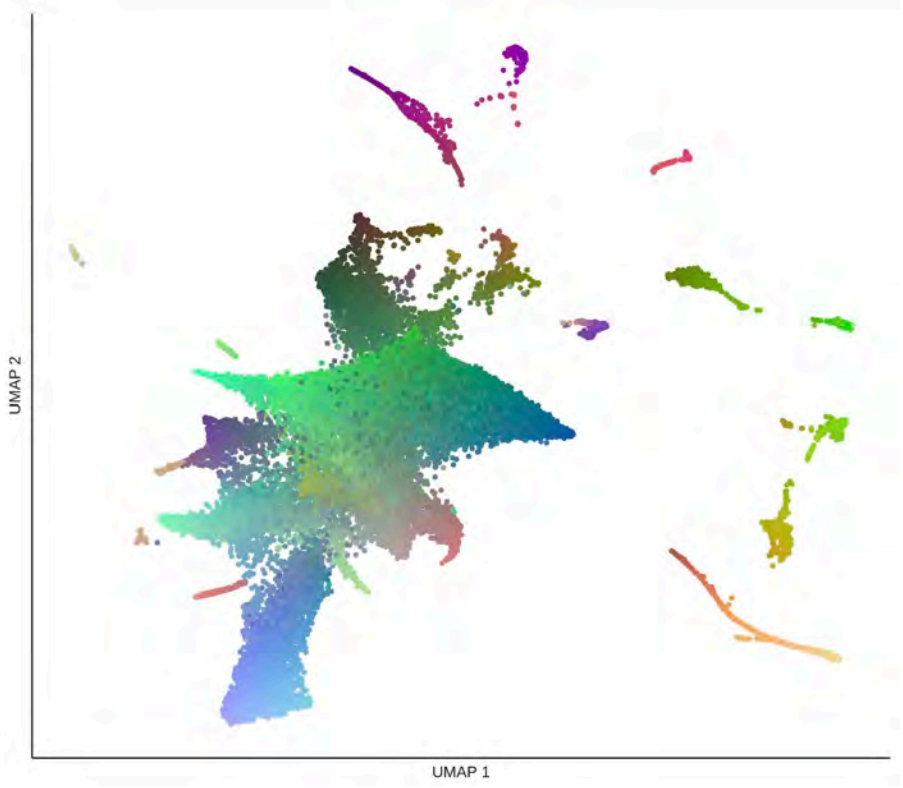






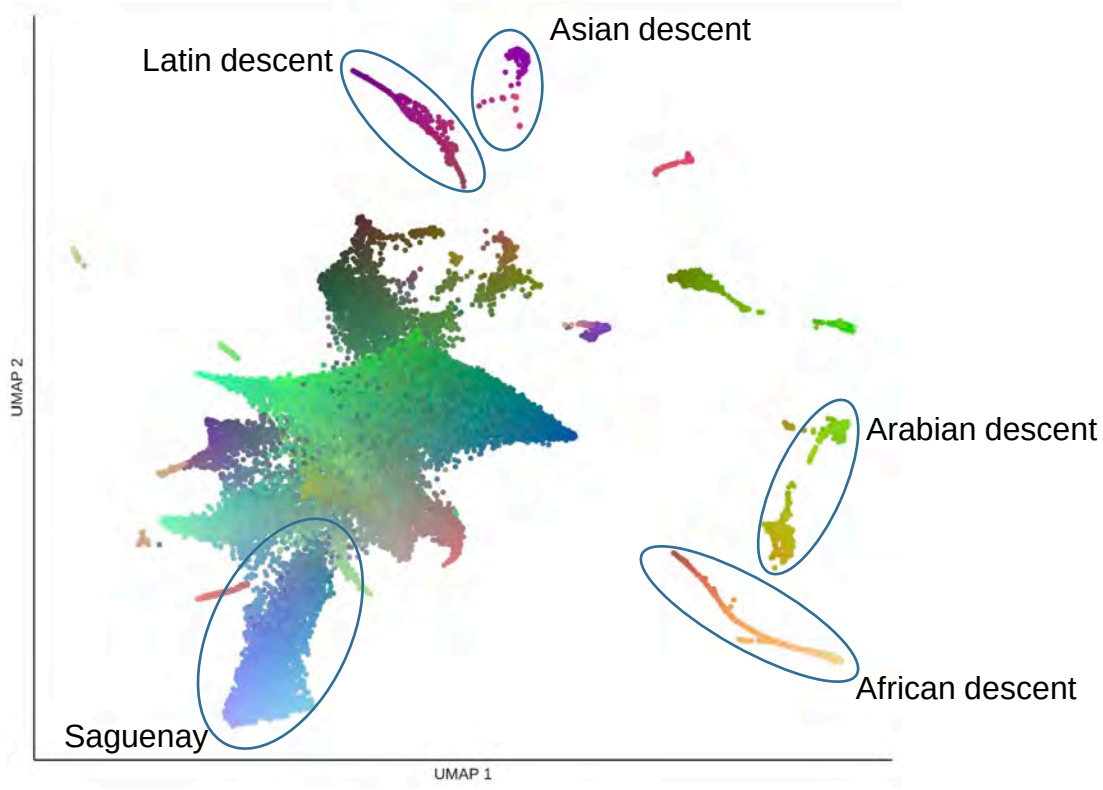
Science	**CanPath**
Genetics/Genomics (*sequencing, genotyping*)	>40,000 participants
Transcriptomics (*RNA-seq*)	>2,000 participants
Proteomics (*cytokines*)	>8,000 participants

CARTaGENE: A Quebec cohort with international representation



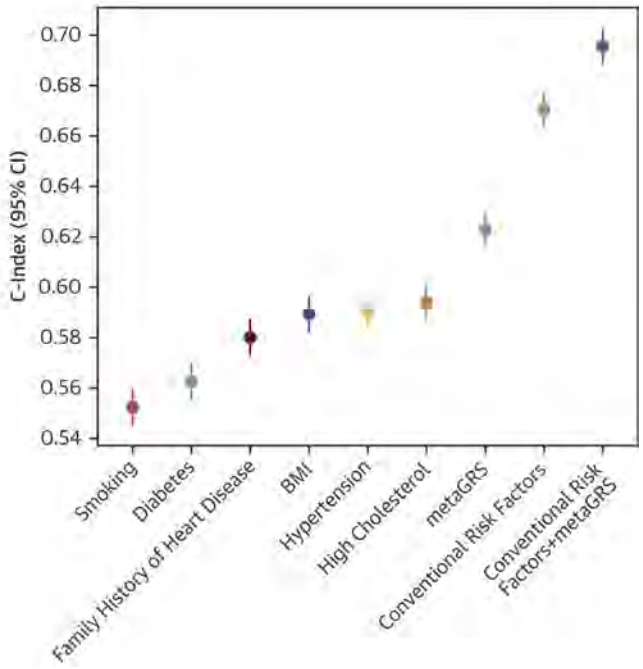
Luke Anderson-Trocmé, Ken Sin Lo

CARTaGENE: A Quebec cohort with international representation

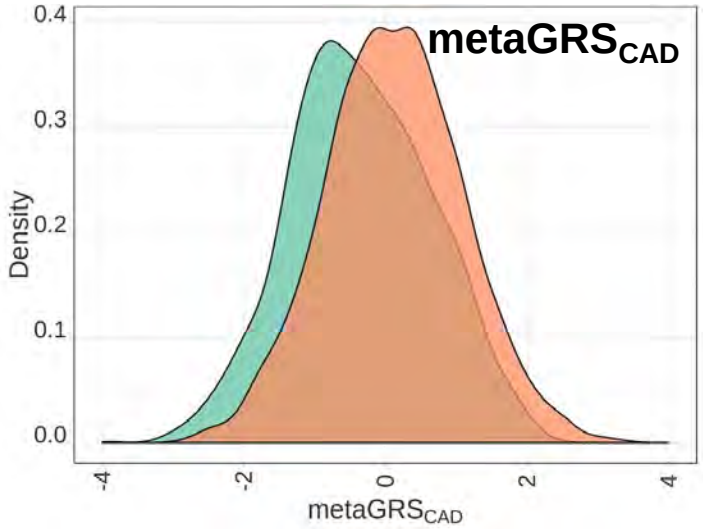


Luke Anderson-Trocmé, Ken Sin Lo

One day, might we predict heart attacks thanks to genomics?



Inouye et *al. JACC 2018*



Wuennemann et *al.*
Circ Genom Prec Med, 2019

Conclusions

1. Genomics is a tool to define the **cause** of human illnesses, understand the **biological mechanisms** involved, and explore new strategies for **prevention** and **treatment**.

2. Large cohorts of participants, such as those at CanPath, are essential to realizing genomics' potential.

COVID-19 Study Results

Dr. Robin Urquhart
Scientific Director, Atlantic PATH, Dalhousie University

CanPath
Partenariat canadien
forur la santé de demain

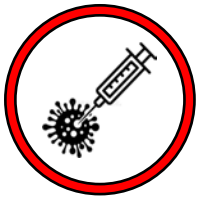
CanPath enabled Canada to respond proactively to the COVID-19 pandemic

- CanPath was in the field collecting COVID-19 related information **within 4 weeks of COVID-19 being declared a pandemic**
- Following the emergence of COVID-19, CanPath became the **first national study to confirm evidence** from the vaccine manufacturer's clinical trials using real-world data from thousands of Canadians
- Our decade's worth of investment and pan-Canadian partnerships **enabled rapid and low-cost implementation of a national COVID-19 study and one of the largest antibody studies in the world**

SUPPORT-Canada: A national COVID-19 Antibody Study

Collection of COVID-19 related data and outcomes from over 100,000 Canadians (beginning in March 2020)

Longitudinal profiling of COVID-19 antibodies in diagnosed, symptomatic, asymptomatic and susceptible Canadians



Supporting pre- and post-vaccine immune profiling

CIHR IRSC Canadian Institutes of Health Research / Instituts de recherche en santé du Canada

$2.6 million in awarded funds from CIHR

Public Health Agency of Canada / Agence de la santé publique du Canada

COVID-19 IMMUNITY TASK FORCE

$3.8 million in awarded funds from PHAC and CITF

CanPath
Canadian Partnership for Tomorrow's Health

CanPath COVID-19 questionnaire was designed to align with international COVID-19 efforts

COVID-19 test result/ suspected infection

Symptoms experienced (if any)

Participant hospitalized or received medical care

Current health status and risk factors for COVID-19

Potential source of exposure

Impact of pandemic on job status

Impact of the pandemic on mental, emotional, social and financial wellbeing

101,595

COVID-19 Questionnaires Completed

Some participants were invited to provide blood to support antibody profiling

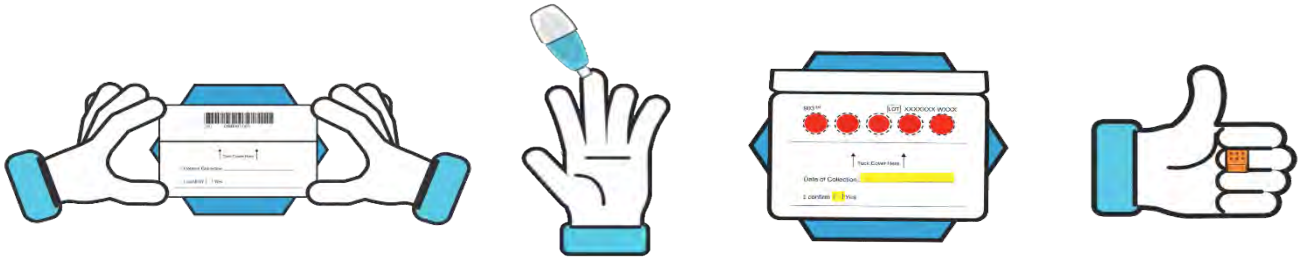
Approximately 20,000 participants were asked to provide a blood sample

Residents of long-term care homes

Areas with a high prevalence of COVID-19

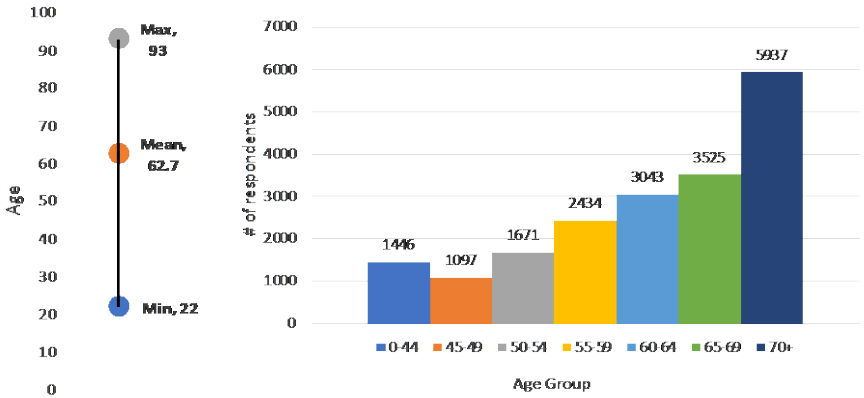
People living in under-served urban and rural communities

Dried blood spots were mailed to participants to collect blood samples

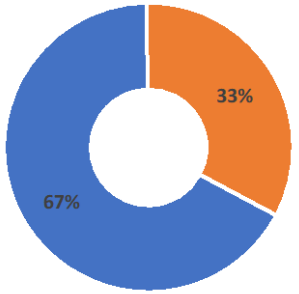


Who is participating in CanPath's COVID-19 Study

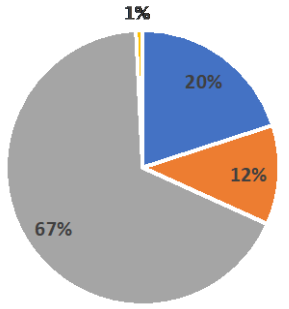
The average age of participants was 62.7



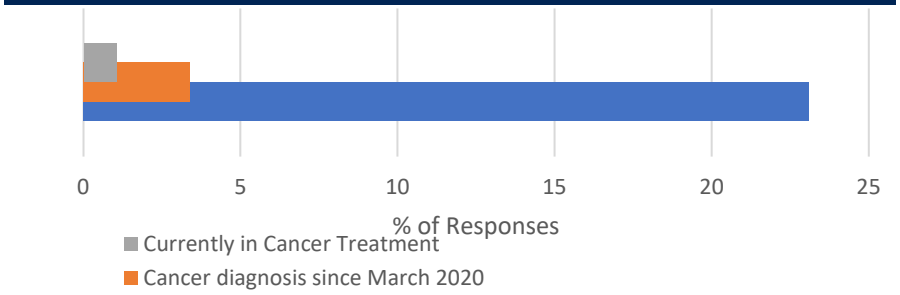
A larger proportion of participants are women



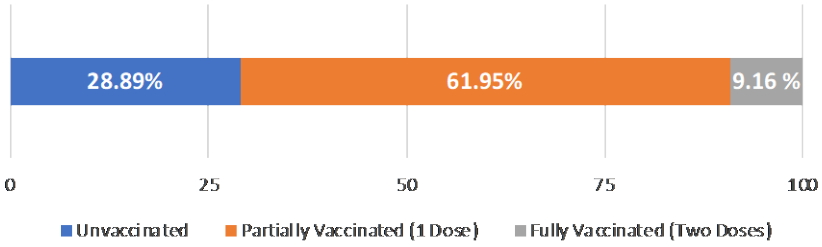
High variability in type of vaccine received



Many participants report current/past cancer diagnoses

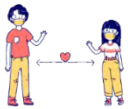


Vaccination status varies across participants in the antibody study



CanPath

Public health precautions taken by CanPath participants following the emergence of the COVID-19 pandemic



Used social distancing when out in public — 94%

Washed hands more regularly — 93%

Avoided crowds and large gatherings — 92%

Avoided leaving the house for non-essential reasons — 88%

Did not visit with people outside household — 75%

Wore a mask when going out in public — 73%

Avoided touching face — 71%

Stocked up on essentials at grocery store or pharmacy — 66%

Worked from home where that was an option — 39%

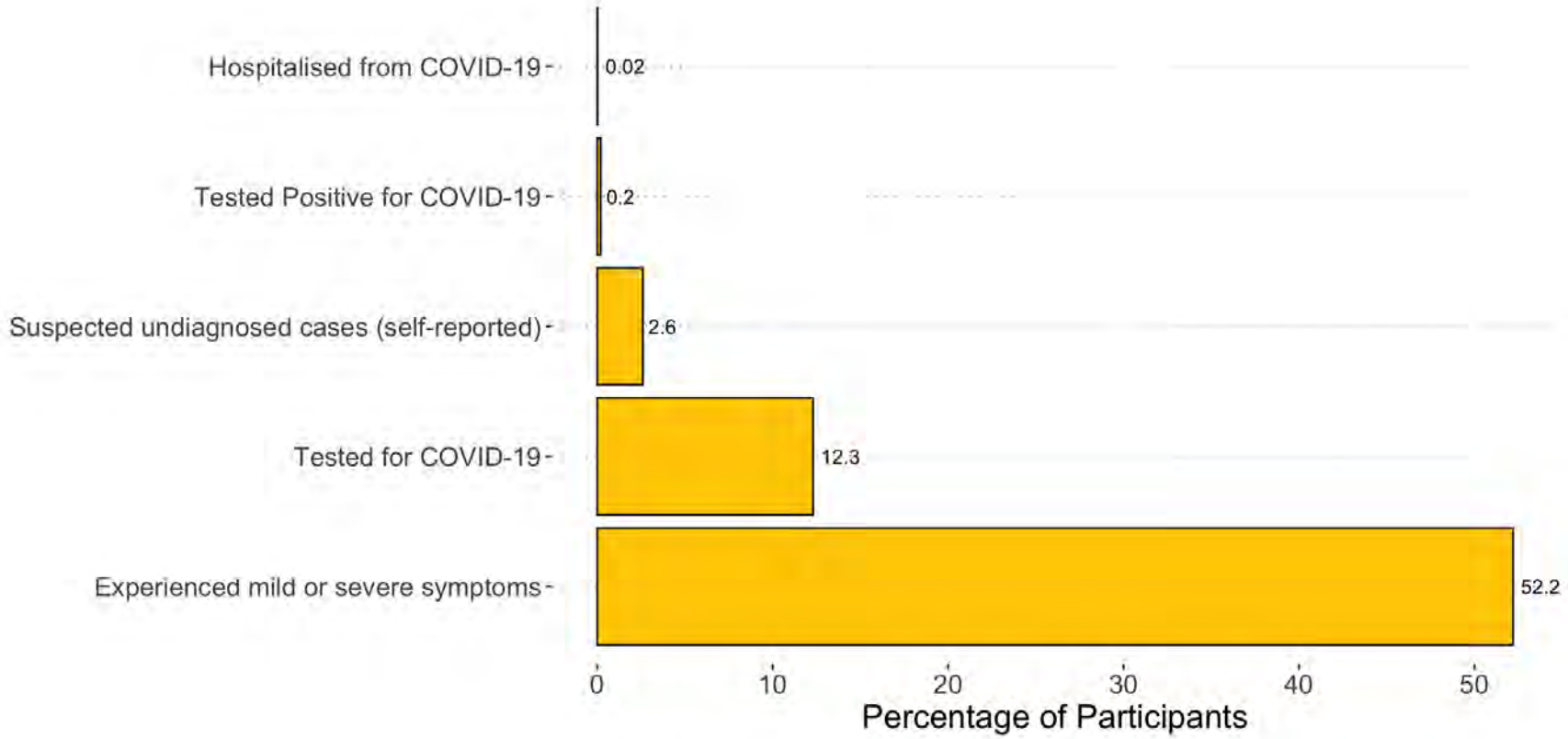
Wore gloves when going out in public — 26%

Some precautions vary by groups. For example, women are more likely to:

- wear masks (75% vs 69%)
- stay home (90% vs 84%)
- stock-up on essentials (69% vs 61%)
- avoid visiting with people outside the home (77% vs 71%)

CanPath

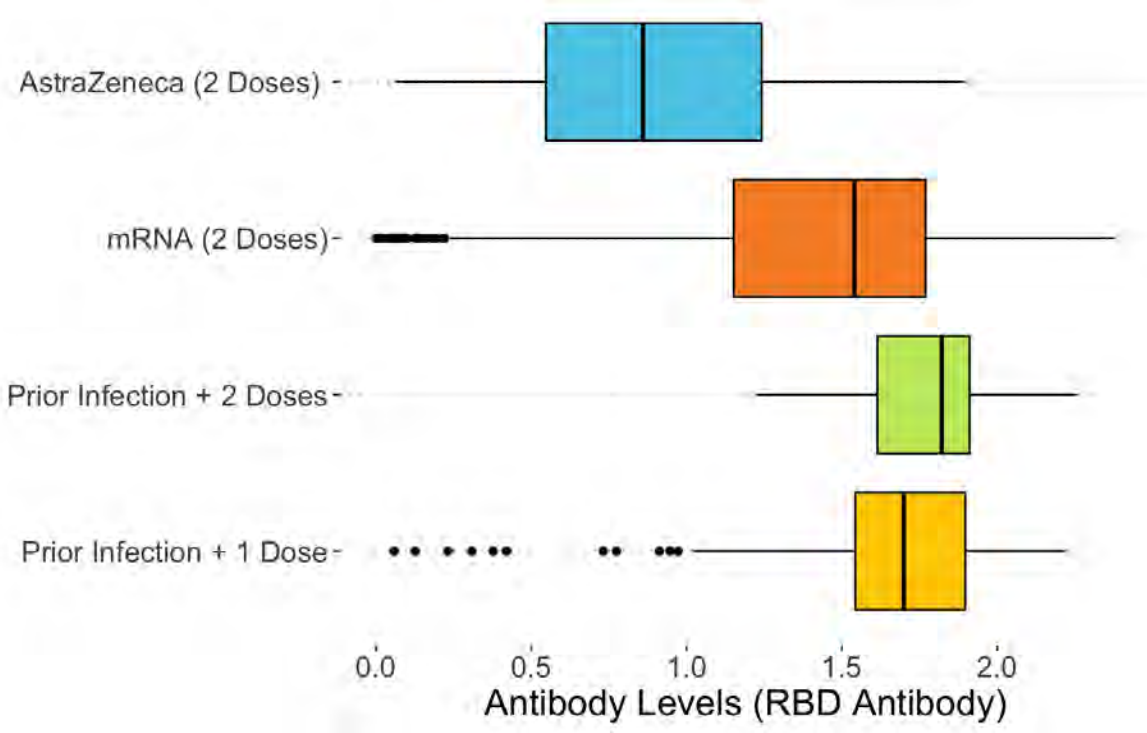
One in two participants reported COVID-19 symptoms in the first wave of the pandemic



Note: *Data is from 1st wave of the pandemic*

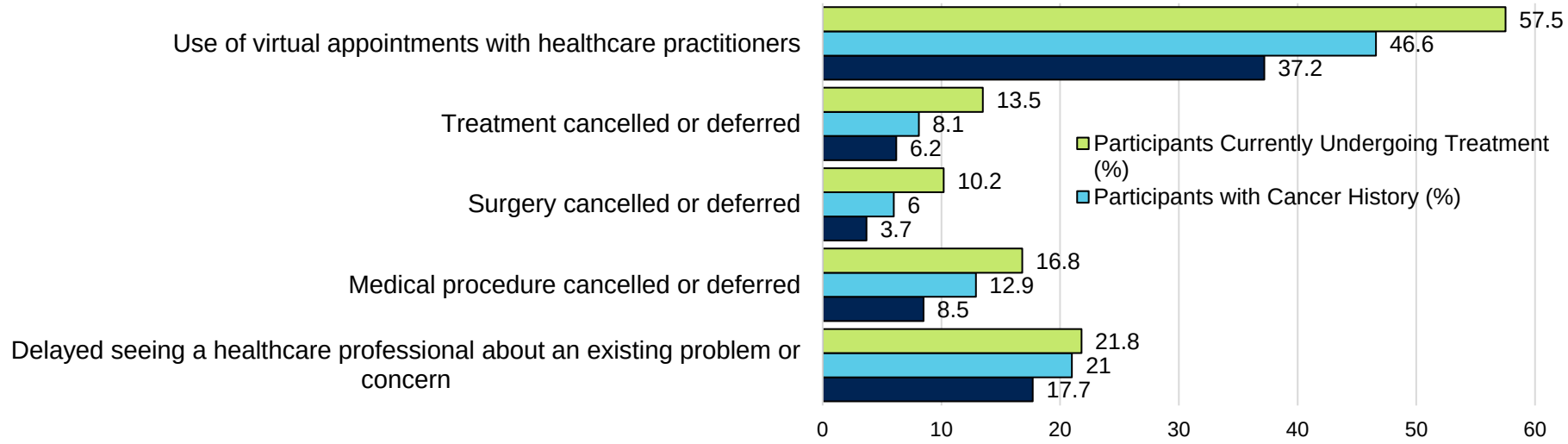
We can use blood samples to study levels of immunity to COVID-19 in the Canadian population

- CanPath participants are providing Canada with essential information in the fight against COVID-19
- **We can study levels of immunity following COVID-19 vaccination and natural infection** in the Canadian population
- The **highest antibody levels are observed in individuals who are fully vaccinated with an mRNA vaccine,** and those who are both vaccinated and have been infected with COVID-19



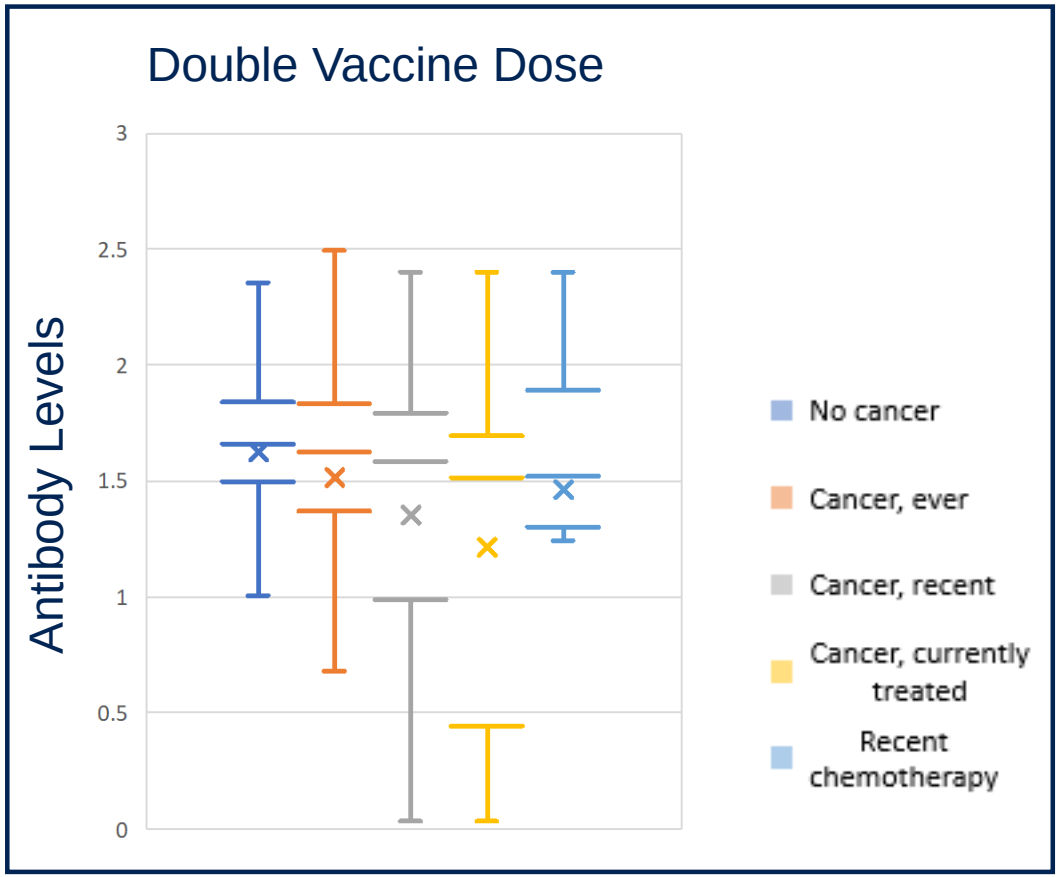
COVID-19 had a large impact on participant's ability to access cancer care

- Cancer patients and survivors perceive a **high risk of being harmed by COVID-19 and were more likely to adopt preventive measures**.
- The pandemic has presented the healthcare system with unprecedented challenges, profoundly affecting cancer patients, and has **catalyzed the adoption of telehealth**.



Vaccine efficacy in individuals who have a history of cancer but still have a high level of protection

Participants **who have cancer, or who have a history of cancer, have slightly lower antibody levels to COVID-19** following two doses of vaccines compared to those with no history of cancer



CanPath COVID-19 research provides evidence of interest and relevance to all Canadians

HEALTH

New Canadian antibody study to investigate COVID-19's spread, why it hits vulnerable

By Dan Spector · Global News
Posted October 28, 2020 5:41 pm

LE DEVOIR

Une étude pancanadienne assoit l'importance de la deuxième dose

CORONAVIRUS

Government invests $1.9 million in COVID-19 immunity study of high-risk populations

Ben Cousins CTVNews.ca Writer
@cousins_ben | Contact

Published Wednesday, October 28, 2020 7:35AM EDT

CTV NEWS

Feeling bad after a second COVID-19 vaccine dose? Here's why that should buy you some peace of mind

IVAN SEMENIUK > SCIENCE REPORTER
PUBLISHED JUNE 26, 2021

THE GLOBE AND MAIL

NEW ZEALAND ONLINE NEWS

HEALTH

Early results from a national study confirm antibody levels – GlobeNewswire

NATIONAL POST

Pfizer is not superior to Moderna and it's 'perfectly okay' to mix COVID vaccines, experts say

While health authorities are reassuring Canadians that it's safe to mix COVID-19 vaccines doses, some appear to be rejecting Moderna for Pfizer

Sharon Kirkey
Jun 24, 2021 • June 24, 2021 • 5 minute read • 130 Comments

加拿大研究结果出来了：阿斯利康确实不如辉瑞

加国无忧 51.CA　2021年6月23日 08:18　来源：本网编译　作者：谈海　27 评论

加拿大科学家研究发现，mRNA 疫苗能比阿斯利康疫苗产生更多的COVID-19抗体，研究发现接种第二剂疫苗非常重要，特别是那些第一剂接种的是阿斯利康疫苗的人，专家建议第二剂疫苗改为接种mRNA疫苗。

Canadian study finds mRNA vaccines produce more COVID-19 antibodies than AstraZeneca

By Sean Boynton · Global News
Posted June 23, 2021 5:00 am · Updated June 23, 2021 12:01 am

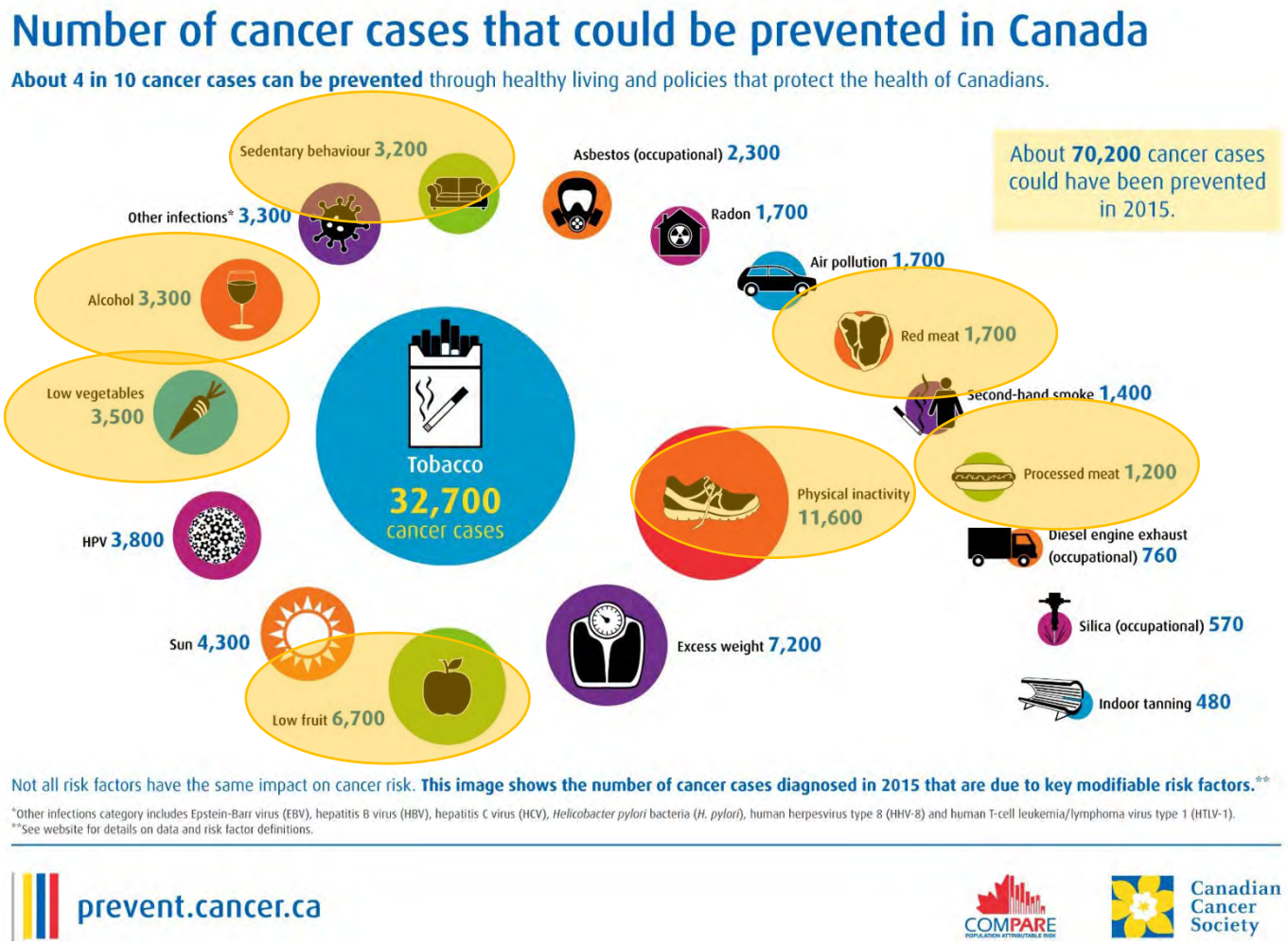
Physical Activity and Diet

Dr. Jennifer Vena
Scientific Director, Alberta's Tomorrow Project,
Alberta Health Services

CanPath
Canadian Partnership for Tomorrow's Health
Partenariat canadien pour la santé de demain

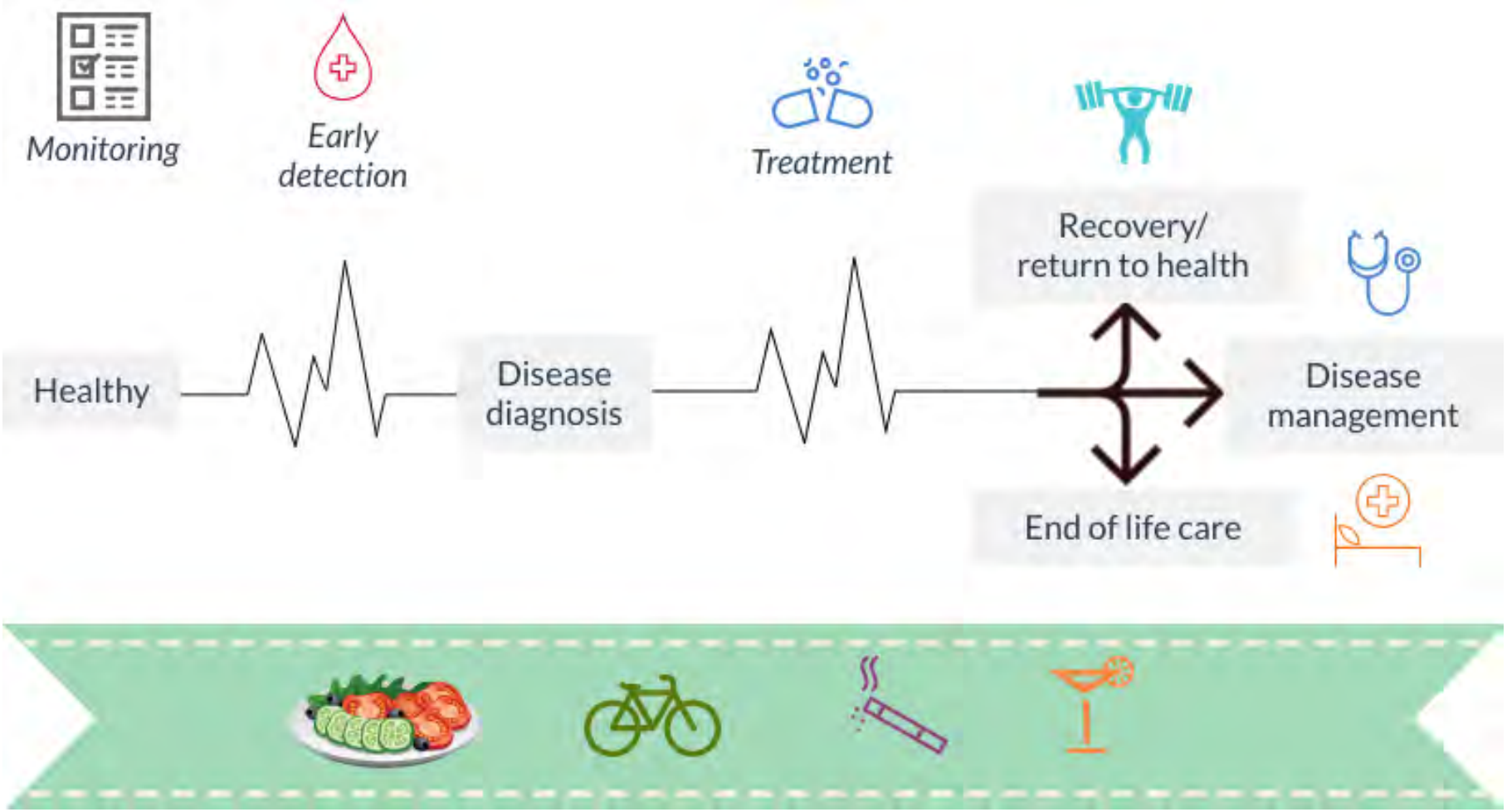
Importance of Diet & Physical Activity for Cancer & Chronic Disease Prevention

COMPARE study



CanPath

Important across the health spectrum



Diet & Physical Activity Data in CanPath

- CanPath has collected fruit and vegetable intake and some indicators of physical activity (e.g. walking, sitting, moderate/vigorous activity) during enrollment
  - Important to have this data; but limited in use
- Some of the cohorts (e.g. ATP, CARTaGENE, Atlantic PATH) have collected more detailed diet/physical activity data at different times

- Examples will highlight use of both

Dr. Darren Brenner
Exploring causes of early-onset breast cancer

Dr. Darren Brenner

- Incidence of breast cancer in younger women (under age 50) is increasing
  - What are the risk factors associated with this?
- Looked at women from BCGP, ATP and OHS linking survey and cancer registry data

BC GENERATIONS PROJECT
Your time today builds a healthier tomorrow.

ALBERTA'S TOMORROW PROJECT
Inspiring research for a healthier tomorrow

Ontario Health Study
Étude sur la santé Ontario

- Findings:
  - Greater body size lowered risk, but greater waist size increased it
  - Insufficient evidence for fruit/veg consumption & physical activity

UNIVERSITY OF CALGARY

CIHR IRSC

Pader et al. (2021) Cancer Causes & Control

CanPath

Dr. Katerina Maximova
Intake of red and processed meat, vegetables and fruit, and fiber on cancer incidence

- Red and processed meat are suggested to increase cancer risk
  - But we don't eat foods alone – need to understand what this means in the context of other parts of the diet
- Looked at people who ate low vs. high amounts (and combinations) of red and processed meat, vegetables and fruit, whole grains, and fiber and risk of cancer

- Findings:

LOW fruit/veg + HIGH Processed Meat

vs.

1.9x more likely to develop cancer

HIGH fruit/veg + LOW Processed Meat

  - Suggests that the effects of eating processed meat may be mitigated by also eating a lot of fruit/veg

Maximova et al. (2020) Nutrients

CanPath

Dr. Vikki Ho
Occupational physical activity & lung cancer risk

- Physical activity can reduce risk of some cancers
  - But there are different types of physical activity (e.g., at work vs. leisure)
  - Recreational physical activity has been shown to reduce lung cancer risk
  - Impact of work activity is not well understood
  - Some studies have actually found that people who have physically demanding jobs have a higher risk of lung cancer

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Canadian Partnership for Tomorrow's Health

CHUM

CIHR IRSC

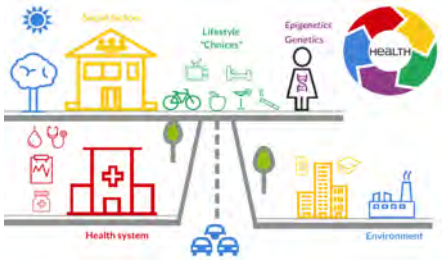
- This study (in progress) is looking at how lung cancer risk is associated with physical activity levels at work

What is still to understand about Diet & Physical Activity?

- Impact of diet and physical activity throughout the life course
  - How needs and behaviours change over time -> impact to risk

- Impact of the parts and the sum of the parts
  - Diet and/or physical activity behaviours
  - Interaction with genetic, environmental and other lifestyle factors

- The context in which people make choices
  - Environmental, economic and social factors influence behaviours and choices
  - Many factors are outside people's direct personal control



How to understand more about Diet & Physical Activity?

- Need to collect more and better data
  - What goes in (i.e., data) determines what you can get out (i.e., evidence)
- We want to! But to do it well requires …
  - Collecting over time (e.g., few times over a year to understand ‘usual’ intake or activity)
  - Using a combination of tools/approaches (e.g., capture different aspects)
- We recognize and respect this requires effort and time from our participants
  - Our challenge is to balance collecting the best data we can with the effort and time we ask from you
  - Newer online tools may make it more feasible

CanPath Plans for the Future

Dr. John McLaughlin
Executive Director, CanPath, University of Toronto

CanPath

Canadian Partnership for Tomorrow's Health

Partenariat canadien pour la santé de demain

Priorities for the Next Five Years

- Continued growth in use of CanPath data resources by researchers across Canada and internationally
- Ongoing knowledge transfer so research findings improve the health of Canadians
- Continued enhancement of data and biospecimen resources in response to health concerns that evolve over time
- Sustain and strengthen CanPath as Canada's premier health research platform that remains unique and useful to the Canadian research community for decades to come
- Continued recognition of CanPath's data platform for excellence in data security, ethics, integrity and scientific merit, while meeting provincial and national needs
- Delivering improved disease prevention, treatments and performance of the healthcare system, and improved health across the population

Recruiting Cohorts

CancerCare Manitoba
ActionCancerManitoba
THE MANITOBA TOMORROW PROJECT

- Mailouts have been sent to 100,000 Manitobans in 2021-2022
- Consent and baseline questionnaires have begun
- In-person appointments to resume by summer 2022

Healthy Future Sask

- Piloting the project with ~75 participants between March–May 2022
- Full recruitment to begin Fall 2022

Thank you to CanPath's sponsors and hosts!

Thank you to CanPath participants across the regional cohorts who generously donate their time, information and biological samples. **CanPath is a success because of your ongoing commitment.**

Q&A Session

Moderated by Dr. John McLaughlin
Executive Director, CanPath, University of Toronto

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Dr. Rachel Murphy
Diet quality and neighbourhood environment

- People's food choices are influenced by many factors, including the neighborhood environment (e.g., access to food sources)
- Looked at the diet quality of participants in Atlantic PATH and their access to neighborhood goods/services

Atlantic PATH
PARTNERSHIP FOR TOMORROW'S HEALTH
For the Benefit of Future Generations

UBC

- Findings
  - Diet quality was lower in socially deprived neighborhoods and in more densely populated areas
  - May be differences in rural vs. urban settings

Gilham et al. (2020) Nutrients

CanPath

Dr. Melanie Keats
Rural-urban differences in physical activity and health indicators

- Various lifestyle aspect may be different between participants living in rural vs. urban areas

- Participants in Atlantic PATH

Atlantic PATH
PARTNERSHIP FOR TOMORROW'S HEALTH
For the Benefit of Future Generations

DALHOUSIE UNIVERSITY

- Findings
  - Rural participants were more likely to be more physically active and drink less alcohol, but also have greater body size and body fat

Forbes et al. (2019) Journal of Rural Health