



Cracking the Code on Cancer Predisposition Syndromes

Mary-Jill (MJ) Asrat, Genetic Counsellor,
Hereditary Cancer Program, BCC

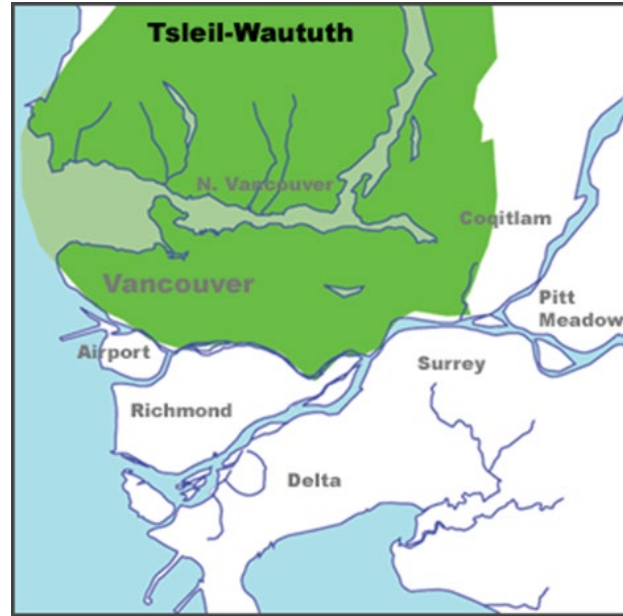
Linlea Armstrong, Medical Geneticist,
Provincial Medical Genetics Program

29 May 2024

VCH Family Medicine Rounds
Thank you for the invitation

We would like to acknowledge that we are gathered today on the traditional territories of the Musqueam, Squamish and Tsleil-Waututh peoples.

Source: www.ijohomaps.net/na/canada/bc/vancouver/firstnations/firstnations.html



Disclosure

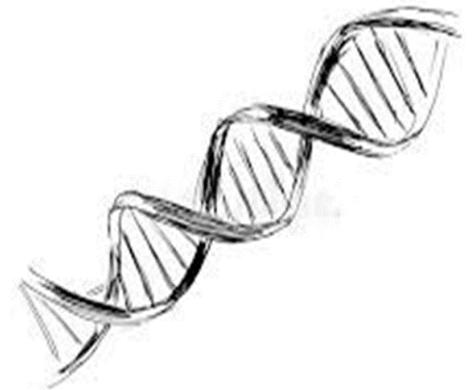
- A family member to Linlea Armstrong owes shares in a genomic testing company, Alamyra

Mitigation

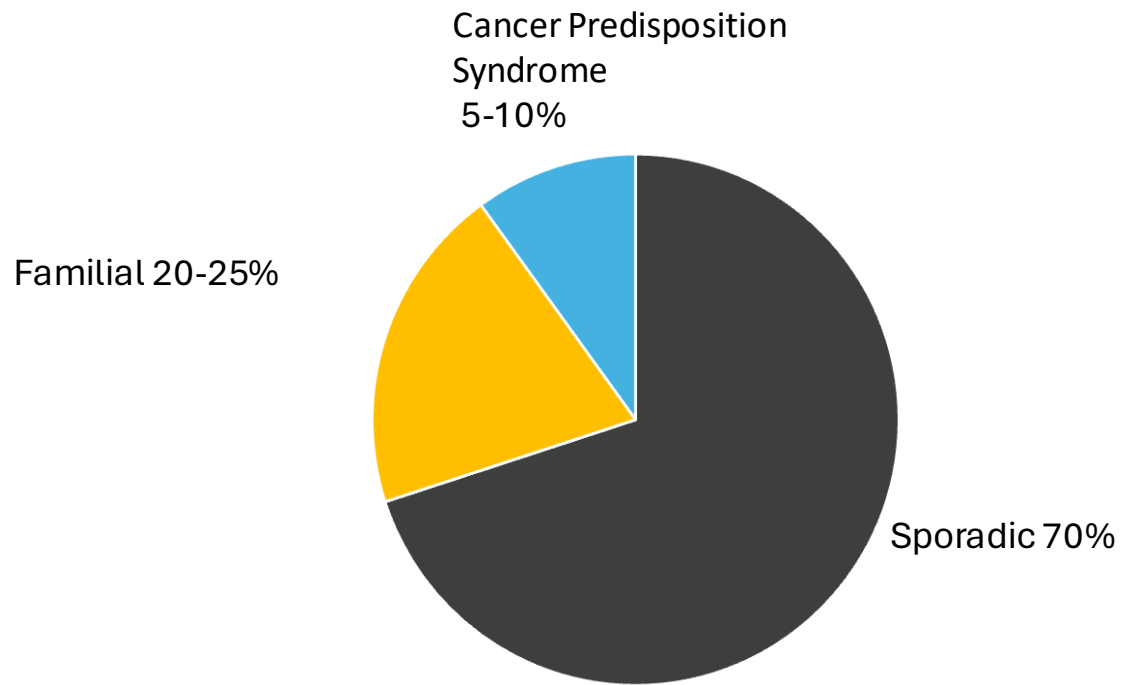
- No tests from that company will be discussed today
- This was disclosed in advance






Objectives

- Define what is meant by “genetic cancer predisposition” and describe common clinical features.
- Outline the contribution of germline genetics to cancer.
- Describe the pathway of care for individuals and families, with attention to the emerging concept of mainstreaming for equitable, sensitive, and efficient ascertainment.
- Discuss the roles of primary care providers in risk management of affected individuals.

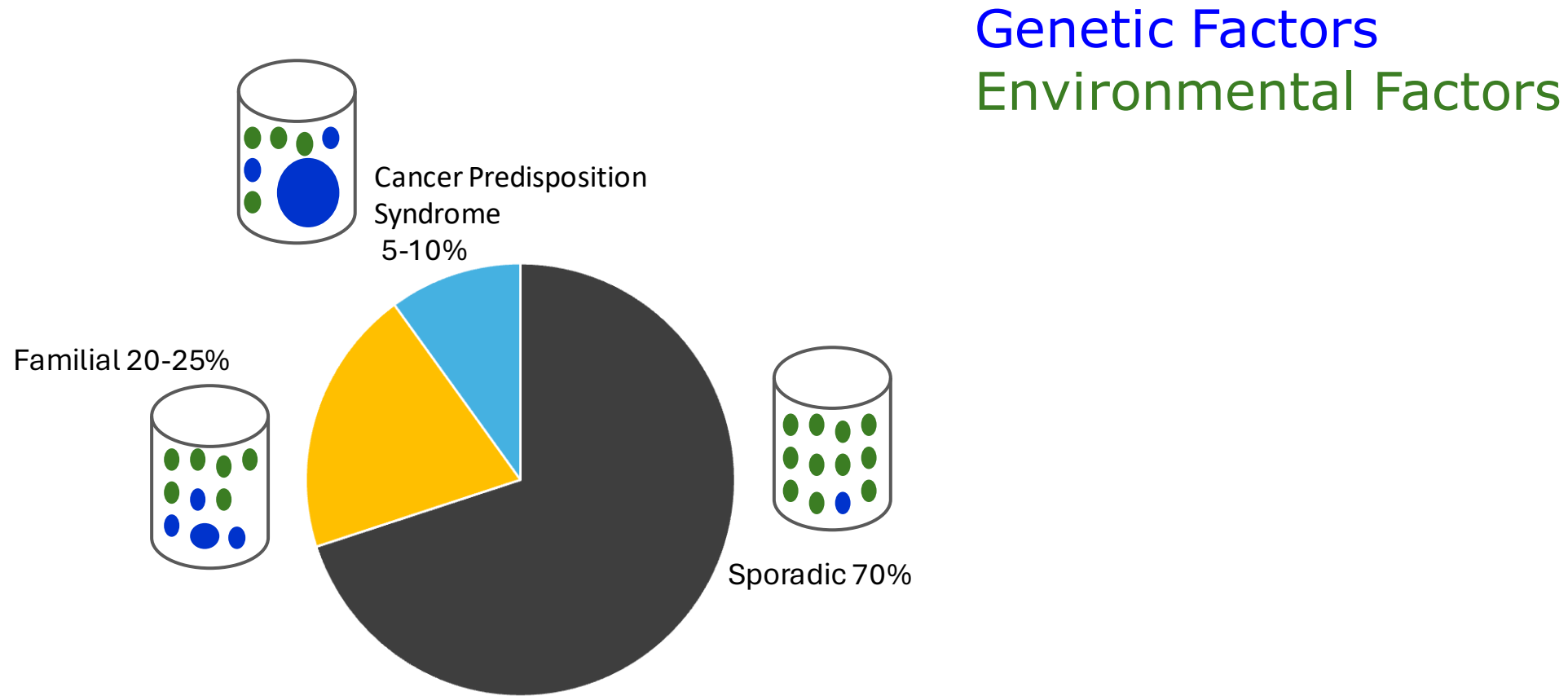


Cancer Predisposition Syndrome

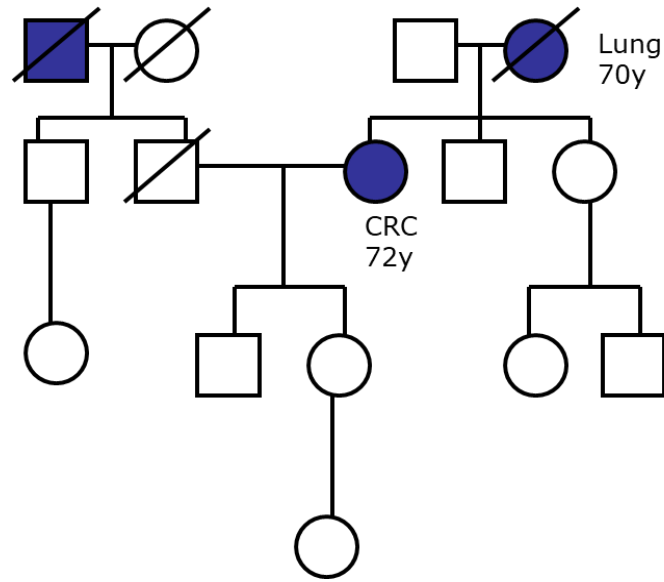


-  Younger Age
-  Multiple Primaries
-  Ethnicity
-  Family History
-  Pathology

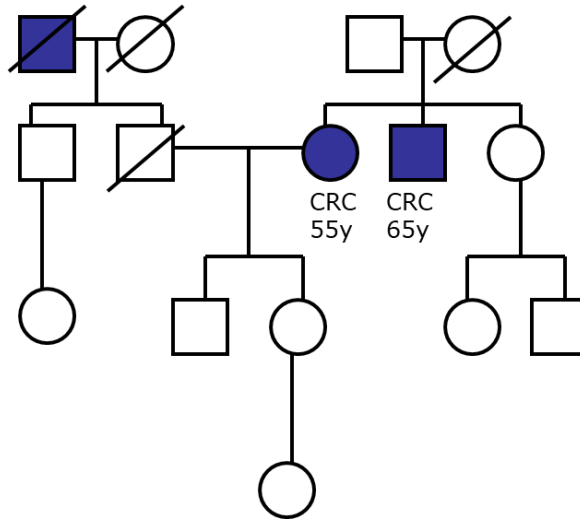
Model for Discussing Risk Factors



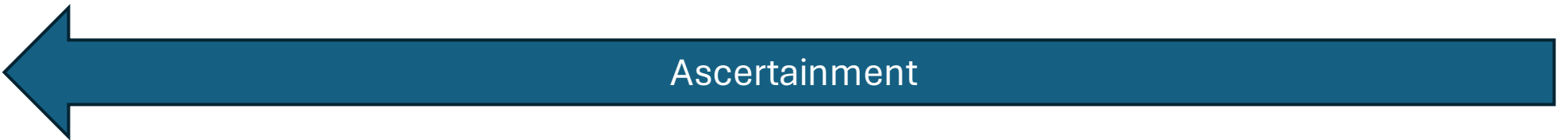
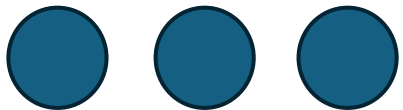
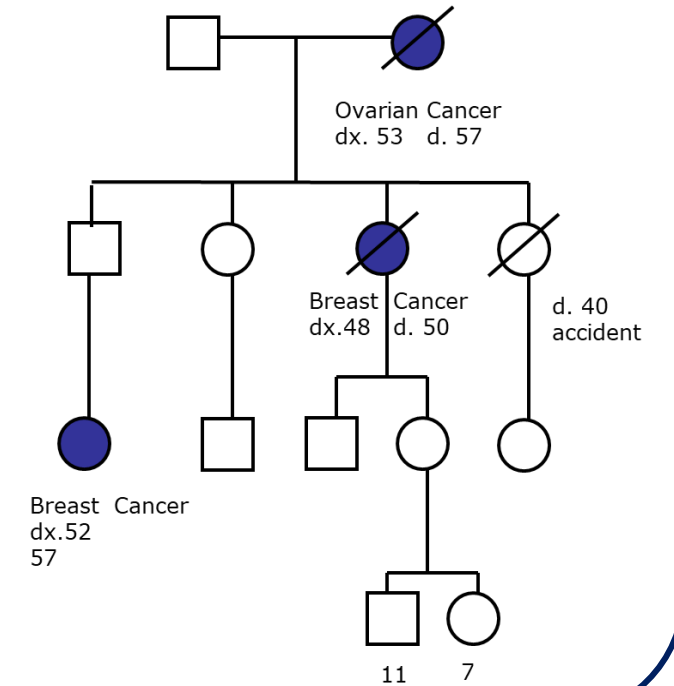
Sporadic



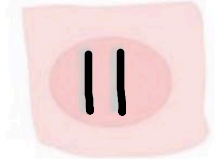
Familial



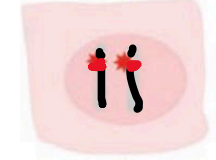
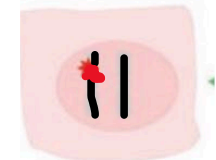
Predisposition Syndrome



Germline cell

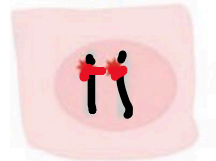
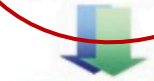
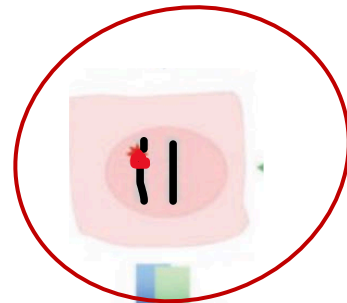


Cell cycle control



Tumour initiation

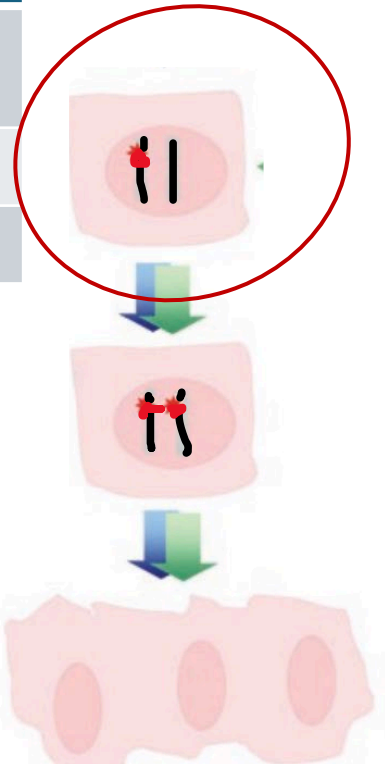
Germline cell



Tumour initiation

Gene	Syndrome
APC	Familial adenomatous polyposis
NF1	Neurofibromatosis type 1
TP53	Li-Fraumeni syndrome

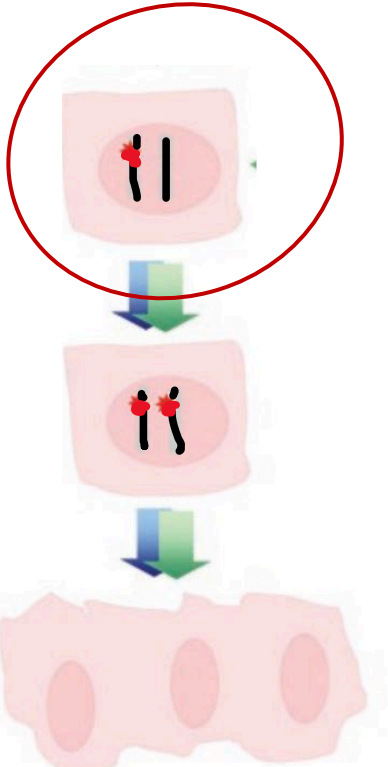
Germline cell



Tumour initiation

Gene	Syndrome
APC	Familial adenomatous polyposis
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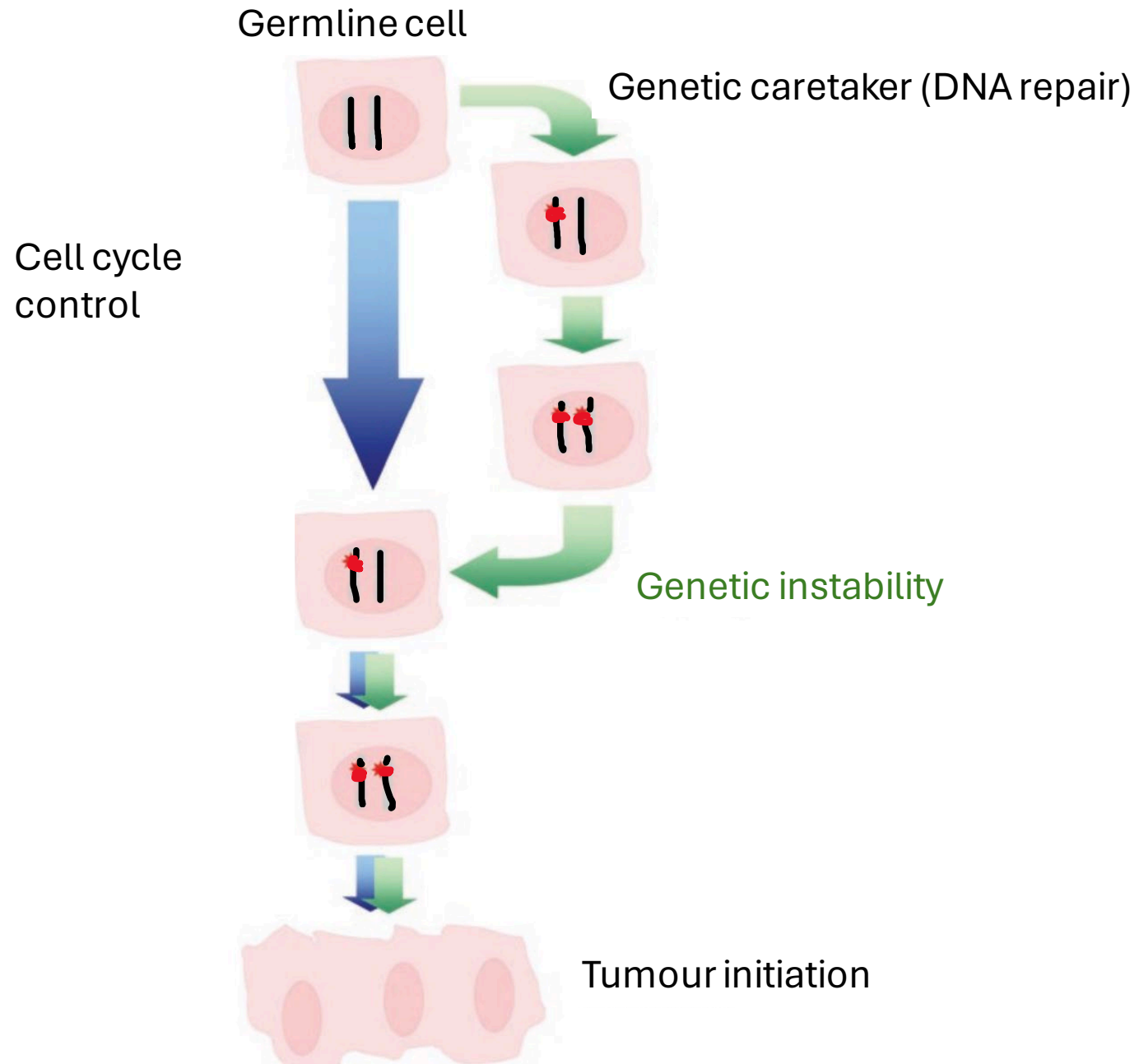
Germline cell

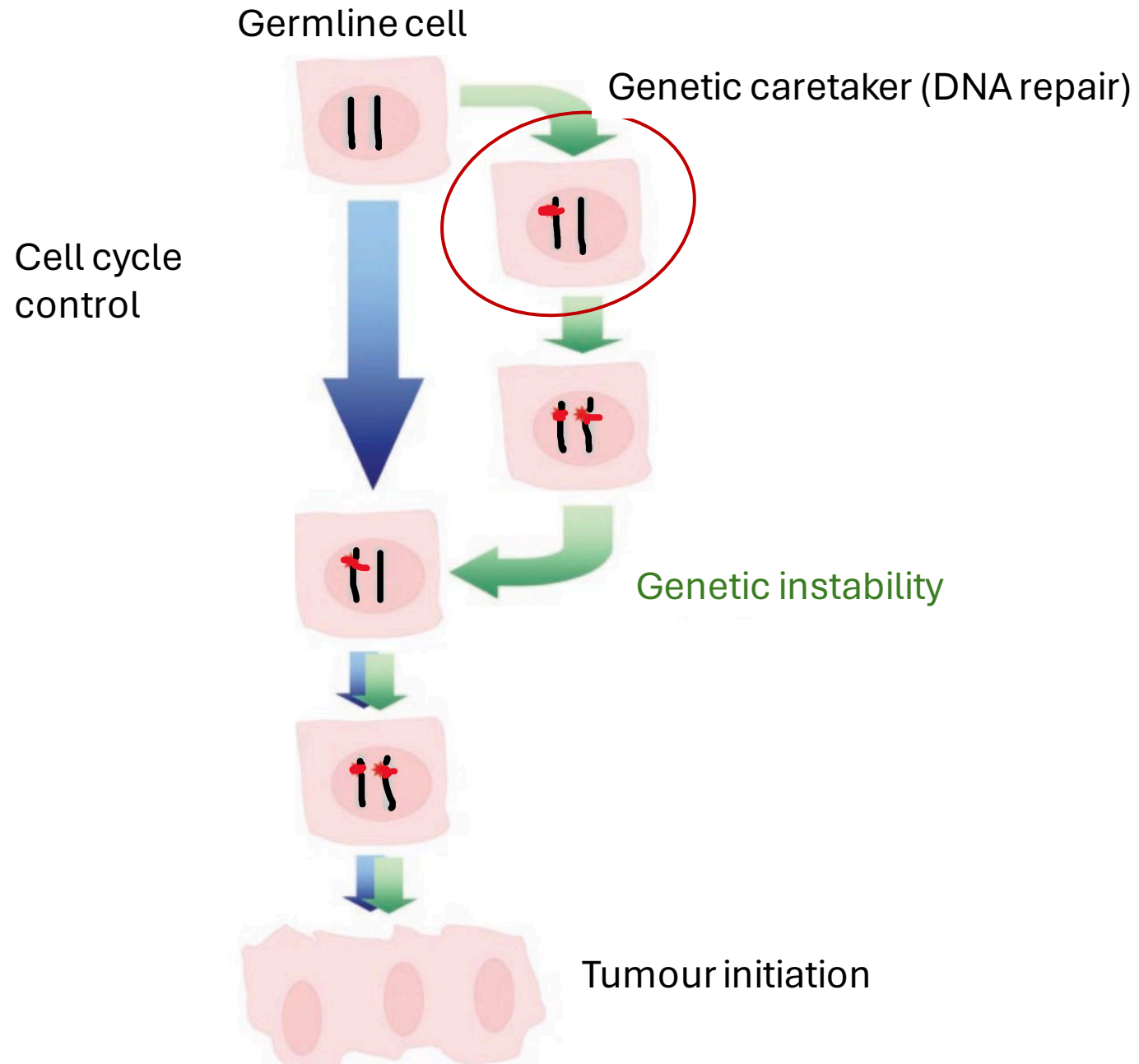


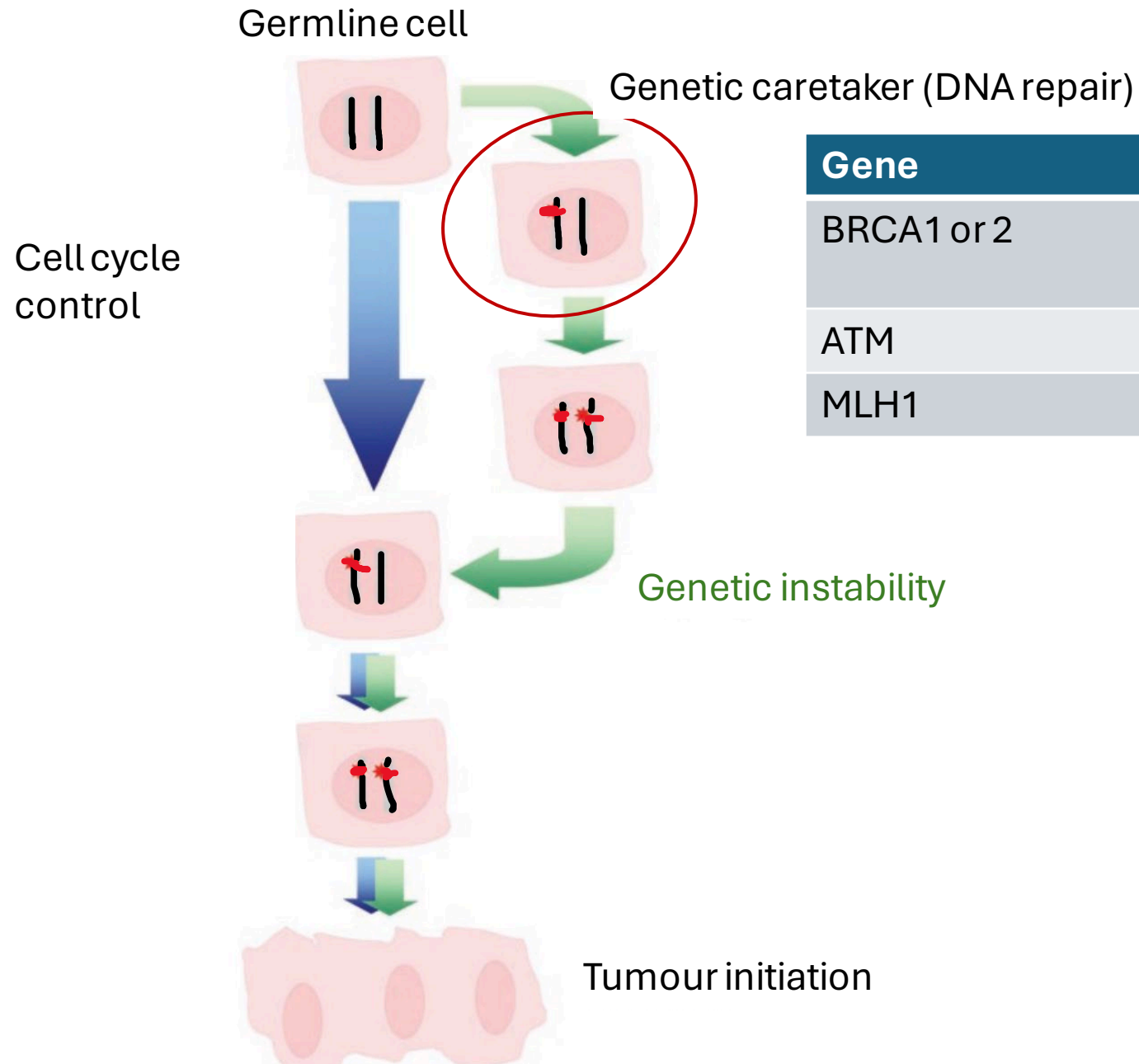
Tumour initiation



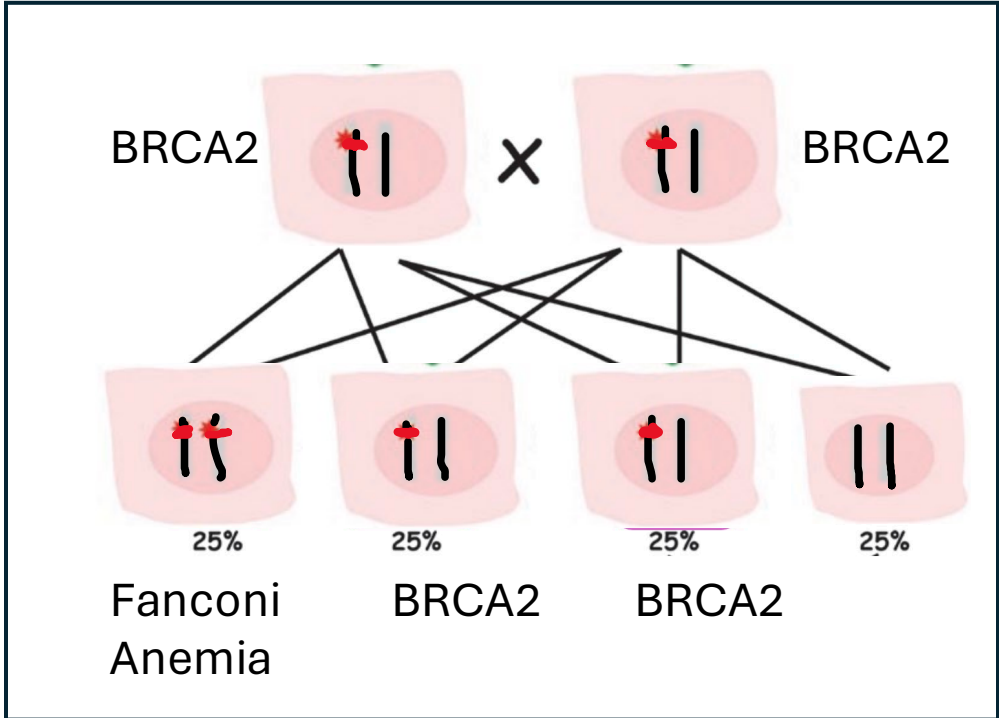
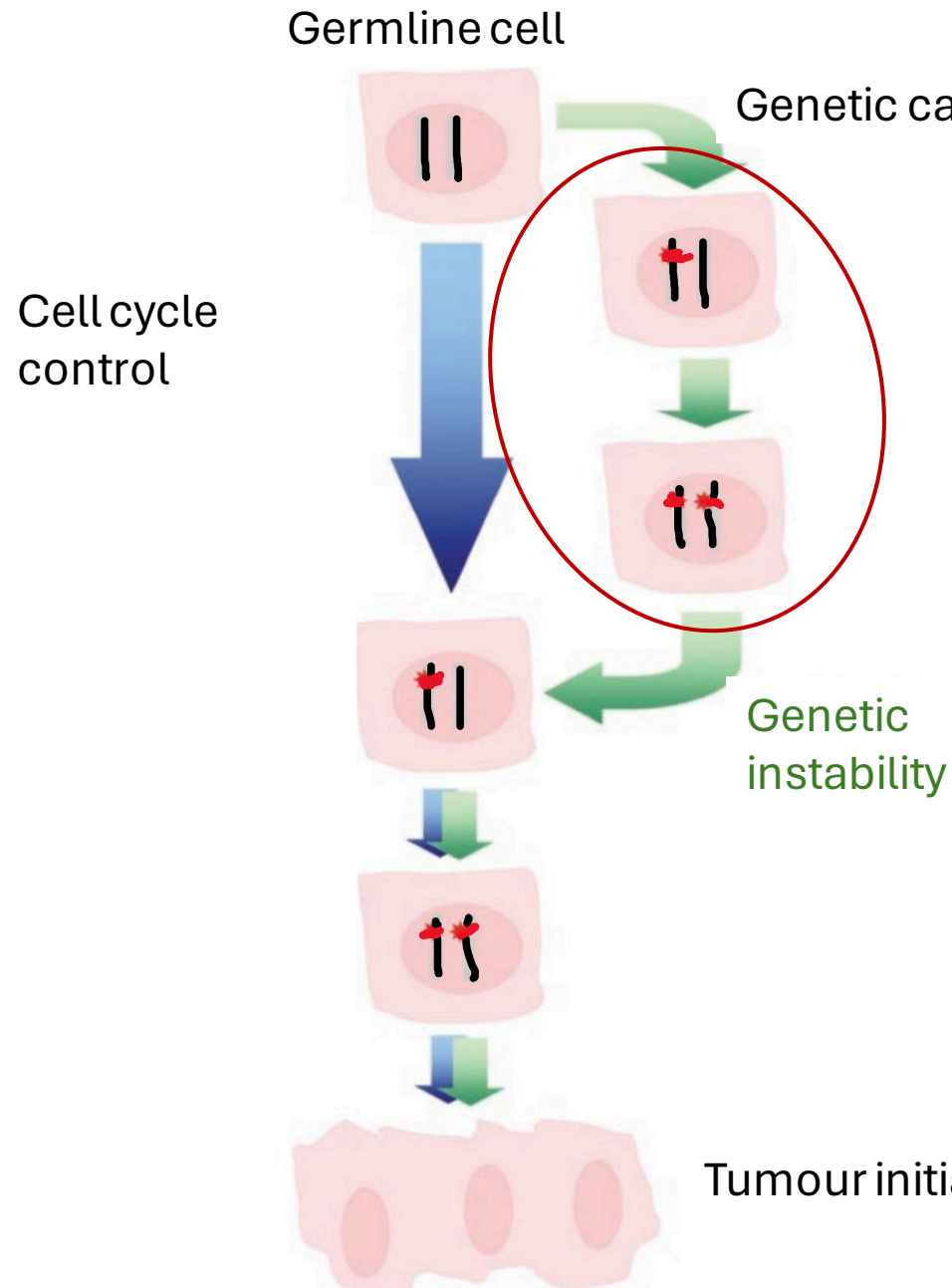
Modified from Fanale et al., 2021: https://link.springer.com/chapter/10.1007/978-3-030-56051-5_5
<https://nf1andpninfo.com/>







Gene	Syndrome
BRCA1 or 2	Familial breast cancer
ATM	Ataxia-telangiectasia
MLH1	Lynch syndrome



Modified from Fanale et al., 2021: https://link.springer.com/chapter/10.1007/978-3-030-56051-5_5

Think Predisposition when:

1. Personal or family history of a predisposition diagnosis
2. Features of a syndrome



3. Suggestive personal or family cancer history

Think Predisposition when:

1. Personal or family history of a predisposition diagnosis
2. Features of a syndrome



3. Suggestive personal or family cancer history

<https://www.customink.com/fundraising/bwsawareness>

<https://nf1andpninfo.com/>

<https://molecularcytogenetics.biomedcentral.com/articles/10.1186/s13039-020-00503-4>

<http://www.bcwomens.ca/health-professionals/refer-a-patient/medical-genetics-child-adult-assessment>

<http://www.bccancer.bc.ca/health-professionals/clinical-resources/hereditary-cancer#Referral>

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Medical Genetics Child & Adult Assessment

The referral form must be completed by a referring healthcare provider.

The form, along with any other relevant medical records, can either be mailed to the address on the form or faxed to 604-875-2825

Medical Genetics General Triage Referral Form ([PDF](#)) ([Fillable](#))

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Hereditary Cancer Program

Please note, Screening Programs has launched a new website. To learn more about Hereditary Cancer Program, visit <http://www.screeningbc.ca/Hereditary/ForHealthProfessionals/Default>.

About the Hereditary Cancer Program

The Hereditary Cancer Program is part of the BC Cancer Agency. The program offers families and individuals across British Columbia and Yukon. Services include genetic and information about cancer screening. People at risk of hereditary cancer may also

Breast & Ovary

Your patient's personal history (refer to notes above) – at least 1 of:

- breast cancer diagnosed at age 35 or younger
- "triple negative" (ER, PR, HER2 receptors) breast cancer diagnosed at age 60 or younger
- breast cancer diagnosed at age 50 or younger AND no family history known due to adoption
- male breast cancer
- 2 primary breast cancers with at least 1 diagnosed at age 50 or younger
- ovarian cancer at any age
- breast or ovarian cancer and Ashkenazi Jewish heritage

Your patient's family history (includes your patient; refer to notes above) – at least 1 of:

- family member with confirmed *BRCA1*, *BRCA2*, or other gene mutation – refer for carrier testing
- a close relative with personal history as above
- 1 breast cancer and 1 ovarian cancer in close relatives
- 2 close relatives with breast cancer diagnosed at age 50 or younger
- 2 close relatives with ovarian cancer
- 3 breast cancers in close relatives, with 1 diagnosed at age 50 or younger
- breast or ovarian cancer and Ashkenazi Jewish heritage

Polyposis

- personal history of:
 - 10 or more adenomatous polyps, OR
 - 2 or more hamartomatous polyps, OR
 - 5 or more serrated polyps proximal to the sigmoid colon (serrated polyps include: hyperplastic polyps, sessile serrated adenomas/polyps, traditional serrated adenomas)
OR
 - multiple polyps of different types (adenomatous, hamartomatous, serrated, hyperplastic)
- family history of:
 - a confirmed mutation in a polyposis gene – refer for carrier testing
 - 1 or more close relatives with polyposis (as defined above)

Lynch syndrome (Previous Name HNPCC)

Your patient's personal history (refer to notes above) – at least 1 of:

- any LS cancer with abnormal MSI/IHC screening test result (MMR deficient)
- colorectal cancer at age 40 or younger
- colorectal cancer at age 50 or younger AND no family history known due to adoption
- colorectal cancer and another LS cancer, at least 1 diagnosed at age 50 or younger

Your patient's family history (includes your patient; refer to notes above) – at least 1 of:

- family member with a confirmed *MLH1*, *MSH2*, *MSH6*, *PMS2*, or *EPCAM* gene mutation – refer for carrier testing
- a close relative with personal history as above
- 2 close relatives with a LS cancer, both diagnosed at age 50 or younger
- 3 or more close relatives with a LS cancer, at least 1 diagnosed at age 50 or younger

Pancreatic

- personal history of:
 - pancreatic ductal adenocarcinoma (see also urgent storage of a blood sample)
 - intraductal papillary mucinous neoplasm or pancreatic intraepithelial neoplasia
 - pancreatic neuroendocrine tumour
- family history of:
 - 1 or more close relatives with pancreatic ductal adenocarcinoma

Hereditary Cancer Program (HCP)

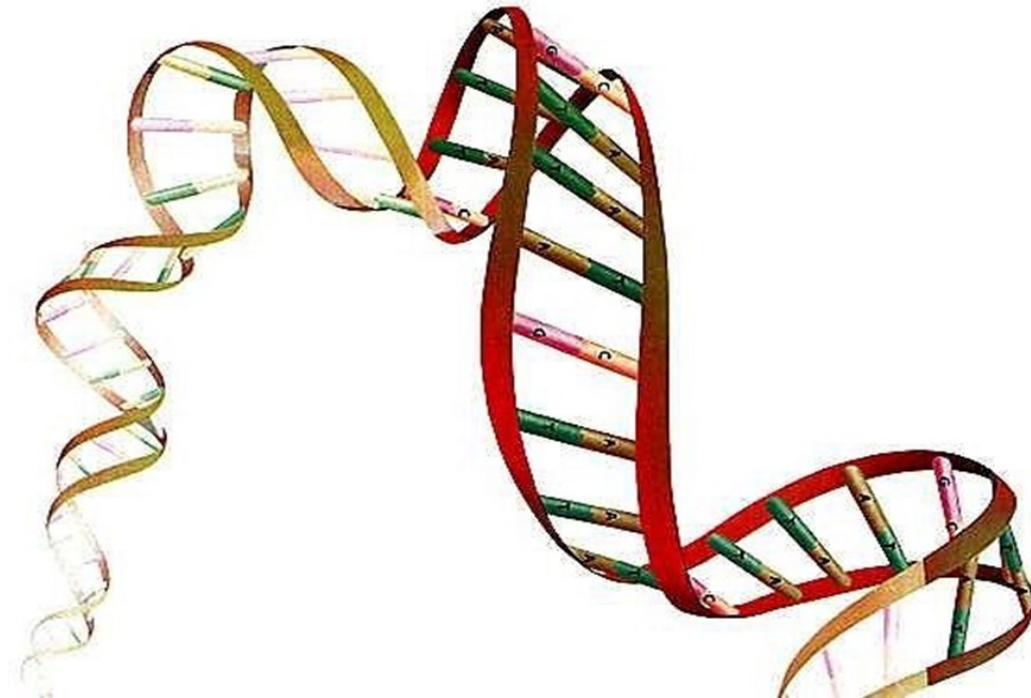
BC Cancer HCP staff live and work on the traditional, ancestral and unceded territories of the **Coast Salish peoples** from the x^wməθk^wəy̓əm (Musqueam), Sk̓wx̓wú7mesh Úxwumixw (Squamish), and sə̓lilw̓ətaʔt̓ (Tsleil-Waututh) Nations, **the Lək^wəŋən speaking people** from the Esquimalt and Songhees First Nations and the **Stó:lō people** from the Matsqui and Sumas First Nations.



Hereditary Cancer Program (HCP)

Outline

- HCP
- Referral
- Portal
- Mainstream
- High Risk Clinic
- DNA banking



Hereditary Cancer Program (HCP)

BC Cancer - Screening & Prevention

Staff on site:

- Vancouver
- Abbotsford
- Victoria

Services Provided:

- Telephone
- Virtual Health
- Small # In-Person

Team:

- Medical Geneticists
- Genetic Counsellors
- Genetic Counselling Assistants
- Physicians
- Nurse Navigators
- Nurse Practitioners
- Clerical Staff
- Research Staff



BC
CAN

Hereditary Cancer Program (HCP)

Reduce the morbidity and mortality from hereditary cancer syndromes

- Identify people with hereditary cancer syndromes
- Cancer risk assessment
- Provide screening and prevention recommendations
- Information to guide cancer treatment decisions
- Identify resources and supports

Genetic
Counselling
& Genetic Testing

High Risk
Clinic

Hereditary Cancer
Follow-Up Initiative

Hereditary Cancer Program (HCP)

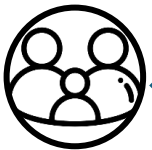
Why offer genetic testing?



TREATMENT



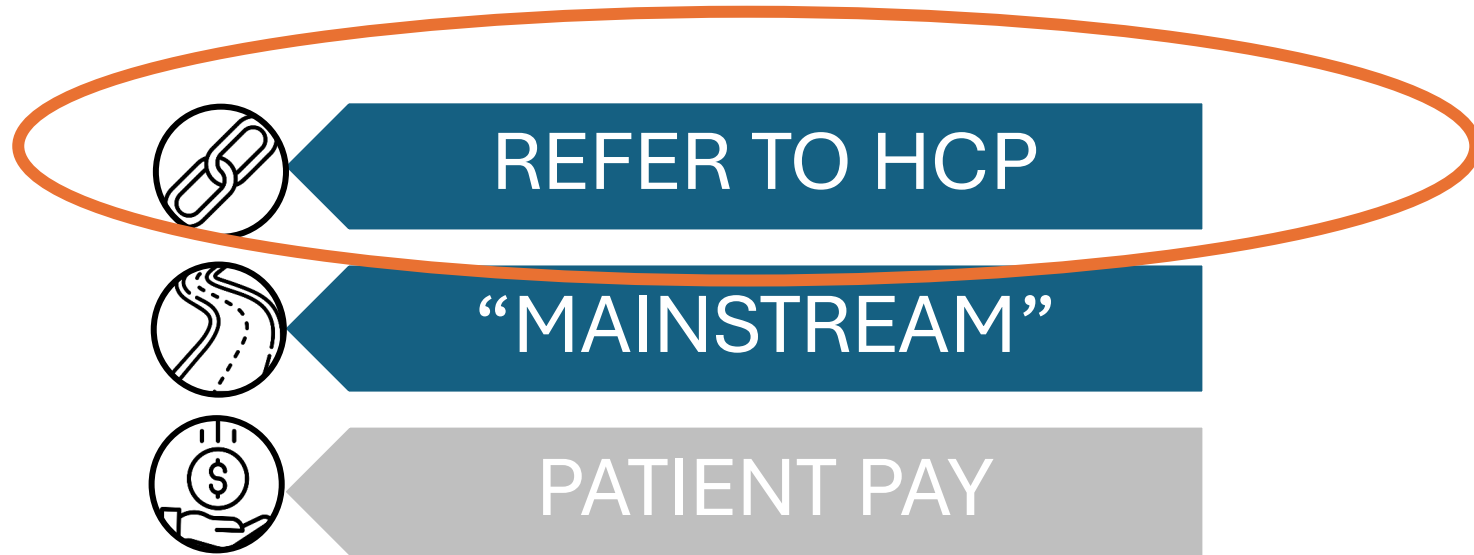
FUTURE CANCER RISK



FAMILY – PREVENT CANCER

Hereditary Cancer Program (HCP)

How do you arrange genetic testing for your patients?



Hereditary Cancer Program (HCP)

Refer to HCP

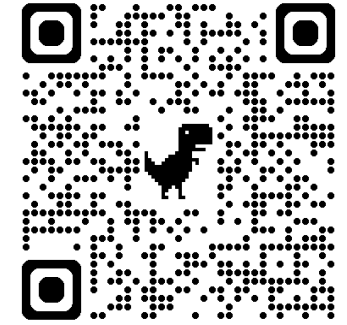
Criteria

- Criteria on website
- Patient outside criteria – OK to refer
- Any health care provider or patient can refer
- It is OK if people do not know their full family history
- Family history form not required if patient meets criteria on their own

High demand for services – working to reduce waitlist

Hereditary Cancer Program (HCP)

Refer



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Hereditary Cancer

The Hereditary Cancer Program (HCP) provides genetic counselling and genetic testing for BC/Yukon residents who may have inherited an increased risk for certain types of cancer. Similar services are available across Canada and in other countries.

This section provides direction about HCP referrals, information and resources for health professionals to use when discussing hereditary cancer assessment with your patients/families.

Some patients with a personal history of cancer are eligible for "mainstreamed" hereditary cancer testing. You can order the testing and disclose results to your patient without a referral. You can find more information in the "Resources" tab below.

Have a patient in the High Risk Clinic? [Learn about your role in their care.](#)

Referral | **Syndromes** | Resources

People are encouraged to review their personal and/or family history with a health care provider to clarify whether HCP referral is indicated.

In this section

[Hereditary Cancer](#)

[High Risk Clinic](#)

[Download the Hereditary Cancer Program Referral form >](#)

[Download the Urgent DNA Storage Requisition >](#)

[Mainstreamed Genetic Testing: Information and Requisition Download >](#)



Hereditary Cancer Program (HCP)

Refer

BC CAN CER HEREDITARY CANCER

Hereditary Cancer Program Referral Form

**Fax page 1 (and completed Family History pages if required) to:
 Fraser Health Authority (F) 604.851.4710 (T) 604.851.4710 local 645174
 All other BC/Yukon Health Authorities (F) 604.707.5931 (T) 604.877.6000 local 672198

www.bccancer.bc.ca/hereditary

REFERRAL DATE: _____

Referring Clinician: _____ Billing #: _____ Phone: _____ Fax: _____
 Copy/Second Clinician: _____ Billing #: _____ Phone: _____ Fax: _____

Personal Health Number _____ Date of Birth (yyyy-mm-dd) _____ BC Cancer ID#: _____ Gender M F X
 Last Name _____ First and Middle Name _____ Phone 1 _____ Phone 2 _____
 Address _____ City/Town _____ Postal Code _____ Email _____

Interpreter Required? Yes, language: _____

Urgent Referral? (Impact on immediate cancer management or patient is palliative):
 No Yes, explain: _____
 Urgent Timeline: <1 week <1 month other: _____ if patient is ill, [store DNA](#).

Reason for Referral – select 1 or more of the following indications:
Personal History – attach pathology/father relevant reports if not available in CAS/Cerner/Care Connect

Age-specific diagnoses: <input type="checkbox"/> breast cancer < age 35 <input type="checkbox"/> 2 primary breast cancers, at least 1 < age 50 <input type="checkbox"/> triple negative (ER, PR, HER2-) breast cancer < age 60 <input type="checkbox"/> breast cancer OR colorectal cancer < age 50 AND no family history known due to adoption <input type="checkbox"/> colorectal cancer < age 40 <input type="checkbox"/> 2 or more colorectal adenomas < age 40 <input type="checkbox"/> colorectal or endometrial cancer < age 50 AND ≥ 5 adenomas <input type="checkbox"/> 2 Lynch syndrome related diagnoses, at least 1 < age 50 <input type="checkbox"/> diffuse gastric cancer < age 50 *additional HSDC criteria on website <input type="checkbox"/> renal cancer < age 47 <input type="checkbox"/> biliary tract cancer < age 50 *additional criteria on website <input type="checkbox"/> pathogenic gene variant result – for confirmation and/or follow-up (eg. from tissue, private pay, out-of-province genetics clinic, clinical trial/research testing)	At least 1 of the following diagnoses at any age: <input type="checkbox"/> ovarian, fallopian tube or peritoneal cancer (non-mucinous epithelial; includes STIC) <input type="checkbox"/> metastatic prostate cancer <input type="checkbox"/> pancreatic ductal adenocarcinoma <input type="checkbox"/> pancreatic neuroendocrine tumour <input type="checkbox"/> Ashkenazi Jewish heritage & personal or family history of breast, ovarian, pancreatic, high-grade prostate cancer, male breast cancer <input type="checkbox"/> dMMH (microsatellite instability) Lynch syndrome related cancer <input type="checkbox"/> 3-10 colorectal adenomas (cumulative) <input type="checkbox"/> ≥ 2 hamartomatous polyps <input type="checkbox"/> serrated polyps involving WHO 2010 criteria <input type="checkbox"/> medullary thyroid cancer <input type="checkbox"/> paraganglioma or pheochromocytoma
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Family History may include patient. ***Family history pages REQUIRED with referral***

1 close relative with personal history as indicated above
 breast and ovarian cancer in close relatives
 2 close female relatives with breast cancer, both < age 50
 2 close relatives with Lynch syndrome cancer, both < age 50
 3 breast cancers in close female relatives, at least 1 < age 50
 3 or more Lynch syndrome cancers, at least 1 < age 50
 3 melanomas in close relatives at any age

Approved by Hereditary Cancer Program

Carrier Testing – confirmed pathogenic variant in family; records required if testing done outside of BC/Yukon
 Gene _____ Clinic/City where relative tested _____ Relative Name _____ Relative DOB _____ How related to patient _____

Re-Assessment, describe reason for re-referral _____ **Other Indication**, describe or attach letters/medical records _____

Date Received at HCP: _____ Version: October 2021

Page 1 = Provider

BC CAN CER HEREDITARY CANCER

Name: _____ PHN: _____ DOB: _____

Hereditary Cancer Program Family History Form (page 2 of 2)

Family History *Complete these pages and give to your doctor/NP's office to attach to your referral**

Please answer the following questions about your blood relatives (living and deceased) to help us give you the best care. Your best guesses about ages and other details are fine. This information will become part of your health record.

I give consent for this information to be shared with family members referred to the HCP: Yes No

Are you adopted? No Yes Were your parents adopted? No Yes, mother Yes, father

Are your parents related to each other? (e.g. first cousins) No Yes – give relationship: _____

Your Children How many daughters? _____ How many sons? _____ I have no biological children

Your Brothers and Sisters How many sisters? _____ How many brothers? _____
 None How many half-sisters? _____ How many half-brothers? _____ Same mother Same father

Your Mother's Side Is your mother alive? No Yes What is her current age or age at death? _____
 How many sisters does your mother have? _____ Are any of them your mother's half-sisters? No Yes
 No info How many brothers does your mother have? _____ Are any of them your mother's half-brothers? No Yes
 Is your grandmother alive? No Yes What is her current age or age at death? _____
 Is your grandfather alive? No Yes What is his current age or age at death? _____

Your Father's Side Is your father alive? No Yes What is his current age or age at death? _____
 How many sisters does your father have? _____ Are any of them your father's half-sisters? No Yes
 No info How many brothers does your father have? _____ Are any of them your father's half-brothers? No Yes
 Is your grandmother alive? No Yes What is her current age or age at death? _____
 Is your grandfather alive? No Yes What is his current age or age at death? _____

Your Family's Ethnic/Ancestral Background: please check all that apply

	Ashkenazi Jewish	Iranian/Persian	East European	French Canadian	Indigenous (First Nations, Métis, Inuit)	South Asian	Middle East	South and Central America	Other	Don't know
Mother's mother	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mother's father	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Father's mother	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Father's father	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Previous Cancer Genetics Appointment/Genetic Testing
 Has anyone in your family had genetic counselling or genetic testing for the family history of cancer? No Yes
 If yes, full name of relative(s): _____ Date of birth or current age (if known): _____
 Relationship to you: _____ Name and/or location of genetics clinic: _____

Received Date: _____ page 1 of 2

Have you ever been diagnosed with cancer? No Yes if yes:

Type of Cancer	Age at Diagnosis	City Where Diagnosed

List of any blood relatives who have had cancer. Please include children, brothers, sisters, parents, grandparents, aunts, uncles, and cousins. Your best guesses about their age and other details are fine. You may add another page if you need more space. Please try to print clearly if completing by hand.

Relative's full name	Date of birth or current age	Age at Death	Relationship to you	Mother's or Father's side	Type of cancer	Age when diagnosed	Location when diagnosed
e.g. Jane Doe	1942-Nov-08		cousin	mother's brother's daughter	breast	65	Victoria, BC

Have you or anyone in your family had any of the following conditions?

Condition	No	Yes	Don't Know	If yes, name of your relative and relationship to you
Chronic pancreatitis that started before age 30	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Tumour or growth in the pituitary, parathyroid or adrenal gland	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
More than 50 moles/nevi (not freckles)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
More than 10 polyps removed from the colon or rectum (bowel)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

page 2 of 2

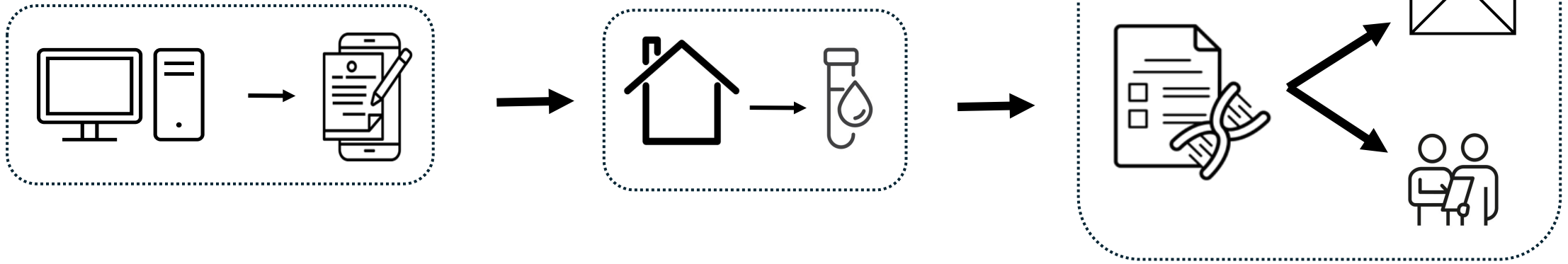
Page 2 & 3 = Patient



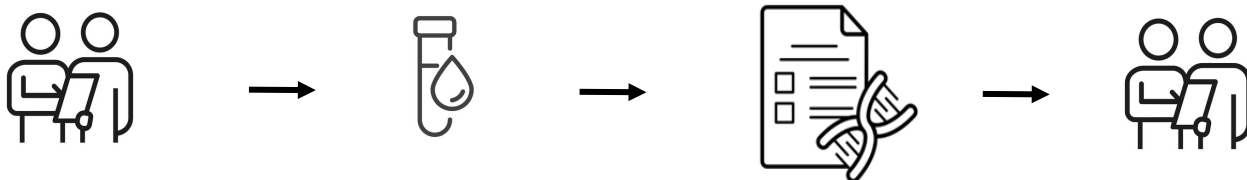
Hereditary Cancer Program (HCP)

Referral Reviewed and Triaged

Portal



Traditional 1-1

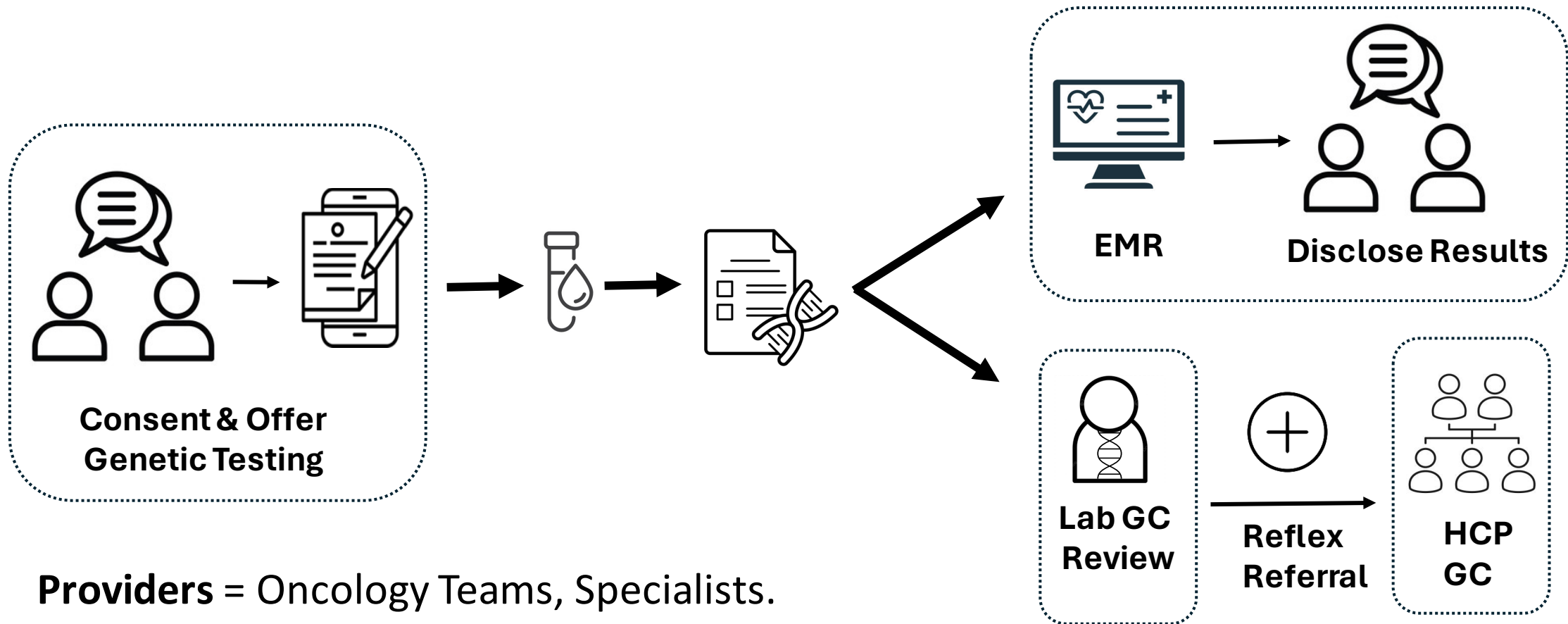


Hereditary Cancer Program (HCP)

How do you arrange genetic testing for your patients?



Hereditary Cancer Program (HCP)



Providers = Oncology Teams, Specialists.
















TAT = < 10 weeks and expedited options (2-3 weeks)

GT Lab = CGL (84 genes) or Ambry (72 genes)

Hereditary Cancer Program (HCP)

Bringing genetic testing into the **Mainstream**

Oncology Clinic-Based Hereditary Cancer Genetic Testing in a Population-Based Health Care System

by  Matthew Richardson ¹ ,  Hae Jung Min ² ,  Quan Hong ² ,  Katie Compton ² ,
 Sze Wing Mung ² ,  Zoe Lohn ² ,  Jennifer Nuk ² ,  Mary McCullum ² ,
 Cheryl Portigal-Todd ² ,  Aly Karsan ³ ,  Dean Regier ^{4,5} ,  Lori A. Brotto ⁶ ,
 Sophie Sun ^{2,7,8,*}  and  Kasmintan A. Schrader ^{2,9,10,*} 

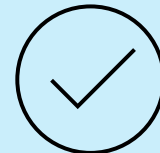
Cancers **2020**, 12(2), 338; <https://doi.org/10.3390/cancers12020338>



**Time to
Results**

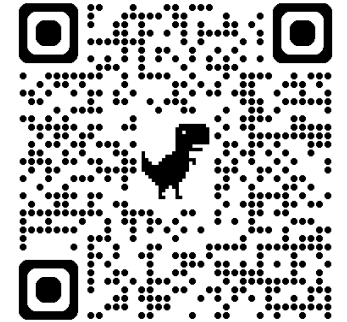


**Acceptable
Patients**



**Acceptable
Providers**

Hereditary Cancer Program (HCP)



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Hereditary Cancer

The Hereditary Cancer Program (HCP) provides genetic counselling and genetic testing for BC/Yukon residents who may have inherited an increased risk for certain types of cancer. Similar services are available across Canada and in other countries.

This section provides direction about HCP referrals, information and resources for health professionals to use when discussing hereditary cancer assessment with your patients/families.

Some patients with a personal history of cancer are eligible for "mainstreamed" hereditary cancer testing. You can order the testing and disclose results to your patient without a referral. You can find more information in the "Resources" tab below.

Have a patient in the High Risk Clinic? [Learn about your role in their care.](#)

[Referral](#)

[Syndromes](#)

[Resources](#)

People are encouraged to review their personal and/or family history with a health care provider to clarify whether HCP referral is indicated.

In this section

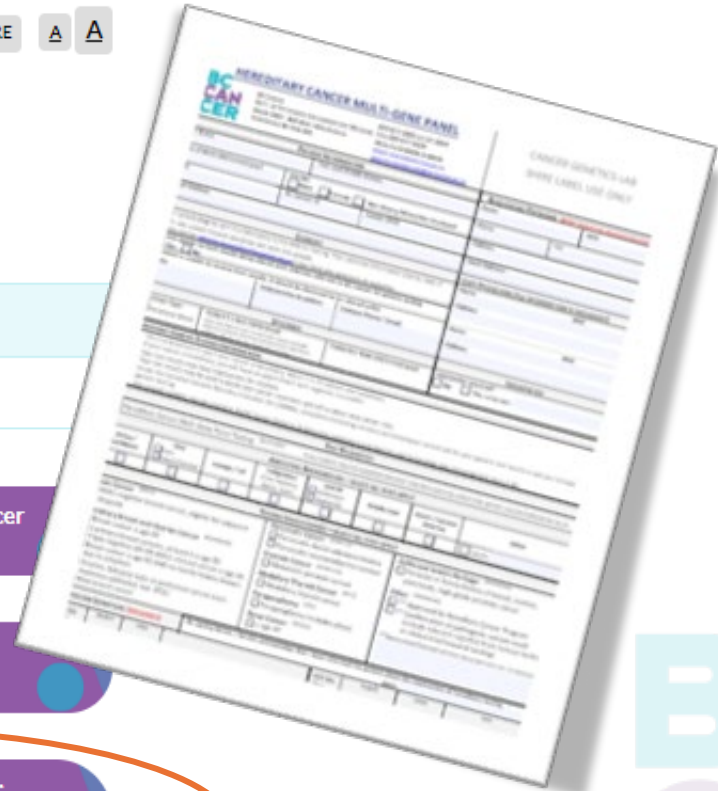
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Hereditary Cancer Program (HCP)

CANCER GENETICS AND GENOMICS LABORATORY <u>HEREDITARY CANCER MULTI-GENE PANEL</u>			CANCER GENETICS LAB SHIRE LABEL USE ONLY	
 BC CANCER DEPT. OF PATHOLOGY AND LABORATORY MEDICINE ROOM 3307 - 600 WEST 10TH AVENUE VANCOUVER BC V5Z-4E6			604-877-6000 EXT 67-2094 FAX: 604-877-6294 MON-FRI 8:30AM-4:30PM WWW.CANCERGENETICSLAB.CA GENETIC.COUNSELLOR@BCCANCER.BC.CA	
PATIENT INFORMATION			REQUESTING PHYSICIAN NOTE: SIGNATURE REQUIRED (BELOW)	
Last Name		First and Middle Names	Name	MSC
Date of Birth (dd/mmm/yyyy)	Gender <input type="checkbox"/> Male <input type="checkbox"/> Female <input type="checkbox"/> Non Binary/Other/Not Disclosed		Phone	Fax
PHN	BC Cancer ID	Cerner MRN	Address	
Email Address			Email Address	
CONSENT			COPY PHYSICIANS (ALL INFORMATION IS NECESSARY)	
Your sample may be sent to a laboratory in the USA for testing. Your personal information (name, date of birth, sex, cancer history) would be sent with the sample. Please contact genetic.counsellor@bccancer.bc.ca if you have any questions or concerns.			Name	MSC
Patient agrees to their results being shared with relatives referred to BC Cancer for genetic testing <input type="checkbox"/> Yes <input type="checkbox"/> No			Address	
If patient is unable to receive their results, it should be disclosed to (or shared with):			Name	MSC
Name	Relationship to patient	Contact Phone / Email	Address	



Hereditary Cancer Program (HCP)

Who is eligible for mainstream genetic testing?

TEST REQUESTED								
<input checked="" type="checkbox"/> Hereditary Cancer Multi-Gene Panel Testing <small>SQ HCAGPB</small> If your patient requires expedited testing for treatment planning, please email genetic.counsellor@bccancer.bc.ca								
ANCESTRAL BACKGROUND – SELECT ALL THAT APPLY								
Africa / Caribbean	Asia <input type="checkbox"/> East <input type="checkbox"/> South/Central	Europe / UK	Indigenous (First Nations, Metis, Inuit)	Jewish <input type="checkbox"/> Ashkenazi <input type="checkbox"/> Sephardic	Middle East	South / Central America	Other	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Specify: _____	
TESTING INDICATION(S) – SELECT ALL THAT APPLY								
Breast Cancer <small>(BRCA)</small> <input type="checkbox"/> HER2-negative breast cancer, eligible for adjuvant Olaparib Hereditary Breast and Ovarian Cancer <small>(INHERCAN)</small> <input type="checkbox"/> Breast cancer ≤ age 35 <input type="checkbox"/> 2 primary breast cancers, at least 1 ≤ age 50 <input type="checkbox"/> Triple negative (ER-PR-HER2-) breast cancer ≤ age 60 <input type="checkbox"/> Breast cancer ≤ age 50 AND no family history known due to adoption <input type="checkbox"/> Ovarian, fallopian tube or peritoneal cancer (non-mucinous epithelial; incl. STIC) <input type="checkbox"/> Male breast cancer		Pancreatic Cancer <small>(PANC CA)</small> <input type="checkbox"/> Pancreatic ductal adenocarcinoma <input type="checkbox"/> Pancreatic neuroendocrine tumour Prostate Cancer <small>(INHERCAN)</small> <input type="checkbox"/> Metastatic prostate cancer Medullary Thyroid Cancer <small>(MTC)</small> <input type="checkbox"/> Medullary thyroid cancer Paraganglioma <small>(PGL)</small> <input type="checkbox"/> Paraganglioma (includes pheo) Renal Cancer <small>(RENAL)</small> <input type="checkbox"/> ≤ age 47		Ashkenazi Jewish Heritage <small>(INHERCAN)</small> <input type="checkbox"/> Personal or family history of breast, ovarian, pancreatic, high-grade prostate cancer Other <small>(INHERCAN)</small> <input type="checkbox"/> ** Approved by Hereditary Cancer Program <input type="checkbox"/> ** Confirmation of pathogenic variant result (include relevant report(s) from tumour testing or clinical trial/research testing) **INDICATION/VARIANT DETAILS (REQUIRED FOR TEST TO PROCEED): _____ _____				
PHYSICIAN SIGNATURE (REQUIRED)		By signing below, I hereby acknowledge that I have informed the patient about the implications of hereditary testing.						
		DATE _____						
LAB USE ONLY	PB EDTA	Other			HCP USE ONLY	Progeny	Initials	Date

The personal information collected on this form is collected under the authority of the Personal Information Protection Act. The personal information is used to provide medical services requested on this requisition. The information collected is used for quality assurance, management and disclosed to healthcare practitioners involved in providing care or when



Hereditary Cancer Program (HCP)

Considerations:



Understanding a factor in my personal / family history of cancer.



Learn of other cancer risks, screening and prevention.



Information may be used for my current care.



Help my family – give options.



Increased worry.



Strained family relationships.

Hereditary Cancer Program (HCP)

Mainstream – this year so far ...

- ~ 200 samples / month
- > 500 Genetic Test Results Reported
- ~12% Positive Rate
- Indication: Metastatic Prostate >> Breast > Pancreatic > Ovarian

Hereditary Cancer Program (HCP)

High Risk Clinic

Team:

- Physician
- Nurse Practitioners
- Nurses

Referrals:

- Genetic Counsellor disclosing (+) result
- GP if Pt discharged from oncology care and has breast tissue
- Pt new to GP practice with variant identified outside of BC – refer to HCP

Hereditary Cancer Program (HCP)

High Risk Clinic

Eligibility

- Not under the care of an oncologist
- People with breasts and a mutation in a gene associated with > 25% lifetime risk for breast cancer (ie, BRCA1/2, ATM, CHEK2, CDH1, PALB2).
- People with Li Fraumeni syndrome (*TP53*), a syndrome associated with an increased risk of many different cancers.
- People with breasts between ages 30 to 50 with Neurofibromatosis 1 because of increased breast cancer risk.

Hereditary Cancer Program (HCP)

High Risk Clinic

- Physical Exam
- Screening management for breast cancer: MRI & Mammograms
- Medication for cancer risk reduction
- Prophylactic surgery referral
- Yearly follow-up appointments

Primary care provider for new problems in between visits (like a breast lump or pain or discharge).

Hereditary Cancer Program (HCP)

Caring for Patients with Pathogenic Variants

- Genetic Counsellor / Medical Geneticist Letter
 - Recommendations for the patient
 - In some cases, recommendations for family members
 - Breast related pathogenic variants – High Risk Clinic
-
- Hereditary Cancer Follow Up Initiative
 - Annual survey check-in

Hereditary Cancer Program (HCP)

Jewish BRCA1/BRCA2 Testing Program

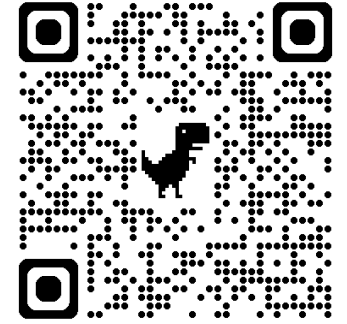
- 1/40 (2.5%) people with Ashkenazi Jewish ancestry have a *BRCA1/BRCA2* pathogenic variant
- Chance increases with family history of breast, ovarian, pancreatic or prostate cancer

Pilot:

- Genetic testing (BRCA1/BRCA2 only) to any person of Jewish ancestry regardless of family history
- <https://brcainbc.ca/>

Hereditary Cancer Program (HCP)

DNA Banking



BC CANCER

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Hereditary Cancer

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Referral	Syndromes	Resources
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Hereditary Cancer Program (HCP)

DNA Banking

DNA Storage For People With Cancer – Instructions for Health Care Providers

This package includes:

- a requisition for your patient to have a blood sample
- an information page for you

Please use this package when:

- your patient is (or might be) diagnosed with cancer
- their health is unstable or may be

What is DNA?
DNA is your genetic material.

What is DNA storage?
You can store some of your DNA for future genetic testing.

What is genetic testing?
We do special tests to look for changes in your genes that may increase your risk of cancer. Without cancer risks for your family.

BC CANCER GENETICS AND GENOMICS LABORATORY
HCP DNA STORAGE

BC CANCER GENETICS & GENOMICS LAB
DEPT. OF PATHOLOGY AND LABORATORY MEDICINE
ROOM 3307 – 600 WEST 10TH AVENUE
VANCOUVER BC V5Z 4E5

604-877-6000 EXT 67-3094
FAX: 604-877-6294
MON-FRI 8:30AM-4:30PM
www.cancergeneticlab.ca
info@cancergeneticlab.ca

Approved For Blood Draw During COVID-19 Restrictions

PATIENT INFORMATION

Last name: _____ First and Middle Names: _____
Date of Birth (DD/MM/YYYY): _____ PHN: _____ BC Cancer ID# (if available): _____
Gender: M X F

SPECIMEN

Specimen Type: **Peripheral Blood**

Draw 5 mL blood into EDTA tubes. Store and ship at room temperature using overnight delivery to Cancer Genetics & Genomics Lab (see address above).
Do not refrigerate or freeze.

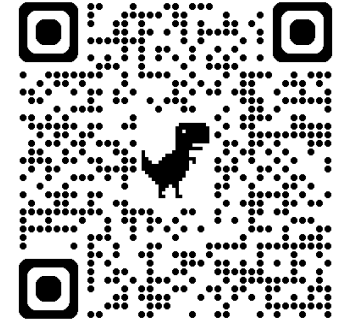
Address: _____
Phone: _____
Fax: _____
Name: _____
Signature: _____

ADDRESSOGRAPH OR PATIENT LABEL

REQUESTING PHYSICIAN: _____ MSC: _____

- No Consent From
- Not an HCP Referral

Hereditary Cancer Program (HCP)



General: HereditaryCancer@bccancer.bc.ca



Mainstream: Genetic.Counsellor@bccancer.bc.ca



High Risk Clinic: HCPHRC@bccancer.bc.ca



1.800.663.3333 local 672198



www.bccancer.bc.ca/hereditary

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