



Genetics on the Risk & Prognosis of Prostate Cancer

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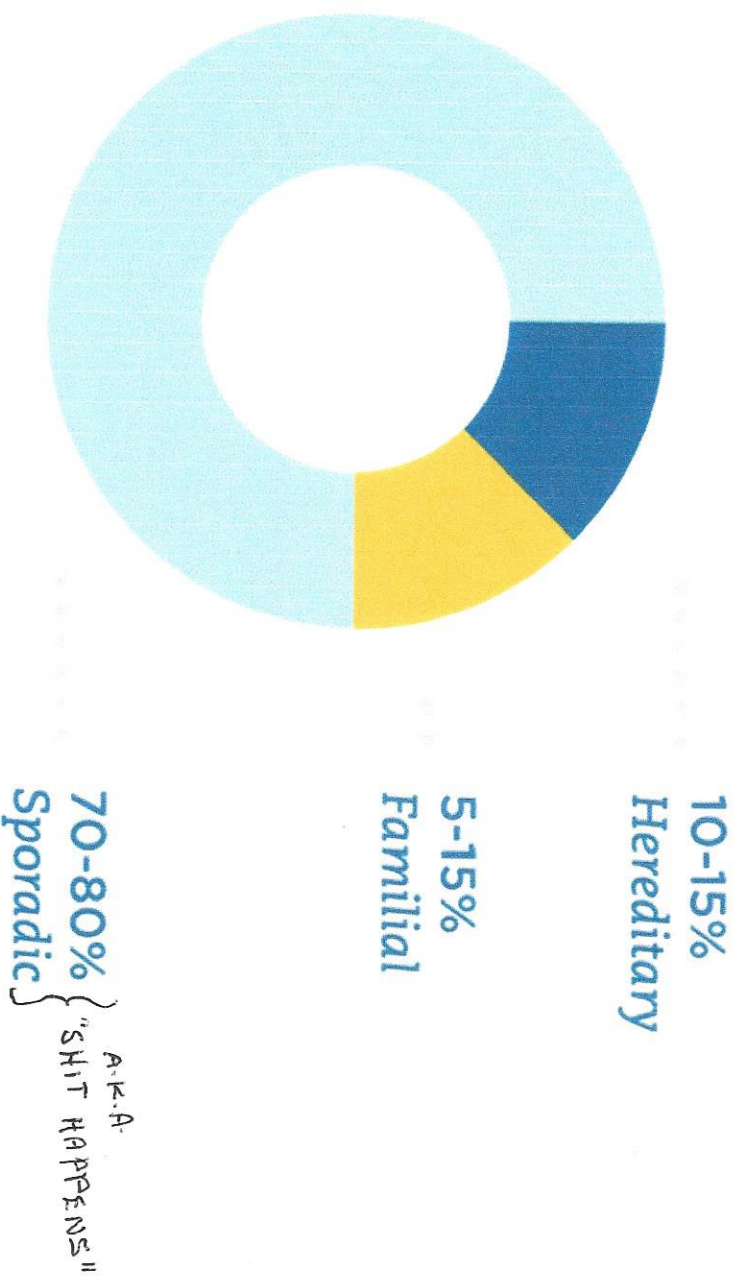
Sunnybrook

HEALTH SCIENCES CENTRE

when it matters
MOST



Hereditary Cancer vs Not Hereditary Cancer





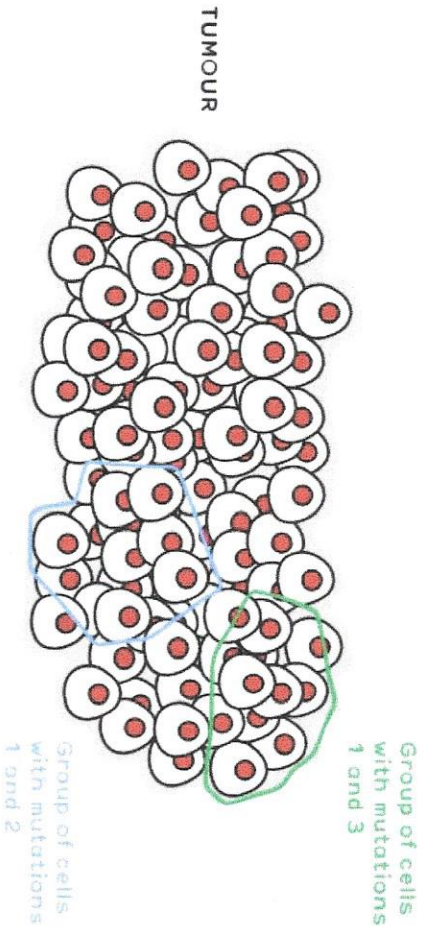
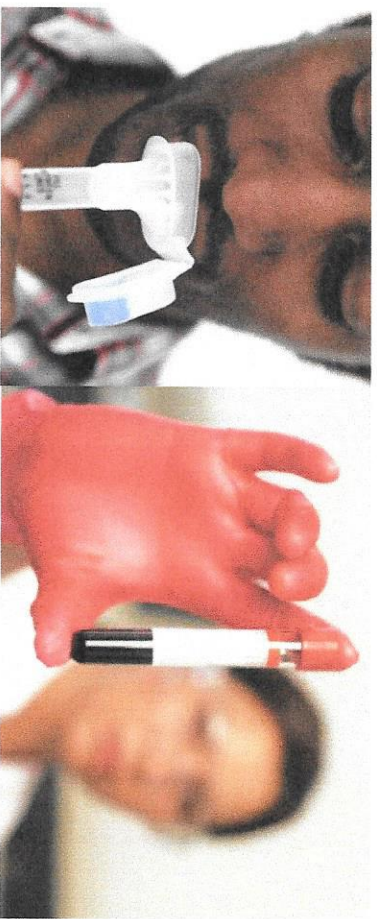
Genetic Testing: Two Types

Blood or Saliva Sample
Germline Testing

- Gene mutation **present** = hereditary cancer
- Gene mutation **absent** = sporadic/familial cancer

Cancer Tissue
Tissue Testing/Somatic Testing

- Gene mutation always **present**



<https://www.precisionmed.ch/en/what-is-cancer/>

FDR = FIRST DEGREE RELATIVE
SDR = SECOND DEGREE RELATIVE

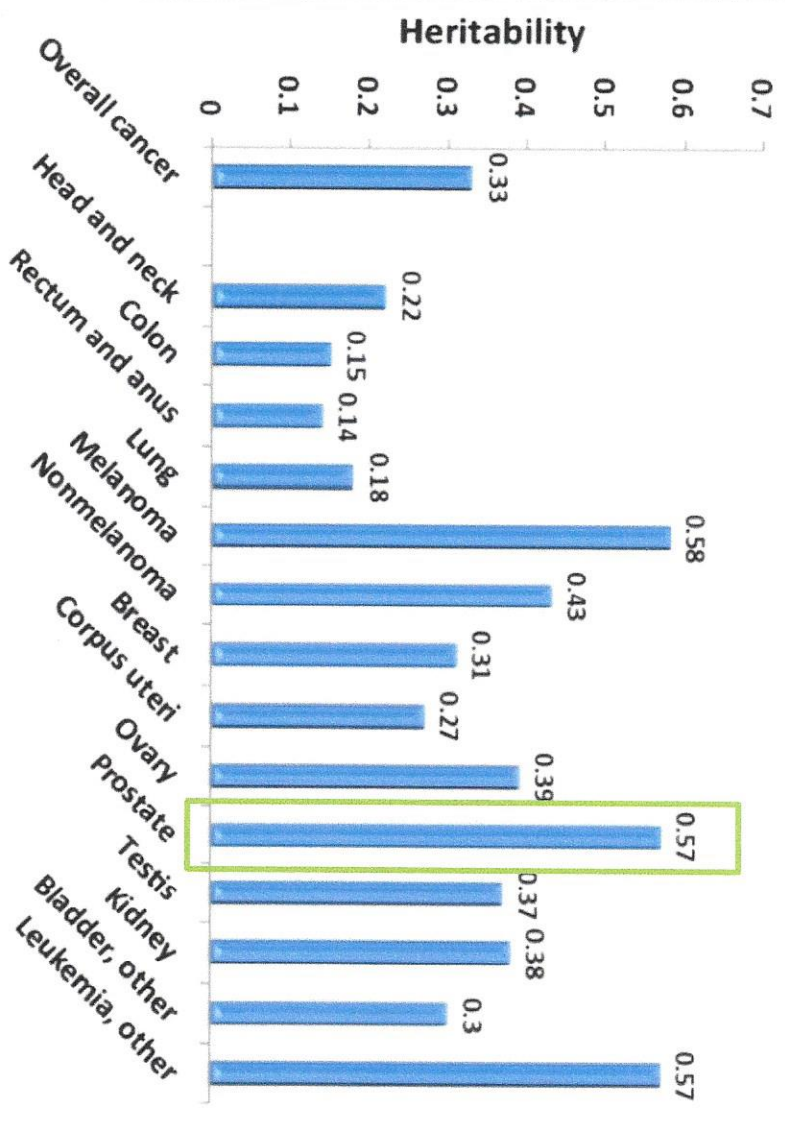
RELATIVE RISK

Risk Group

RR


- Brother with prostate cancer diagnosed at any age **3.4**
- Father with prostate cancer diagnosed at any age **2.2**
- One affected FDR diagnosed at any age **2.6**
- One affected SDR diagnosed at any age **1.7**
- Affected FDRs diagnosed age <65 y **3.3**
- Affected FDRs diagnosed age >65 y **2.4**
- Two or more affected FDRs diagnosed at any age **5.1**

A systematic review and meta-analysis of familial prostate cancer risk



Heritability = proportion of variance in cancer risk due to genetic differences between people

- Prospective study of 80,309 MZ and 123,382 same-sex DZ twins followed for a median of 32 years

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Familial Risk and Heritability of Cancer Among Twins in Nordic Countries

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Prostate Cancer Risk

Gene	Prostate Cancer Risk	mPC
HOXB13	+++	-
BRCA1	++	Y
BRCA2	+++	Y
MLH1	+	Y
MSH2	++	Y
MSH6	++	Y
PMS2	-	Y
ATM	+	Y
CHEK2	+	-

