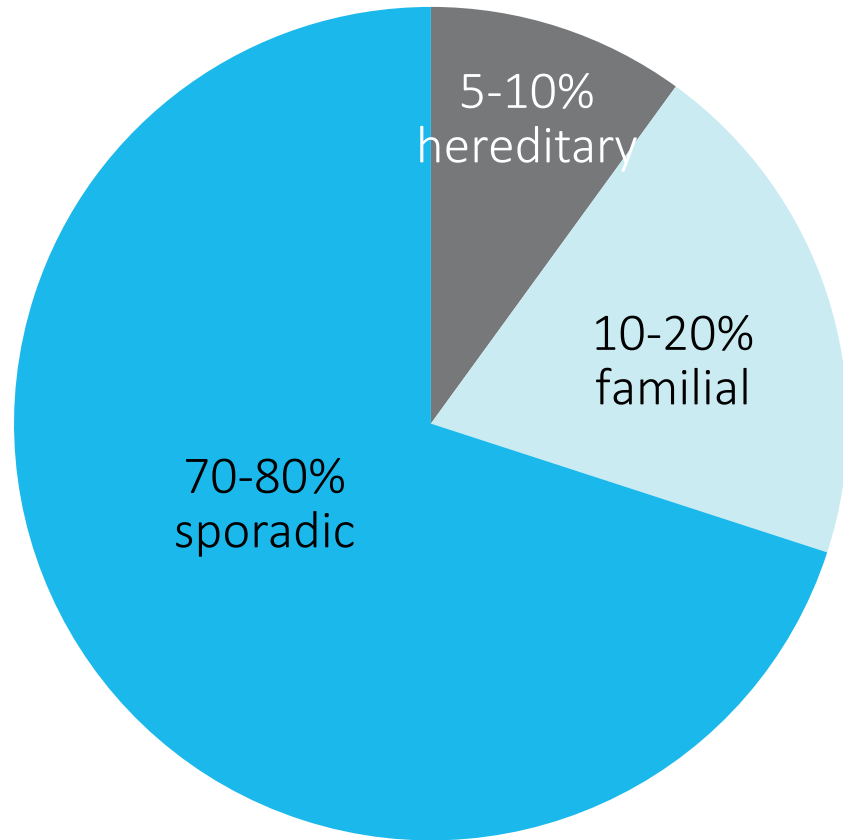




◆ Hereditary Prostate Cancer ◆
Genetic Testing

Brooke Overstreet, MS, CGC

Causes of Cancer



Sporadic Cancer

Happens in one person or possibly two distantly related family members at older ages

Familial Cancer

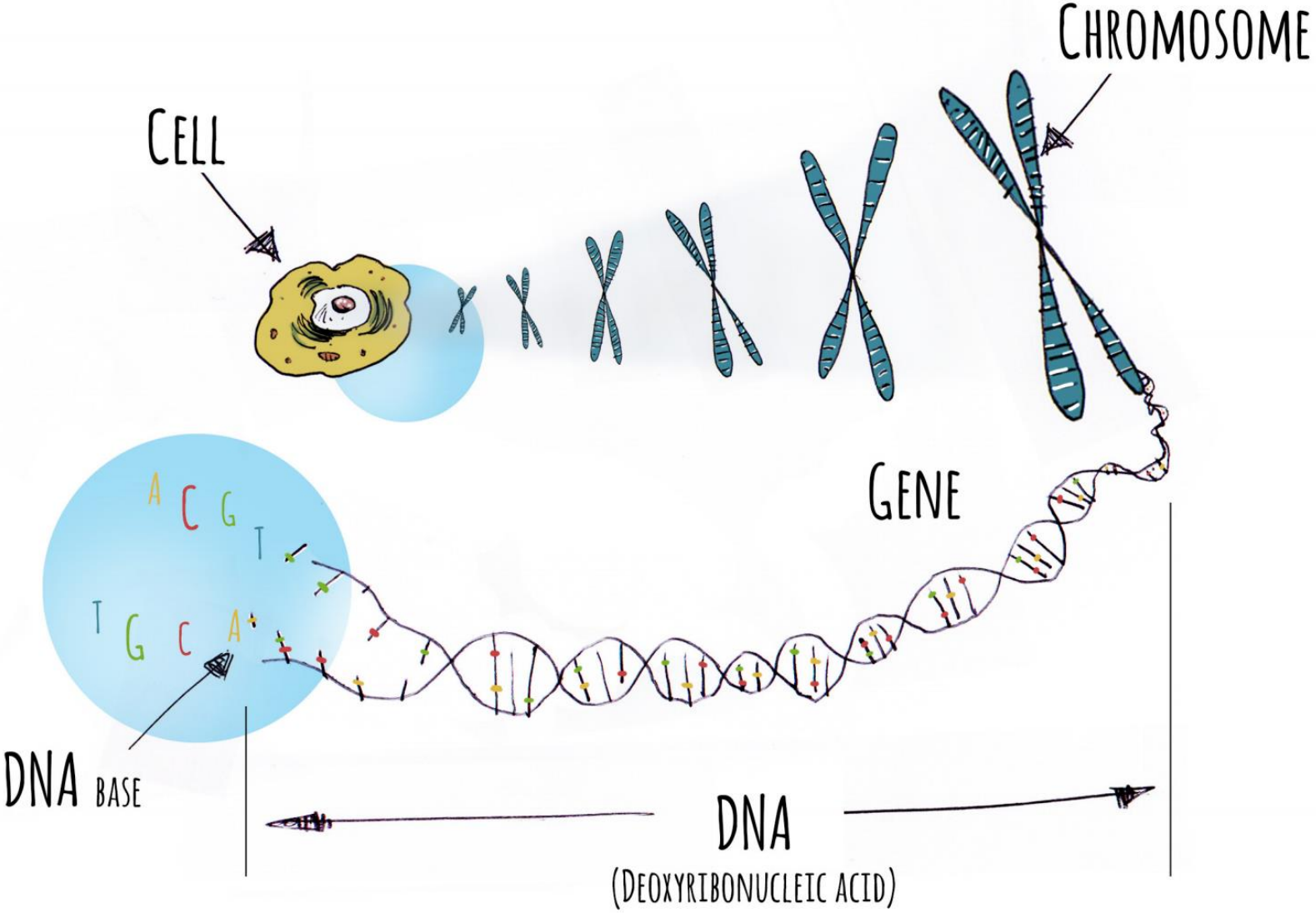
A clustering of cancer in a family that may be due to genes and/or other shared factors, such as environment and lifestyle

Hereditary Cancer

A clustering of cancer in a family due to inherited gene changes (mutations), which can be passed from parent to child

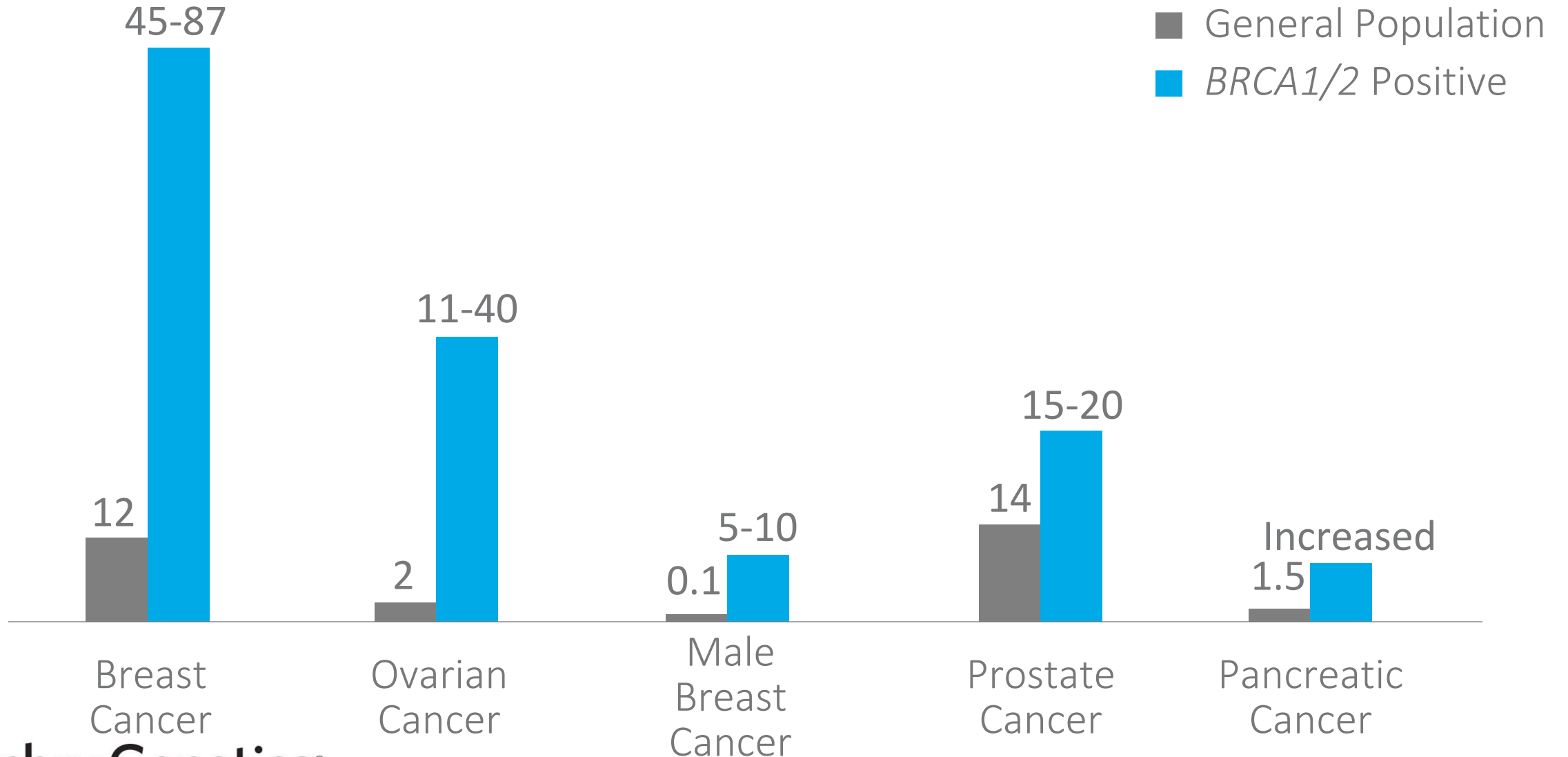


Introduction to Genetics



Hereditary Breast and Ovarian Cancer Syndrome

Lifetime Cancer Risks (%)



Who is an Appropriate Candidate for Genetic Testing?

Personal History

Prostate cancer at or before age 50

Metastatic prostate cancer

Prostate cancer Gleason 7 or higher

More than one primary cancer diagnosis

Prostate cancer plus a family history of cancer

Family History

3 or more prostate or other cancers on the same side of the family

Prostate, breast, colorectal or uterine cancer before age 50 in a relative

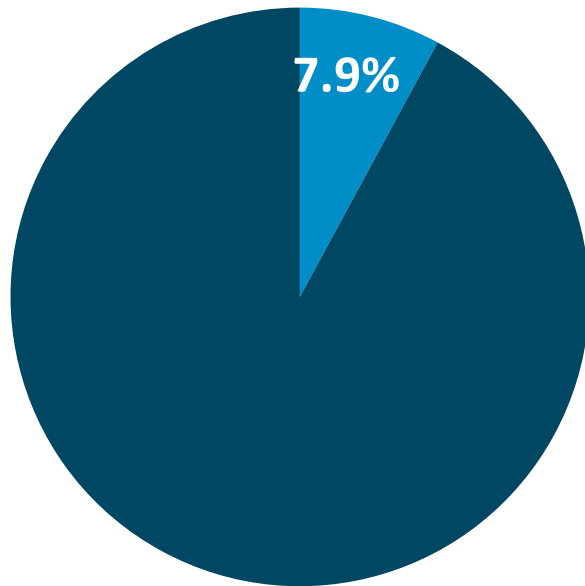
Male breast or ovarian cancer in a relative



BRCA-Related Cancer Panel Results: Males vs. Females



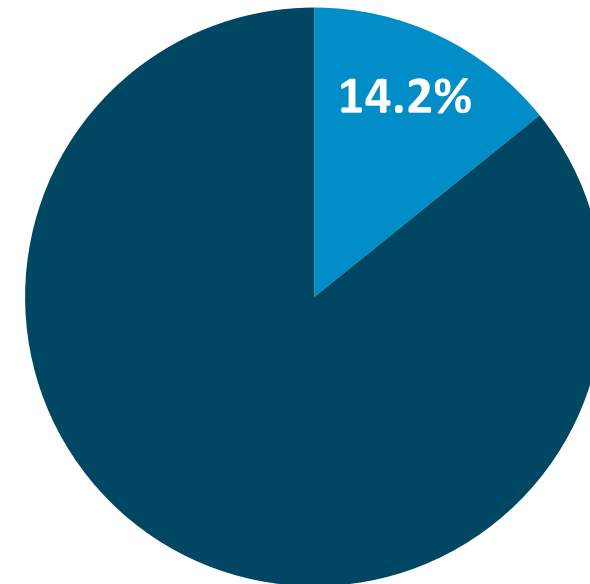
Females with Personal History of Breast Cancer (N>100,000)



■ POSITIVE ■ No Mutation



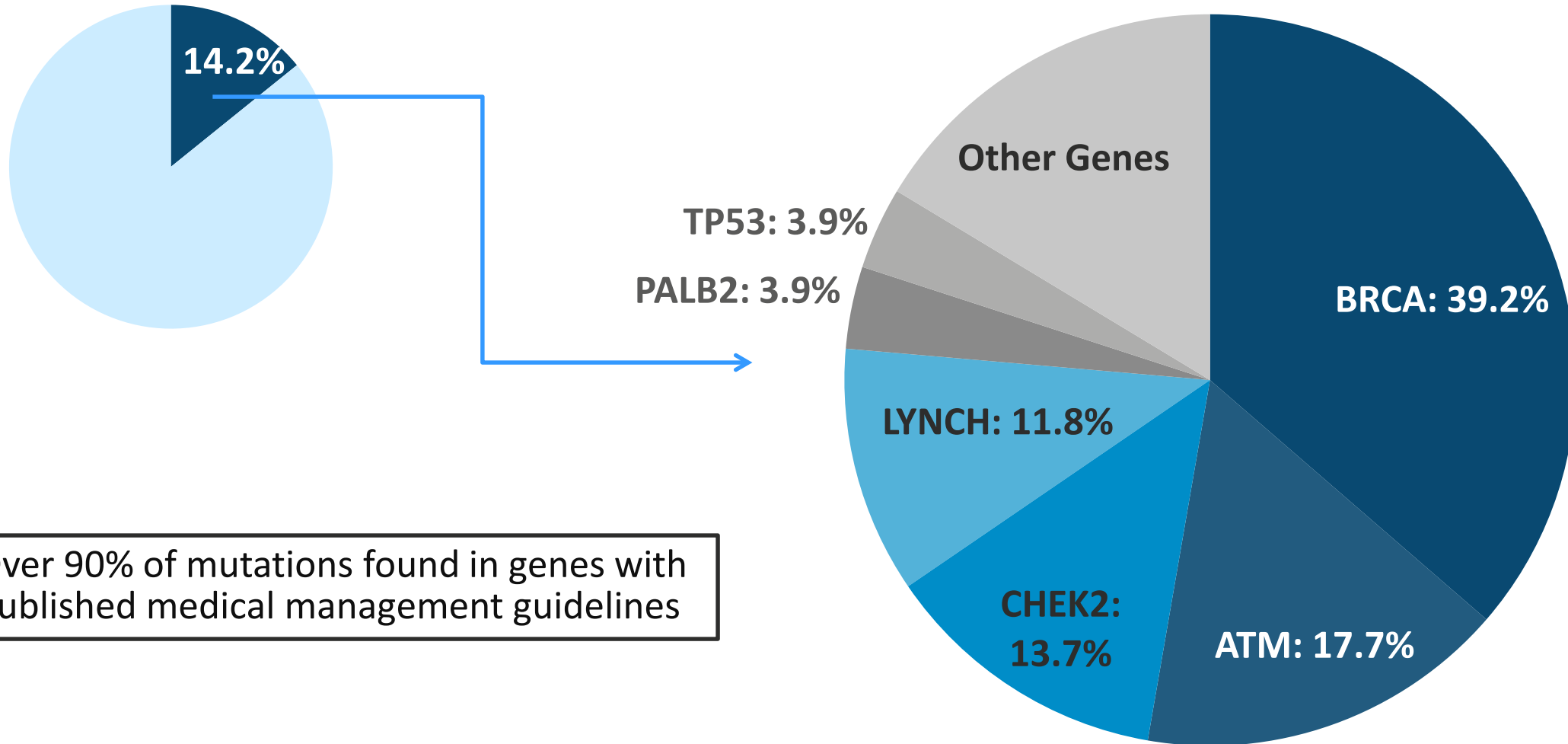
Males with Personal History of Prostate Cancer (N=360)



■ POSITIVE ■ No Mutation



Mutations in Various Genes in Prostate Cancer Cohort



Over 90% of mutations found in genes with published medical management guidelines



How Will Genetic Testing Benefit Patients?

- *BRCA1/2* Prostate-Specific Early Detection
 - *BRCA2*: Recommend prostate cancer screening beginning at age 45
 - *BRCA1*: Consider prostate cancer screening beginning at age 45
- Prostate Cancer: Risk-Appropriate Management
 - Given the aggressive nature of *BRCA1/2*-associated prostate cancer, more aggressive prostate cancer treatment may be considered

Lynparza™ (olaparib) granted Breakthrough Therapy designation by US FDA for treatment of BRCA1/2 or ATM gene mutated metastatic Castration Resistant Prostate Cancer



How Will Genetic Testing Benefit Patients?

- Beneficial for Family Members
 - Relatives (e.g. daughters, sisters, brothers) can be tested to determine if they inherited the mutation and get appropriate medical management
- Other Cancers: Risk-Appropriate Management
 - Male breast cancer: Annual clinical breast exam and self-breast exam training beginning age 35
 - Pancreatic: Consider referral to GI specialist to discuss pancreatic surveillance protocols (especially if pancreatic cancer in family)
 - Melanoma: Consider annual full-body skin and eye exam (ocular melanoma)



Summary

Prostate cancer can be an indicator for hereditary cancer susceptibility

Identification of a hereditary mutation has prognostic, therapeutic, and familial implications

Talk to your provider about genetic testing



Thank You



Introduction to Genetics



1. INSIDE OUR CELLS, WE HAVE GENES

1.



2.

GENES ARE LIKE "RECIPES" THAT TELL OUR BODIES HOW TO MAKE PROTEINS

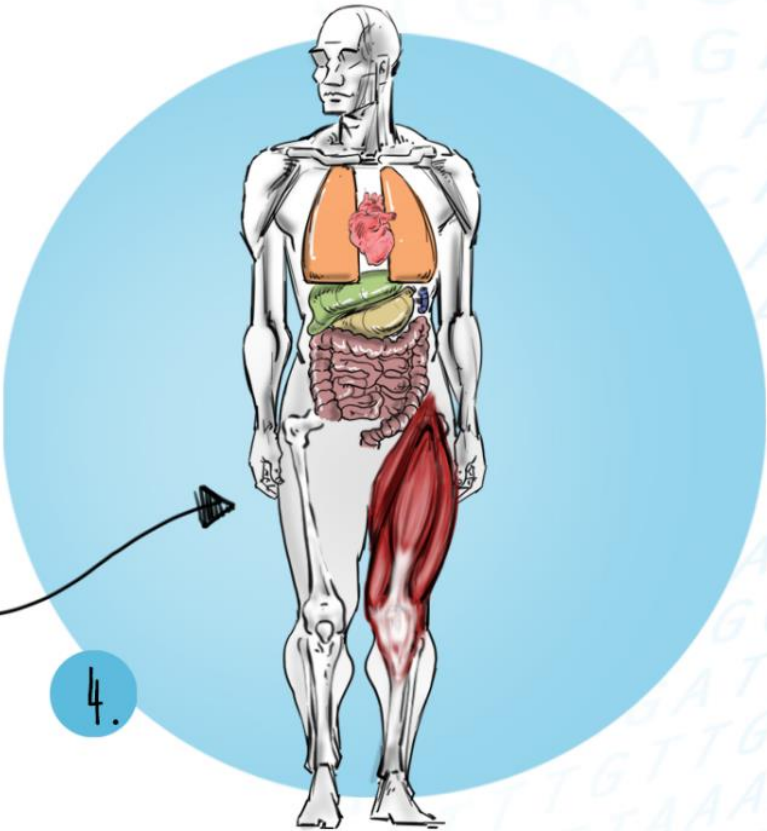
RECIPE

A-G-C-T

3. THESE PROTEINS HELP OUR BODIES WORK PROPERLY



3.

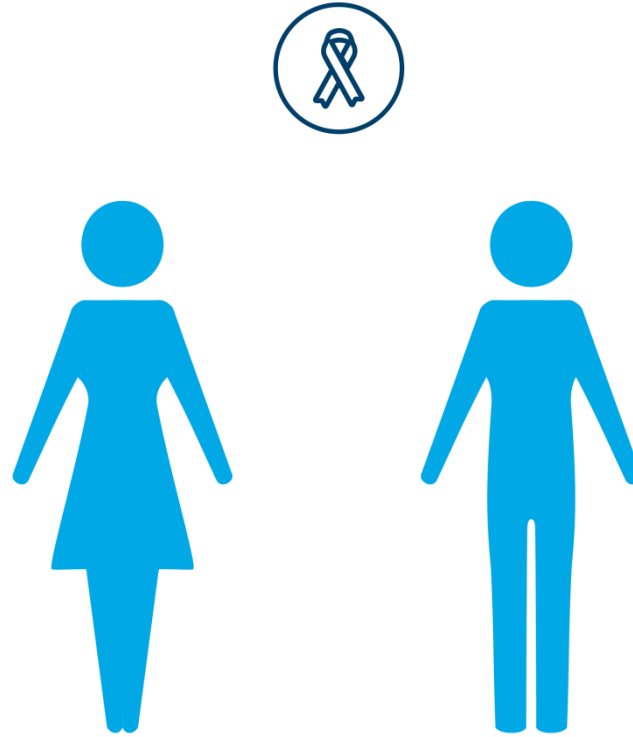


4.

MUTATIONS IN OUR GENES CAN CHANGE THESE PROTEINS, WHICH CAN AFFECT ANY PART OF OUR BODIES

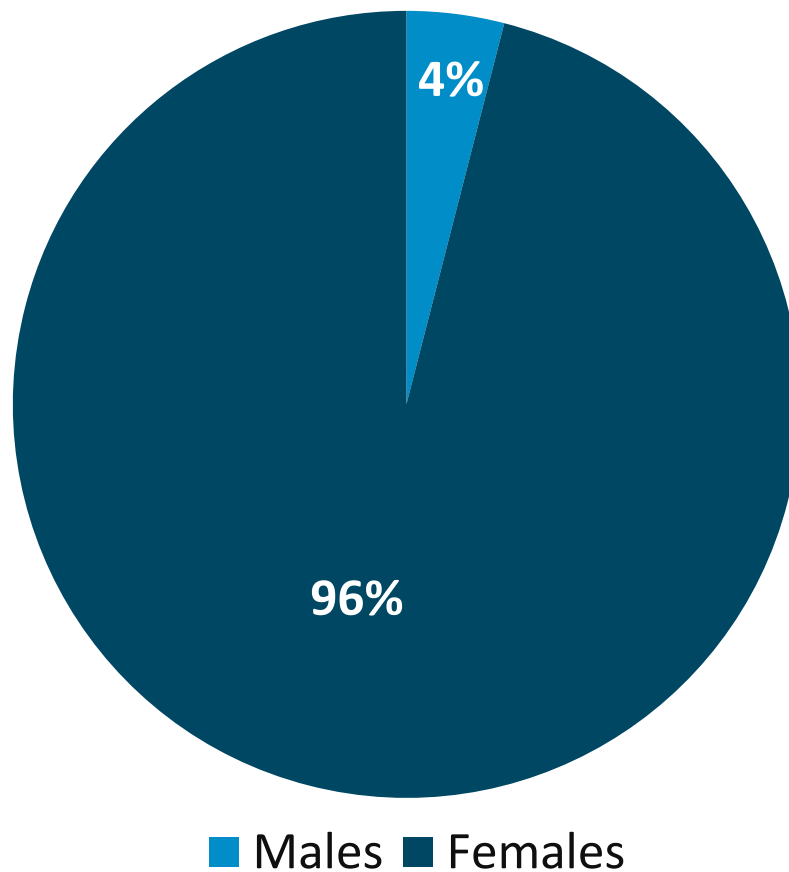


Myth Busters: Hereditary Cancer Impacts Both Men and Women



And yet... who is being tested?

BRCA-Related Hereditary Cancer Panels (N>100,000)



Bowling *et al.* ASCO 2016, Chicago IL

ProstateNext – 14 gene panel test

GENE(S)	ASSOCIATED CANCERS AND RISKS
<i>BRCA1</i> *	Female breast (57-87%), ovarian (39-40%), pancreatic, melanoma, prostate, male breast
<i>BRCA2</i> *	Female breast (45-84%), ovarian (11-18%), pancreatic, melanoma, prostate (15%), male breast (>6%)
<i>EPCAM</i> *	Colorectal (52-82%), uterine (12-55%), possibly prostate, other
<i>MLH1</i> *	Colorectal (52-82%), uterine (25-60%), stomach (6-13%), ovarian (4-12%), prostate (2 fold), other
<i>MSH2</i> *	Colorectal (52-82%), uterine (25-60%), stomach (6-13%), ovarian (4-12%), prostate (2 fold), other
<i>MSH6</i> *	Colorectal (20-44%), uterine (up to 44%), prostate (2 fold), other
<i>PMS2</i> *	Colorectal (15-20%), uterine (15%), possibly prostate, other
<i>ATM</i> *	Breast (2-4 fold), pancreatic, prostate
<i>CHEK2</i> *	Breast (2 fold), colorectal, prostate, other
<i>HOXB13</i>	Prostate
<i>NBN</i> *	Breast, possibly ovarian, brain, prostate
<i>PALB2</i> *	Breast (33-58%), pancreatic, ovarian, possibly prostate, male breast
<i>RAD51D</i> *	Ovarian (10-12%), breast, prostate
<i>TP53</i> *	Breast, sarcoma, brain, adrenocortical, leukemia, other

