## Interpreting for Cancer Genetics

#### Cynthia E. Roat, MPH

National Consultant on Language Access in Health Care

#### Galen Joseph, PhD

Professor, University of California, San Francisco

#### Mari Gilmore, CGC

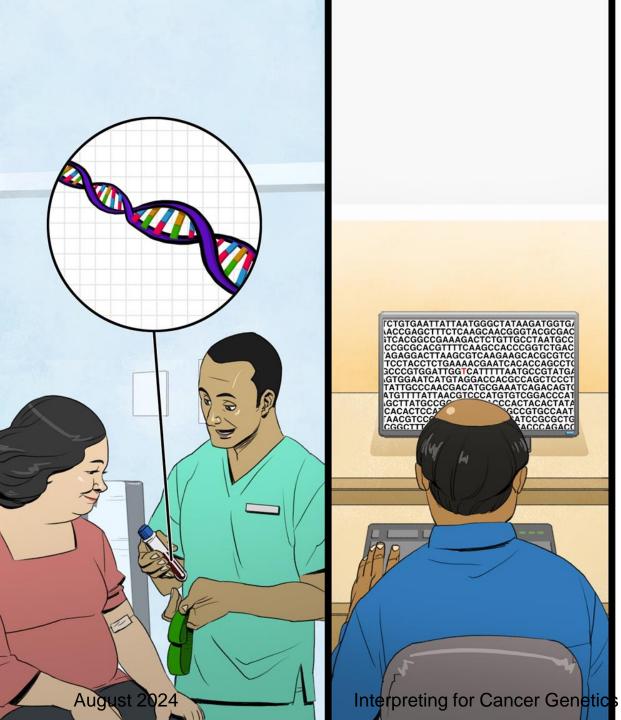
Licensed Certified Genetic Counselor

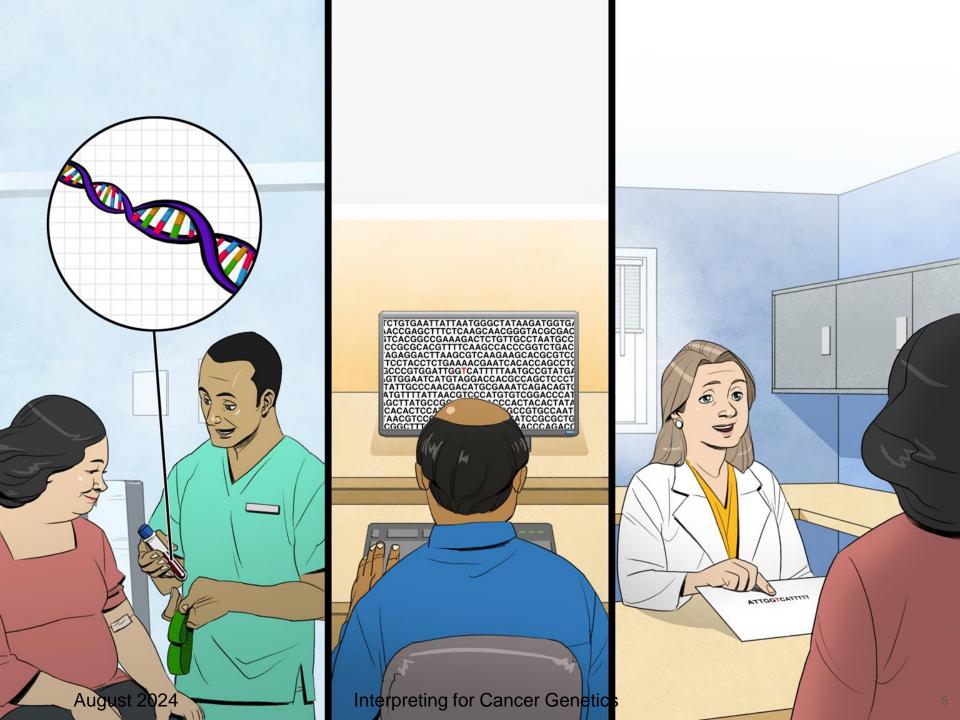
1

Developed 2024, revised 2024



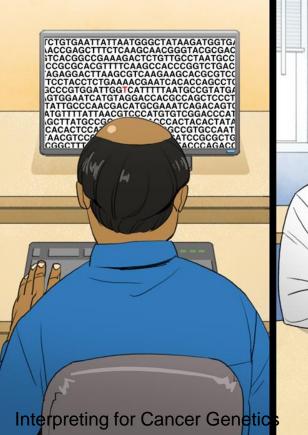




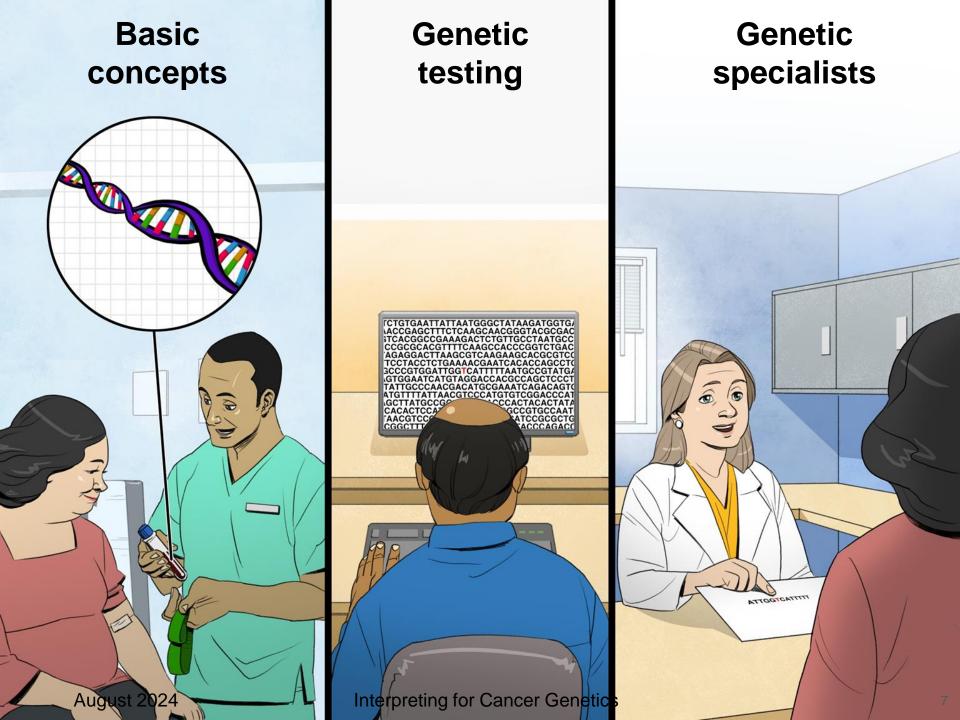


# Genetics





ATTGGTCATTTT



### What to expect today

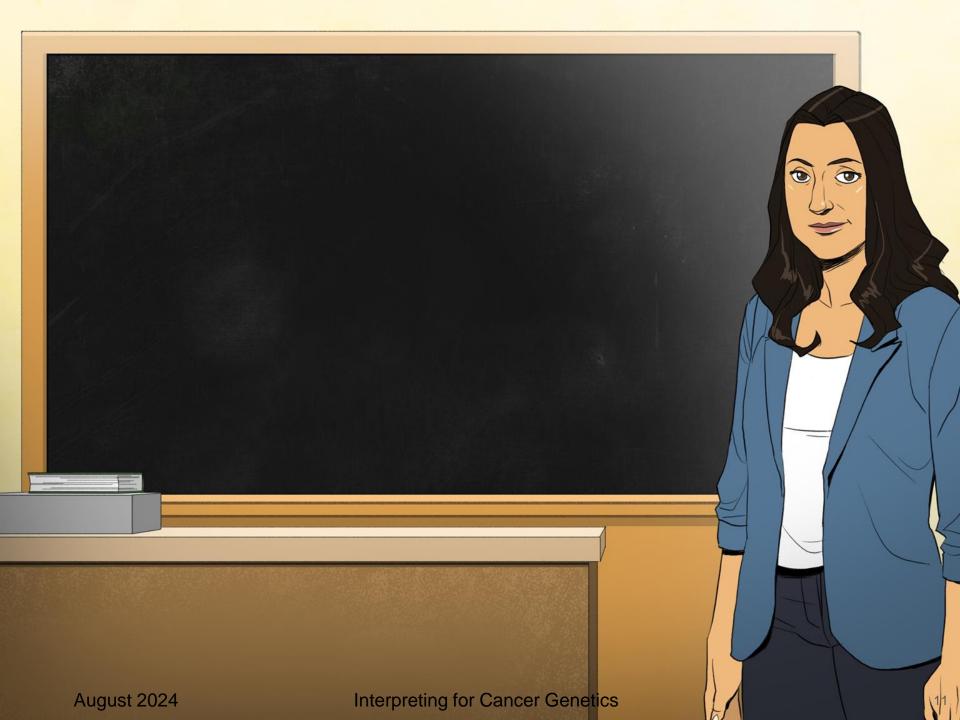
- 1. Short pre-test.
- 2. Introduction to Cancer Genetics

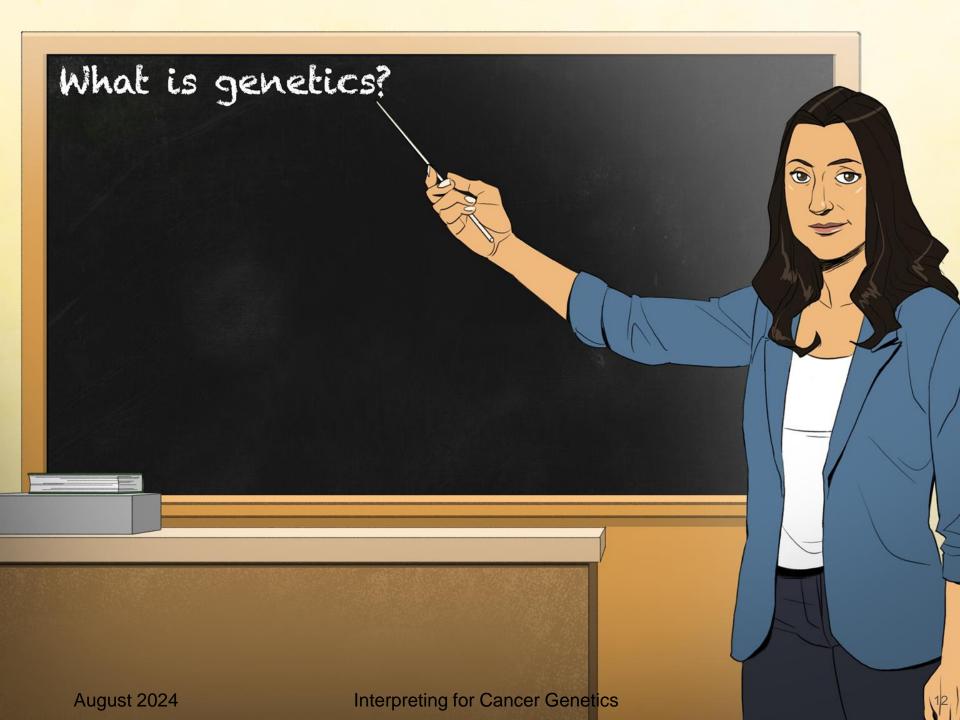
### What to expect next week

- 1. Challenges for interpreters
- 2. Vocabulary exercises in English
- 3. Conversion exercises

#### 4. Posttest

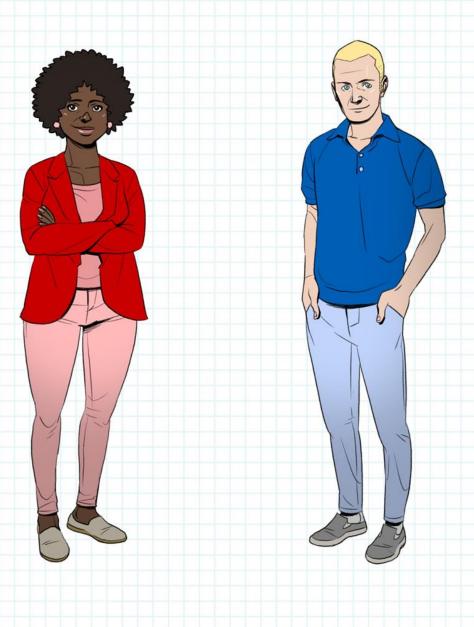
### So, what do you know already?





#### What is genetics?

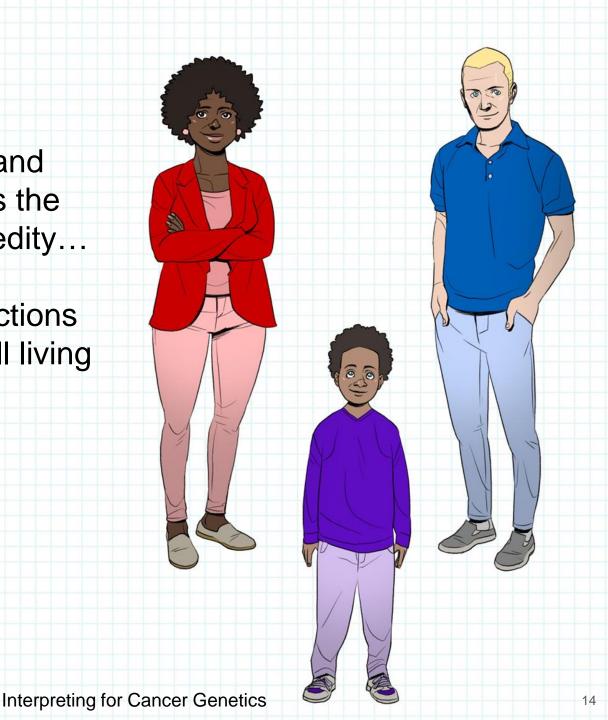
The field of science and medicine that studies the biologic basis of heredity...

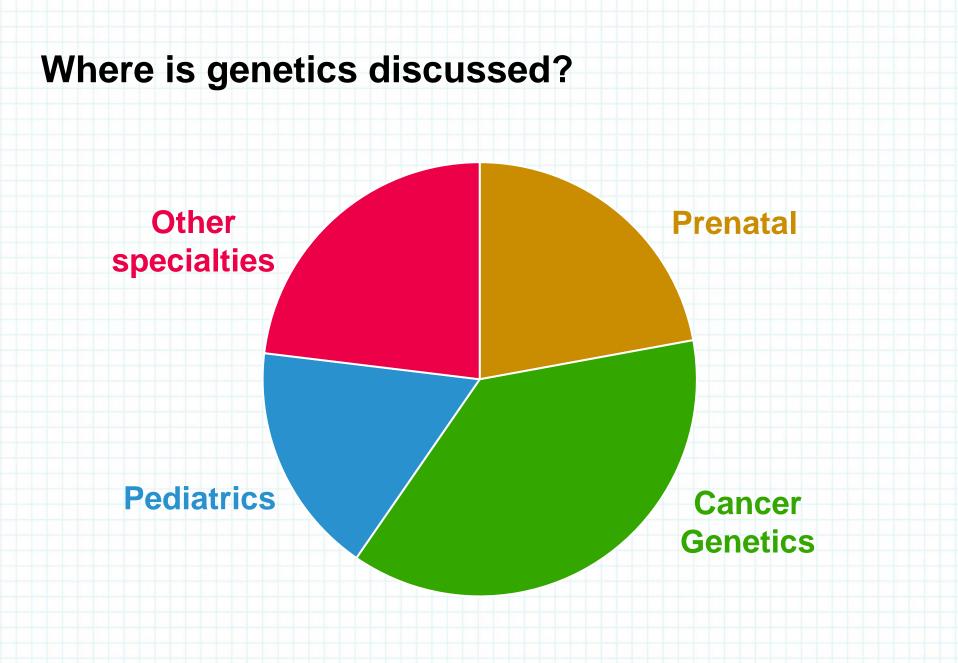


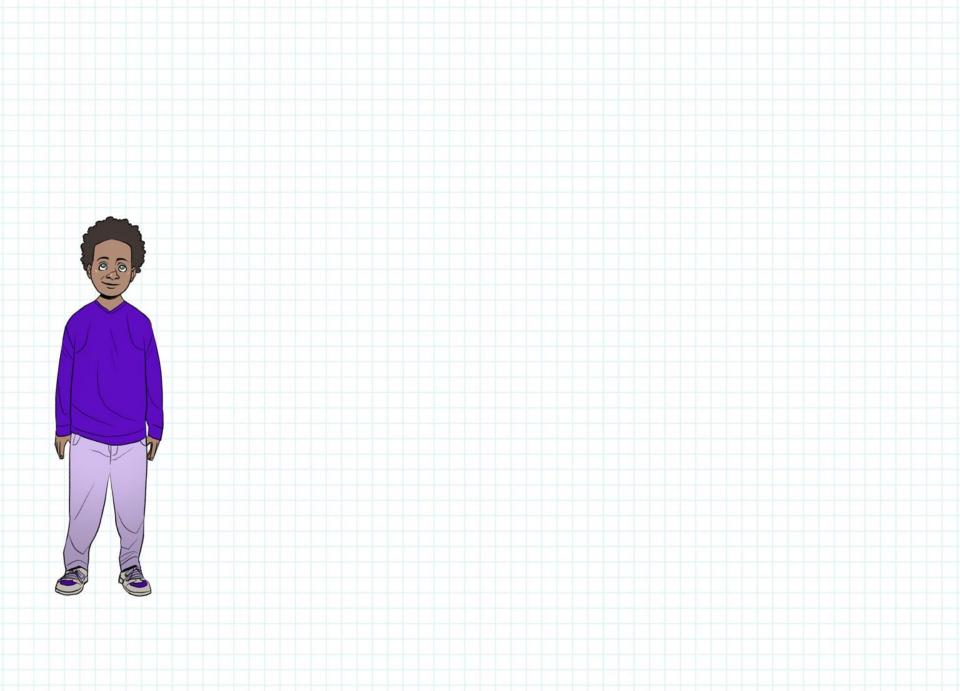
#### What is genetics?

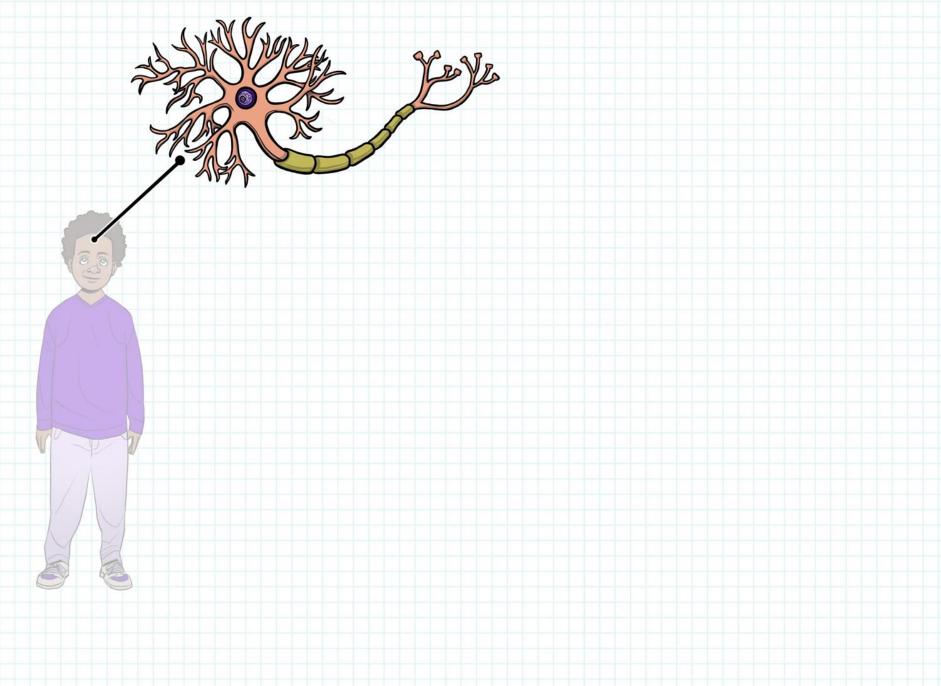
The field of science and medicine that studies the biologic basis of heredity...

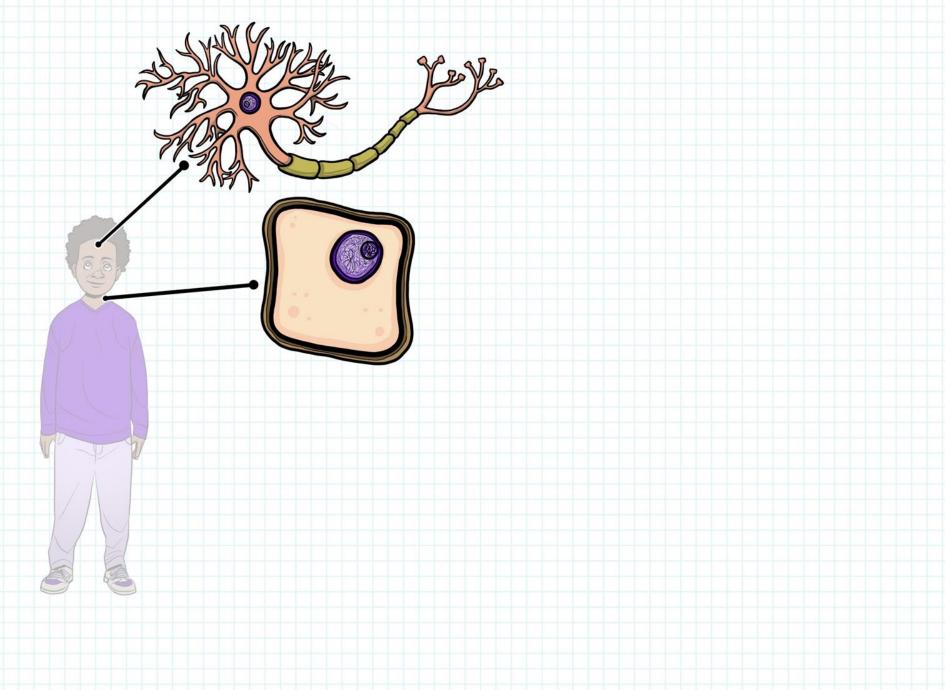
...and how the instructions for life are used by all living organisms.

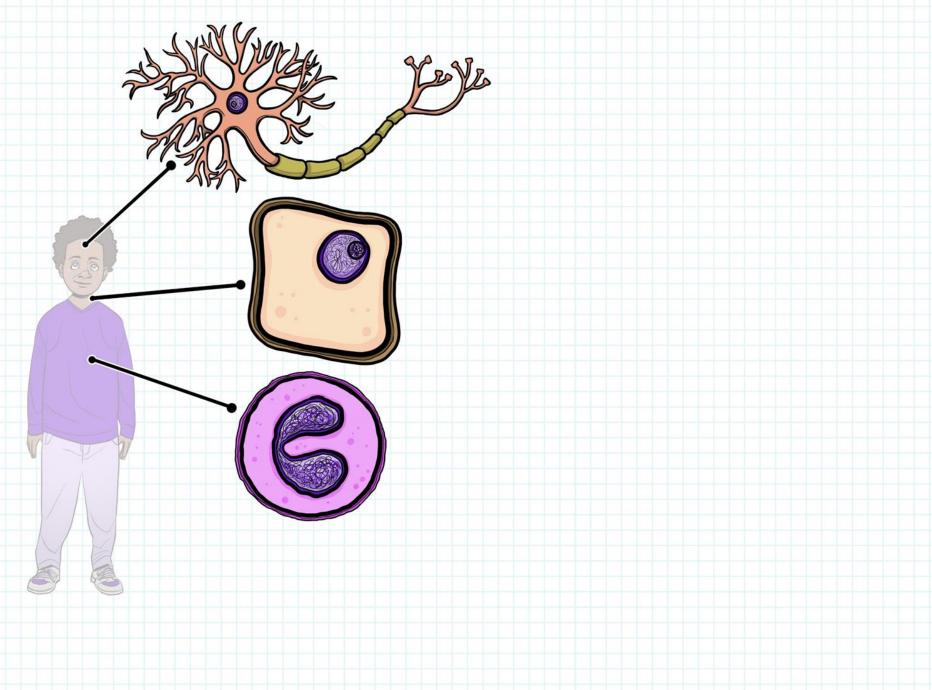


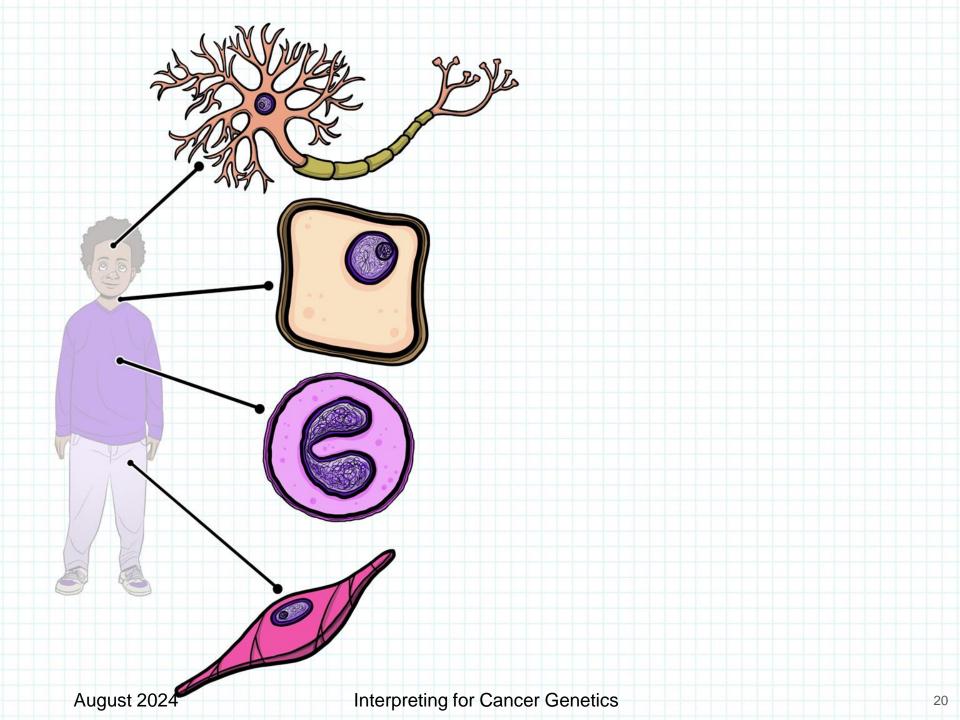


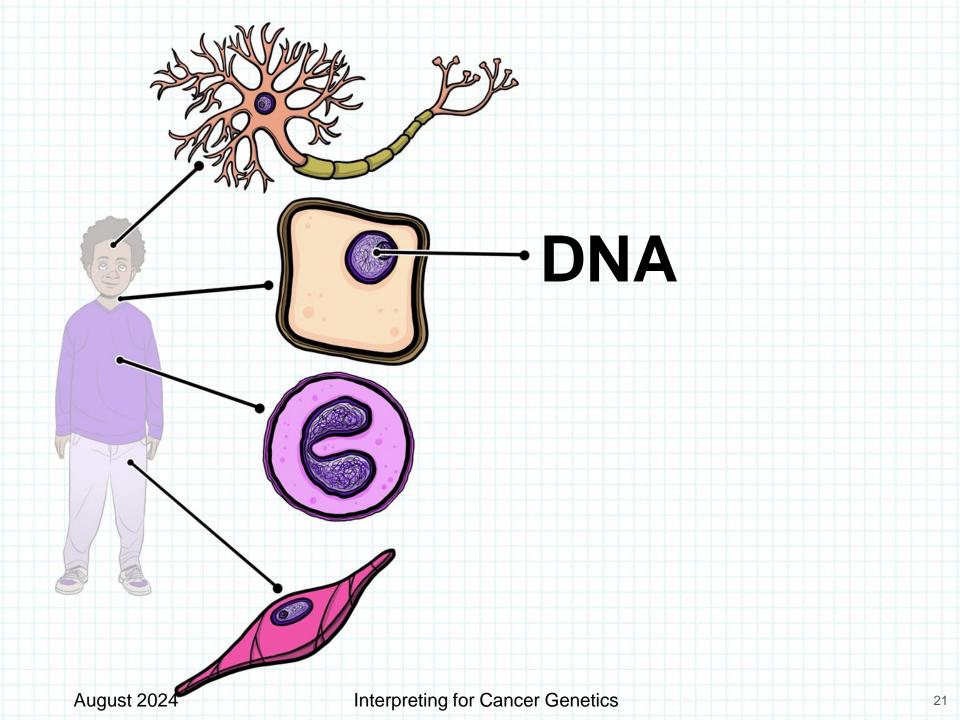


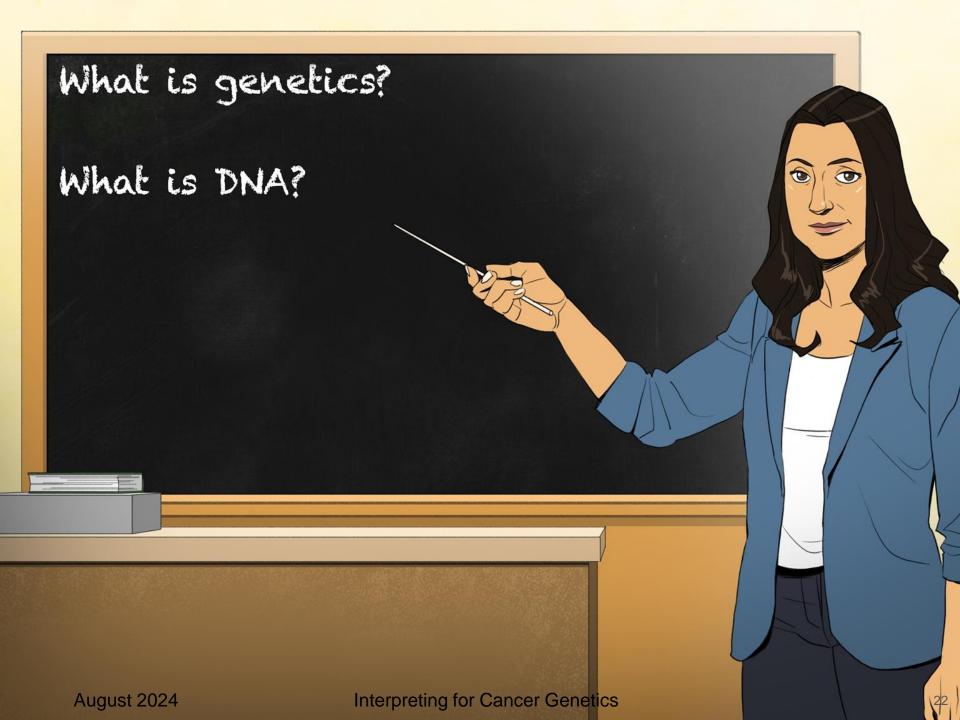


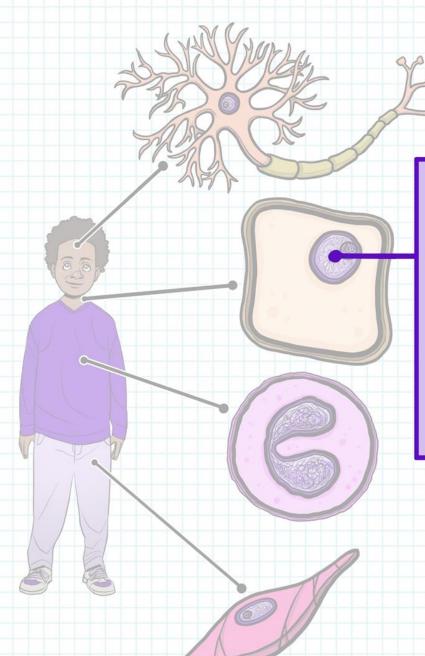


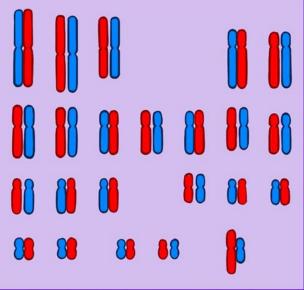


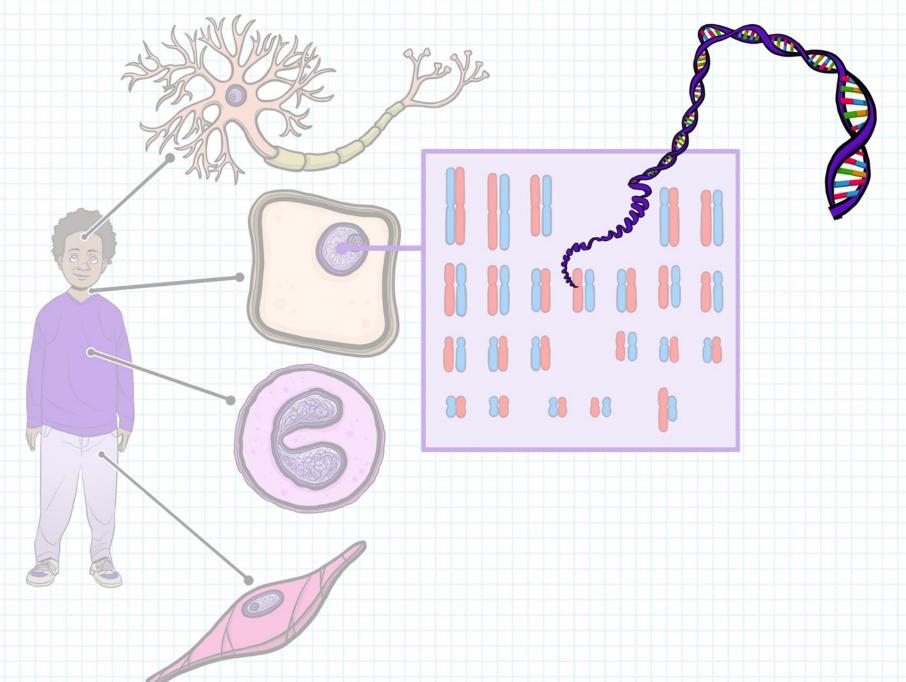


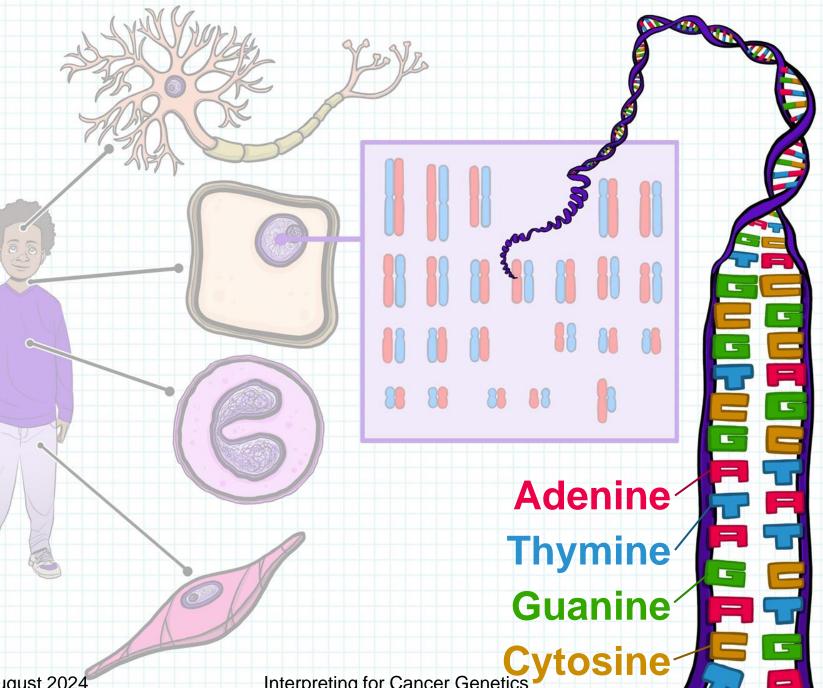










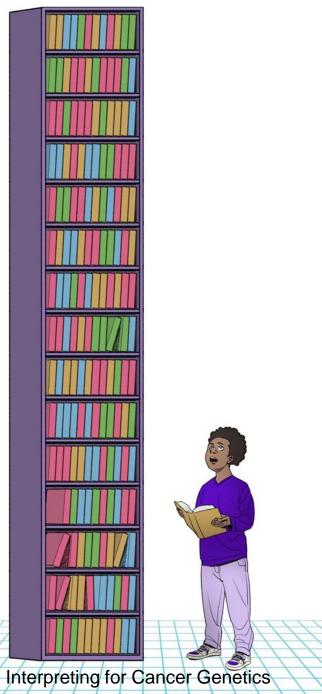


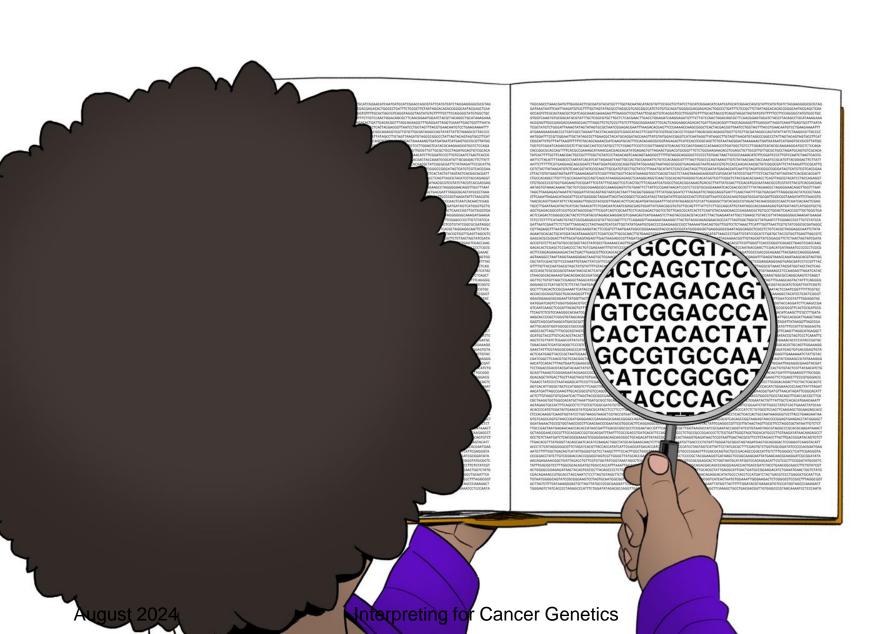
ACGGAGTTGCCGAGGACGAAAGCGACTTTAGGTTCTGCCGTTGTCTTTGGCGGAAAACTTCCACTCAGGAAGCAGACCTGATTGACACGGTTTAGCAGAAGGTTTGAGGATTAGGTCAAATTGAGTGGTTTAATA ATTCTTACATTTAAACCCTAATATCACATCATTAGAGATTAATGCCACTGCCAAAATTCTGTCCACCAGCGTTTAGTCGCCCCAGTAAAGTTGTCTATAACGACTACCGACTATCGGGACTTCTTAT AATTCTTTTTCGTGAGGAGCAGCGGATCTTAATGGATGGCCGCAGGTGGTATGGAAGCTAATAGCGCGGGTGAGAGGGTAATCAGCCGTGTCCACCAACACAACGCTATCGGGCGATTCTATAAGATCCCGCATTG CGTCTACTTATAAGATGTCTCAACGGTATCCCCAACTTGCGATGTGCCTGCTATCCTTAAATGCATATCTCGCCCAGTAGCTTCCCAATATGAGAGCATCATTGTAGATCGGCCCGGGATAGTCATGTCGTCACGGA CITACTGTATGAGTAGTAGTAGTAGTAGTGTCGGTTGCGGGTTCACGGTAAAGGCCCCCCACGCTACCCTCAAGGAAGAGAGCGGTCGTGACATTATCCGTGATTTTCTCACTACTACTACTACTACGGCACGAT CTGTGGCCCCCGTGGTGAGAAGTGCGGATTTCGTATTTGCAGCTCGTCAGTACTTTCAGAATCATGGCCTGCACGGCAAAGTGACGCCTTATTATGGACTTCGACATGGCAATAACGCGTCGTATCTACGTCACGACGAGAG TAACGCAGTTGAGTATTCTACAGAGTTGGCGTACGCGTTGAACACTTCACAGATGATAGGAATTTGCGTATAGAGCGTGTCATTGAGGGCTTATACAGCCGTAGACTACAACGGGCCCAACTCAACAACTCGAG ACTCCAGACTCGGGGCCACTACTCTCATACGTAGAGCAAGGCGTCGAACAGTCATGAAAGTCTTAGTACCGCACGTACCATCTTACTGAGAATATTGCCTGAAGCTGTACCGTTATAGGGGGGCCAAAGATGAAGA AGAATGCACACTGCATCGATACATAAAACGTCTCGATCGCTTGCGCAACTTGTGAAGTGTCTACCATCCCTAAGCCCATTTCCCGCATATTAACCCCCTGATTGTATCGCGCATCTGATCGCTACCGTGGTTGAGTTAGCGTC GCCGTGTCTTCACTGTGCCGCGGCTACCTATCGCCTGAAAACCAGTTGGTGTTAAGGGGTCCCCTGTCAAGGACGCLACGCGTAGTGAGACATACACGTTCGTTGGGTTCACCCGGGTCGAACCAAG ACTTCCAGAGAAGAAGACTACTGACTTGAGCGTTCCCAGCACTTCAGCCOAGGAAGTTACCAATTTTTTGTTTCGGAATGACACGCGTCTCCCTTGCGGGTAGATCGCCGACGACGAAGAACTTACGAGCCAGGGGAAA GCCTTTCACACTCCGCGAAAATTCATACCGCTCATTCACTAGGTTGCGAAGCCTACACTGATATATGAATCCAAGCTAGAGCAGGGCTCTTAAAATTCGGAGTGTGAGATGCTCAATACTCCGATCGGTTTTTCGTG GALGGAAACGLAGAATTATGGTTACTTTTTGGATACGTGAAACATGTCCCATGGTAGCCCAAAGACTTGGGAGTCTATCACCCCTAGGGCCCATTTCTGGATATAGACGCCAGGTTGAATCCGTATTTGGAGGAC GTCAATCAAGCTCGGATTACCGCGTCTTGCGGTTACTCACAAAACTGTAATCCACCACAAGTCAAGCCATTGCCTCTCTGAGACGCCGTATGAATTAATATGTAAACTTTGCGCGGGGTTACTCACAAAACTGTAATCCACCACAAGTCAAGCCATTGCCTCTCTGAGACGCCGTATGAATTAATATGTAAACTTTGCGCGGGGTTACTCCGCATCCG TICAGTCTCGTCCAAGGGCACAATCGAATTCCCATTGTATGTTCGGCTAACTTCTACCCATCCCCGAAGTTTAGCAGGTGTGTAGGAGGCTCTCGTTCATCCCGTGGGGCACATCAAGCTTCGGCCTTGATA WGCACCCCGCTC5GGTGTAGCAGAGAAGACGCCTACTGAATTGTGCGATCCCTCCACCTCAGCTAAGGTAGCTACCAATATTTAGTTTTTTAGCCTTGCGACAGAACCTCCTACTTAGATTGCCALGCATTGAGCTAGC GCATGCTACGTTGCTACGTCGTACACTGCTCGAAAGTAAATATGGGAAGCGCGGGGCCCGGCCCGAGGGCGTTCCGCCGCGCCGCCGCGCGCTGTTCGTTGATCGGTGGCACATAAGCAATACCGTAGTCCCTCAAAT AGC/CTGTTATCTCGAGCGTTATGTGTCAGAATGGCGTAGAACGGGATTGACTGTTTGACACTAGCTGGTGGTGGGTAACGGAGAATCTGTGGGGGCTATGTCACTAATACTTTCGAAACGGCCCCGTACCGATGC TGAACAAGTCGATGCAGGCTCCCGTCTTTGAATAGGGGTAAACATACAAGTCGATAGAAGATGGGTAGGGGCCTCCAATTCATCCAACACTCTACGCCTTCTCCAAGAGCTAGTAGGGGCACCCTGCAGTTGGAAAG NCTCGATGAGTTACCCGCTAATCGAACTGGGCGAGAGATCCCAGCGCTGATGCACTCGATCCCGAGGCCTGACCCGGACATATCAGCTCAGACCAGGGCTGTTGACGTTTGGGGTTGAAAAAATCTATTGTAC GCCGCAATACACAGTTTACCGCATCTAGACCTAACTGAGATACTGCCATAGACGACTAGCCATCCCTCTGGCTCTTAGATAGCCCGATACAGTGATTTTGAAAGGTTTGCGG GCACAGCTATGAC GTGTGAGGGAAGGAACTITTGCGTATTTGTATGTTCACCCGTCTACTACGCATGCGGGCAGATTATGTAGGTTGAGAGATGCGGGGAGAAGTTCTCGACCTTCCCGTGGGACG TTCGAGCATGGCAGTAAGTACGCCTTCTCAATTGTGCTAACCTTCATCCCTATCAAAGCTTGGAGCCAATGATCAGGGTTATTCCCTTGGGACAGACTTCCTACTCACAGT CTTCAGCTTGACCCGGTCTGTTGGGCCGCGATTACGTGAGTTAGGGCCCCGGACTGCGCTGTATAGTCGATTCTCATCCGGCCCCCACATCTGGAAACCCCAACTTATTTAGAT CGTGTCCACCGTGGAGTCCTCCCCGGGTGTCCCCTCCTTCATTTGACGATAAGCAGCGGCTACCACCATTGATTAACAACAAGGAACGGTGATGTTAACATAGATTCGGCACATT CTTC AGCCCTCTTGTCGTCGGCGATGTGTGTAAAATGGCGTTGATGTGGATGGGATGGGATCGACTCTATAAAGGTATCTACTGGTGGGGAGATCCGGAATCTATTGGCCTATGTCACTGAAACTATCCAA TCGATACTGAACGTATCGACGCATACCTCCTTCCTTGAAAAACGCACAATCATACAACTGGGCACATAATGCGTACGCCCATCTAGTACACCCATCTCTGTGGGTCCAGTTCAAGAGCTGGAAGAGC STCAAGTGGTATCCTGGTAAGGTAAGCTCGTGATCGTGATTCATGCGACAGGGGTAAGACCATCAGTAGGAGGATAGTGCCAAAACCTCACCACTGCCAATAAGGGGTCCTTACCTGAAGAATAA NOT GOND OF THE CONTRACT AND A THE CONTRACT OF CONTRACT OF THE NCTAATGAGAACAACCACACCACAGGGGATTTGACGGGGGGCGCCGGGAATACCGTTTCAGGAGGGGCTTGGTAAGGGCCATCGGGAATACCAGGTATCGTGTAAGTAGCGTAGGGCGGGA ACCGCGTTTCCACGGCCGGTGCACGATTTAATTTCGCCGACGTGATGACATTCCAGGCAGTGCCTCTGCCGCCGCCGGACCCCTCTGTGATGGGTAGCTGGACATGCCCTTGTAAGATAT SATCTCACGGCGAAAGTCGGGGGAGACAGCAGCGGCTGCAGACATTATACCGCAACAACACTAAGGTGAGATAACTCCGTAATTGACTACGCGTTCCTCTAGACCTTAAGTCGG GGTTACAGCAATCACATCCAAGACTGGCTATGCACGAAGCAACTCTTGAGTGTTAAAATGTTGACCCCTGTATTTGGGATGCGGGTAGTAGATGAGTGCAGGGACTCCGAG GGGTTCTAGATCAGGTTACCACLATATCATCGAGCATGACACCATCTCCGCTGTGCCCATCCTAGTAGTCATTATTCCTATCACCATCTGCTGGTGGCGGAATATCCCC CAGTCATATTGGGGTGCTCCTAAGCTTTTCCATTGGCTGGGGCAGCTAGGCTAGGCTGCCGGGGGCGTTGGGGGGCAGTGCGCCGACGCCGGCGCCTGTCTTGGGGGGGCCCTAA TACACCTGTTCGTGTGGTATCGGTAAATAGCCTCGCGGAGCCTTATGCCATACTCGTCCGCGGGAGCACTCTGGTAATGCATATGGTCCACAGGACATTCGTCGCTCCGGG CAGATIGETGGECAECATTTAAATTAGAGGAETCEAEATETGTAAGGTCEGGECAEGGAACGAEAGAEGAEGAEGAECAETGAEGGAETAECTGAAEGGEAAECTTETG LAGTGECGECTTAEAGECEETETGTEGECGGECGAEGTETGTAGTCTAGECTEATTATGATGEAEGCATTGAAGGEATTGAETGATGECGGAAGAEATETGAATGAAETGG CTCCTTAGTGTAGGTTCTGACCGATTCGTGGCTTCGTTGAGAACTCACATTTTAACAACAGAGGACATATGCCCTACCTCCATGATCTACTGACGTCCCTGAGGCTGCAATT TCCTAGTGCAATGGCGGTTTTTTACCCTCGTTCTGAAGAAGAGGCGACGCGGGTGCGGTCATCACTAATGTGGGAAATTTGGGAAGACTCTCGGGCCTCCGCCTTTAGG TTCTGGATATAGACGCCAGGTTGAATCCGTATTTGGAGGTACGATCCGGAGAGACGGGCTTCAAAGCTGCCTGACGACGGTTGTGGGCCCCGTAACAAATCCTCCCAAT

TIGGARCT AARCATOTIGGGARCT COLDINGT AND THE THE TAKAN A CALL TO THE COLDINGT AND THE COLDING

#### Interpreting for Cancer Genetics

August 2024





ATTTCTCATTTCAGGCATACCCAGTCCGTCGAAGGCGGCAGCGACATGGCGACTAAGT( CGCTGCCACCTTCGTATTCCGAGTTGCCTGTGGGCCGTGGGAACGATTCCTAGAAGGA CTGCACTACTATATACGCCGGCAAGTCTAAAAAGCGAAGTTGGCATACACAACGGAG/ GTCTCCGATCCGCCCCCACAATAACCGTCGACTTTCCAGGTCTCAAGCACCTAAATTTGG GAACTGGCGGACGTGGAACACGTTTCTTACTGTGTACGTTGCTAGGACCCTGGGAGAC CCTTTTGCGACATGAGGTACTCAAGAGAGGTTGAACTAACCTTCCGCAGAACCTTCACG FACCTGCGCGGATCCACTATTAACGTCCCATGTGTCGGACCCATCACGCCTTGCCTCAC ACTCAGTCAATTCGACACACATAGTCAAGACAGCGTAAGAGTCGCGCTGAAACATGGO GTCGGTAAAAGCTTATGCCGGCTTTGTACCCACTACACTATACCCAGACCACCTACAAC ſĠŦĂŦŦĂĊĠŦĊŦĠŦĠĠŦĊŦĠŦĠĂĂŦŦĂŦŦĂĂŦĠĠĠĊŦĂŦĂĂĠĂŦĠĠŦĠĂŦĂĂĊĂĂĊĠŦŦŎ CCCCGTCAGCAGAGCAACCGAGCTTTCTCAAGCAACGGGTACGCGACTCCCGAGCGA/ CCACGGAGGCTGATCGTCACGGCCGAAAGACTCTGTTGCCTAATGCCTTCATTGTAGT/ CCACTCCGGCTAGTTGCCGCGCGCACGTTTTCAAGCCACCCGGTCTGACGGCTCGGCCC/ GTGATAGTACCCGGGTAGAGGACTTAAGCGTCAAGAAGCACGCGTCCACTCTGCGTG/ GATCCTTTTCGTTCCCTTCCTACCTCTGAAAACGAATCACCAGCCTCAATAGTTGCAG GGTGGGCCGGTGGAGGCCCGTGGATTGGTCATTTTTAATGCCGTATGAGAAATCGTCA/ CATCGGAGTCCCCGCAGTGGAATCATGTAGGACCACGCCAGCTCCCTGCGAGGCTCC/ ACTTTTTTGTTCACTCCTATTGCCCAACGACATGCGAAATCAGACAGTGTTCCATCACGO CGCCGTATTGACTAAAATGTTTTATTAACGTCCCATGTGTCGGACCCATCCGCGCTGAA/ CATGGGGTCGGTAAAAGCTTATGCCGGCTTTGTACCCACTACACTATACCCAGACCATA ACAGATTGCCCCAGGTCACACTCCATAGGGTCGCGGGCCGTGCCAATCTTGCGAATTTC FCATTTCAGGCATAATTAACGTCCCATGTGTCGGACCCATCCGCGCTGAAACATGGGG<sup>-</sup> CGGTAAAAGCTTATGCCGGCTTTGTACCCACTACACTATACCCAGACCACCCAGTCCG CGAAGGCGGCAGCGACATGGCGACTAAGTCCGCTGCCACCTTCGTATTCCGAGTTGCC<sup>-</sup> GTGGGCCGTGGGAACGATTCCTAGAAGGACCTGCACTACTATATACGCCGGCAAGTCT/ **AAAAGCGAAGTTGGCATACACAACGGAGAGTCTCCGATCCGCCCCACAATAACCGTCC** ACTTTCCAGGTCTCAAGCACCTAAATTTGGTGAACTGGCGGACGTGGAACACGTTTCTT/ CTGTGTACGTTGCTAGGACCCTGGGAGACTCCTTTTGCGACATGAGGTACTCAAGAGAG GTTGAACTAACCTTCCGCAGAACCTTCACGTACCTGCGCGGATCCACTATTAACGTCC ATGTGTCGGACCCATCACGCCTTGCCTCACACTCAGTCAATTCGACACACATAGTCAAC ACAGCGTAAGAGTCGCGCTGAAACATGGGGTCGGTAAAAGCTTATGCCGGCTTTGTACC CACTACACTATACCCAGACCACCTACAAGTGTATTACGTCTGTGGTCTGTGAATTATTA/ GGGCTATAAAGATGGTGATAACAAQGITTCCCCCCGTCAGCAGCAGCACCGAGCTTTCTC/ ATTTCTCATTTCAGGCATACCCAGTCCGTCGAAGGCGGCAGCGACATGGCGACTAAGTC CGCTGCCACCTTCGTATTCCGAGTTGCCTGTGGGCCGTGGGAACGATTCCTAGAAGGAC CTGCACTACTATATACGCCGGCAAGTCTAAAAAGCGAAGTTGGCATACACAACGGAG/ GTCTCCGATCCGCCCCACAATAACCGTCGACTTTCCAGGTCTCAAGCACCTAAATTTGG GAACTGGCGGACGTGGAACACGTTTCTTACTGTGTACGTTGCTAGGACCCTGGGAGAC1 CCTTTTGCGACATGAGGTACTCAAGAGAGGTTGAACTAACCTTCCGCAGAACCTTCACG FACCTGCGCGGATCCACTATTAACGTCCCATGTGTCGGACCCATCACGCCTTGCCTCAC ACTCAGTCAATTCGACACACATAGTCAAGACAGCGTAAGAGTCGCGCTGAAACATGGC GTCGGTAAAAGCTTATGCCGGCTTTGTACCCACTACACTATACCCAGACCACCTACAAG **FGTATTACGTCTGTGGTCTGTGAATTATTAATGGGCTATAAGATGGTGATAACAACGTT** CCCC**GTCAGCAGAGCAACCGAGCTTTC**TCAAGCAACGGGTACGCGACTCCCGAGCGA/ CCACGGAGGCTGATCGTCACGGCCGAAAGACTCTGTTGCCTAATGCCTTCATTGTAGTA CCACTCCGGCTAGTTGCCGCGCGCACGTTTTCAAGCCACCCGGTCTGACGGCTCGGCCC/ GTGATAGTACCCGGGTAGAGGACTTAAGCGTCAAGAAGCACGCGTCCACTCTGCGTG/ GATCCTTTTCGTTCCCTTCCTACCTCTGAAAACGAATCACCAGCCTCAATAGTTGCAG GGTGGGCCGGTGGAGGCCCGTGGATTGGTCATTTTTAATGCCGTATGAGAAATCGTCA/ CATCGGAGTCCCCGCAGTGGAATCATGTAGGACCACGCCAGCTCCCTGCGAGGCTCC/ ACTTTTTTGTTCACTCCTATTGCCCAACGACATGCGAAATCAGACAGTGTTCCATCACGO CGCCGTATTGACTAAAATGTTTTATTAACGTCCCATGTGTCGGACCCATCCGCGCTGAA CATGGGGTCGGTAAAAGCTTATGCCGGCTTTGTACCCACTACACTATACCCAGACCAT ACAGATTGCCCCAGGTCACACTCCATAGGGTCGCGGGCCGTGCCAATCTTGCGAATTTC [CATTTCAGGCATAATTAACGTCCCATGTGTCGGACCCATCCGCGCTGAAACATGGGG] CGGTAAAAGCTTATGCCGGCTTTGTACCCACTACACTATACCCAGACCACCCAGTCCG CGAAGGCGGCAGCGACATGGCGACTAAGTCCGCTGCCACCTTCGTATTCCGAGTTGCC GTGGGCCGTGGGAACGATTCCTAGAAGGACCTGCACTACTATATACGCCGGCAAGTCT/ **AAAAGCGAAGTTGGCATACACAACGGAGAGTCTCCGATCCGCCCCACAATAACCGTCC** ACTTTCCAGGTCTCAAGCACCTAAATTTGGTGAACTGGCGGACGTGGAACACGTTTCTT/ CTGTGTACGTTGCTAGGACCCTGGGAGACTCCTTTTGCGACATGAGGTACTCAAGAGAG GTTGAACTAACCTTCCGCAGAACCTTCACGTACCTGCGCGGATCCACTATTAACGTCC ATGTGTCGGACCCATCACGCCTTGCCTCACACTCAGTCAATTCGACACACATAGTCAAC ACAGCGTAAGAGTCGCGCTGAAACATGGGGTCGGTAAAAGCTTATGCCGGCTTTGTACC CACTACACTATACCCAGACCACCTACAAGTGTATTACGTCTGTGGTCTGTGAATTAT TAA FGGG August 2024ATGGTGATAA CInterpreting for Cancer Genetics CAGAGCAACCGAGCTTTCT30/ ATTTCTCATTTCAGGCATACCCAGTCCGTCGAAGGCGGCAGCGACATGGCGACTAAGTC CGCTGCCACCTTCGTATTCCGAGTTGCCTGTGGGCCGTGGGAACGATTCCTAGAAGGAC CTGCACTACTATATACGCCGGCAAGTCTAAAAAGCGAAGTTGGCATACACAACGGAG/ GTCTCCGATCCGCCCCACAATAACCGTCGACTTTCCAGGTCTCAAGCACCTAAATTTGG GAACTGGCGGACGTGGAACACGTTTCTTACTGTGTACGTTGCTAGGACCCTGGGAGAC1 CCTTTTGCGACATGAGGTACTCAAGAGAGGTTGAACTAACCTTCCGCAGAACCTTCACC FACCTGCGCGGATCCACTATTAACGTCCCATGTGTCGGACCCATCACGCCTTGCCTCAC ACTCAGTCAATTCGACACACATAGTCAAGACAGCGTAAGAGTCGCGCTGAAACATGGC GTCGGTAAAAGCTTATGCCGGCTTTGTACCCACTACACTATACCCAGACCACCTACAAG **FGTATTACGTCTGTGGTCTGTGAATTATTAATGGGCTATAAGATGGTGATAACAACGTT** CCCC**GTCAGCAGAGCAACCGAGCTTTC**TCAAGCA**ACGGGTACGCGACTCCCGA**GCGA/ CCACGGAGGCTGATCGTCACGGCCGAAAGACTCTGTTGCCTAATGCCTTCATTGTAGTA CCACTCCGGCTAGTTGCCGCGCGCACGTTTTCAAGCCACCCGGTCTGACGGCTCGGCCC/ GTGATAGTACCCGGGTAGAGGACTTAAGCGTCAAGAAGCACGCGTCCACTCTGCGTG/ GATCCTTTTCGTTCCCTTCCTACCTCTGAAAACGAATCACCAGCCTCAATAGTTGCAG GGTGGGCCGGTGGAGGCCCGTGGATTGGTCATTTTTAATGCCGTATGAGAAATCGTCA/ CATCGGAGTCCCCGCAGTGGAATCATGTAGGACCACGCCAGCTCCCTGCGAGGCTCC/ ACTTTTTTGTTCACTCCTATTGCCCAACGACATGCGAAATCAGACAGTGTTCCATCACGO CGCCGTATTGACTAAAATGTTTTATTAACGTCCCATGTGTCGGACCCATCCGCGCTGAA/ CATGGGGTCGGTAAAAGCTTATGCCGGCTTTGTACCCACTACACTATACCCAGACCATA ACAGATTGCCCCAGGTCACACTCCATAGGGTCGCGGGCCGTGCCAATCTTGCGAATTTC [CATTTCAGGCATAATTAACGTCCCATGTGTCGGACCCATCCGCGCTGAAACATGGGG] CGGTAAAAGCTTATGCCGGCTTTGTACCCACTACACTATACCCAGACCACCCAGTCCG CGAAGGCGGCAGCGACATGGCGACTAAGTCCGCTGCCACCTTCGTATTCCGAGTTGCC1 GTGGGCCGTGGGAACGATTCCTAGAAGGACCTGCACTACTATATACGCCGGCAAGTCTA **AAAAGCGAAGTTGGCATACACAACGGAGAGTCTCCGATCCGCCCCACAATAACCGTCC** ACTTTCCAGGTCTCAAGCACCTAAATTTGGTGAACTGGCGGACGTGGAACACGTTTCTT/ CTGTGTACGTTGCTAGGACCCTGGGAGACTCCTTTTGCGACATGAGGTACTCAAGAGAG GTTGAACTAACCTTCCGCAGAACCTTCACGTACCTGCGCGGATCCACTATTAACGTCC ATGTGTCGGACCCATCACGCCTTGCCTCACACTCAGTCAATTCGACACACATAGTCAAC ACAGCGTAAGAGTCGCGCTGAAACATGGGGTCGGTAAAAGCTTATGCCGGCTTTGTACC CACTACACTATACCCAGACCACCTACAAGTGTATTACGTCTGTGGTCTGTGAATTAT ΤΑΛ FGGG August 2024ATGGTGATAA CInterpreting for Cancer Genetics CAGAGCAACCGAGCTTTCT31/



## Quiz!

- What is the function of DNA in our bodies?
- What is a chromosome?
- What is a gene?

What is genetics?

What is DNA?

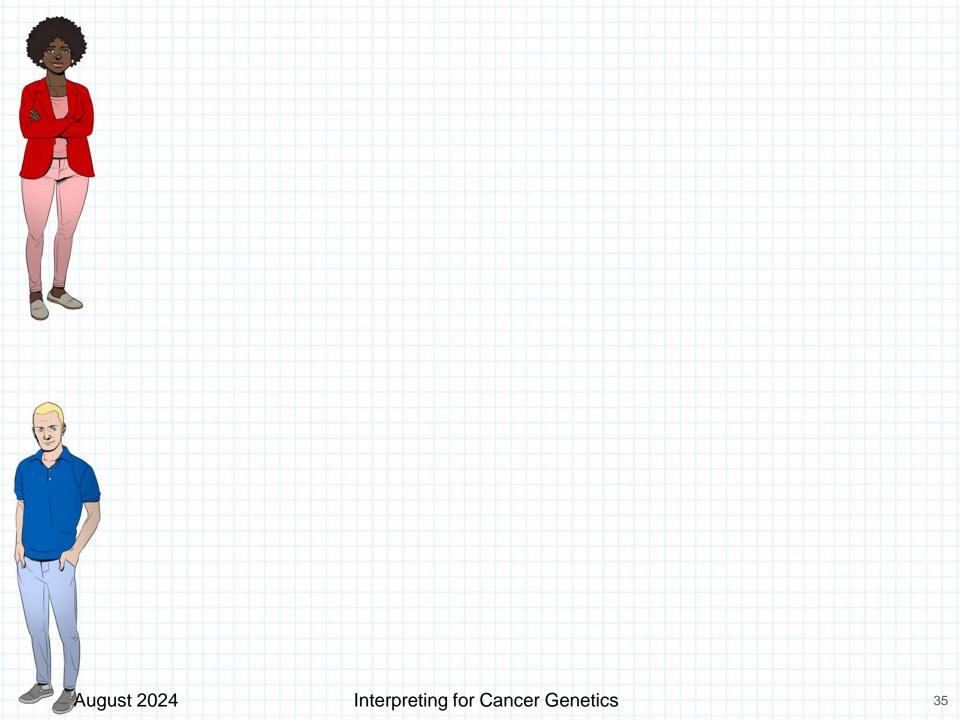
How do we pass on DNA?

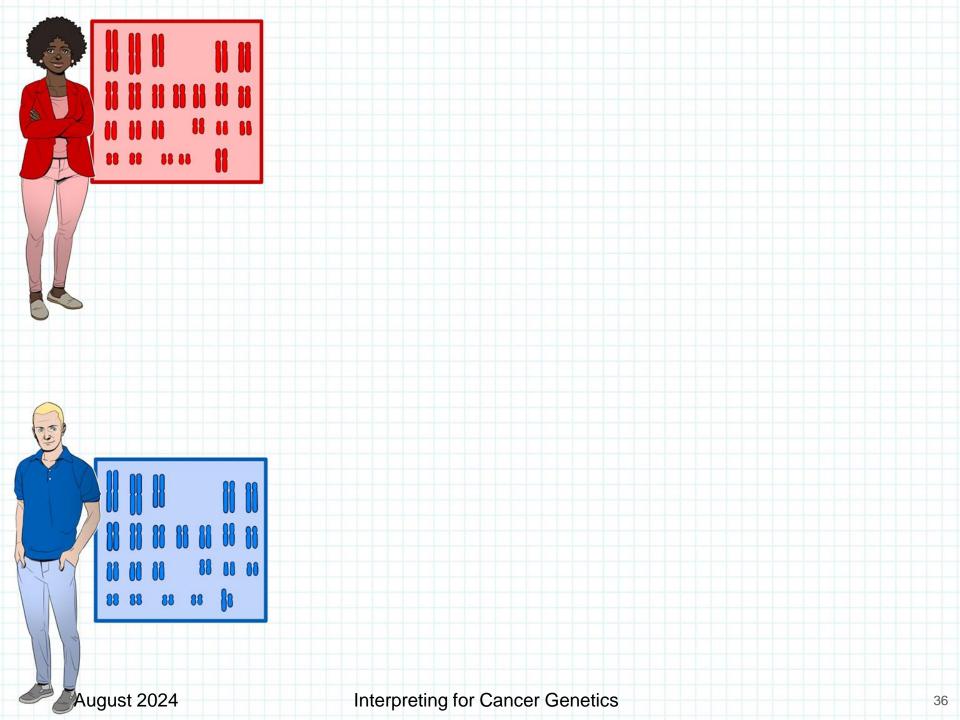
August 2024

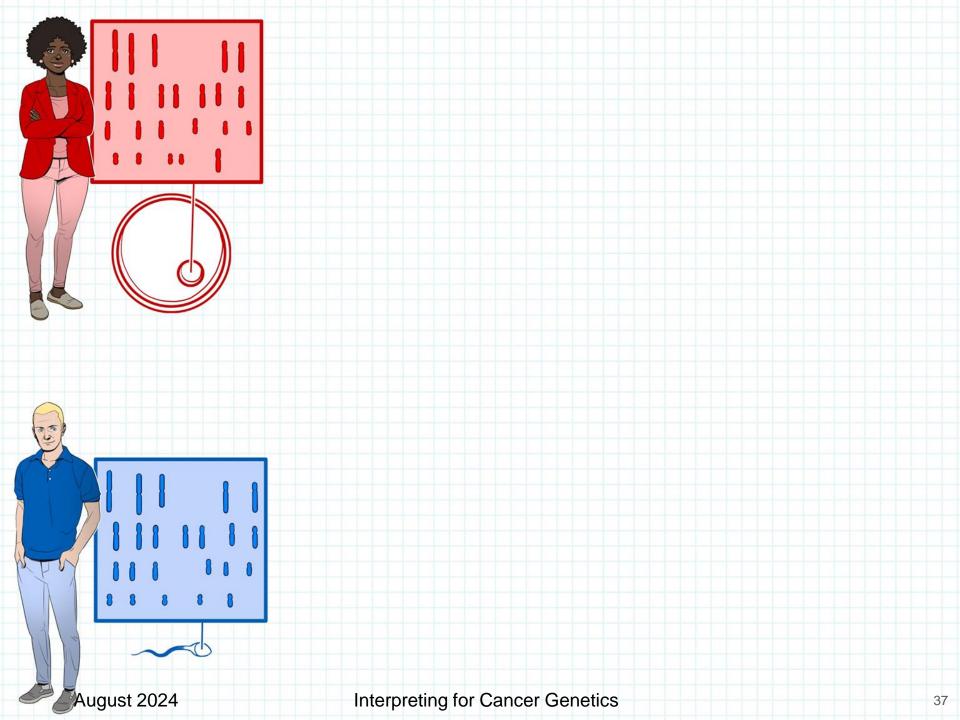
Interpreting for Cancer Genetics

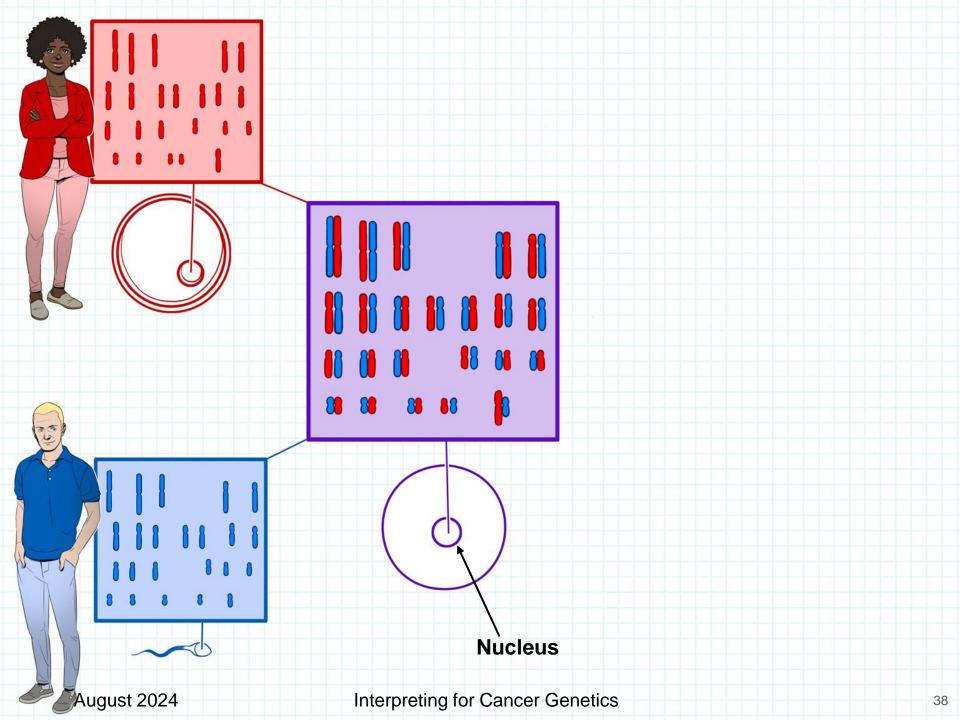
0

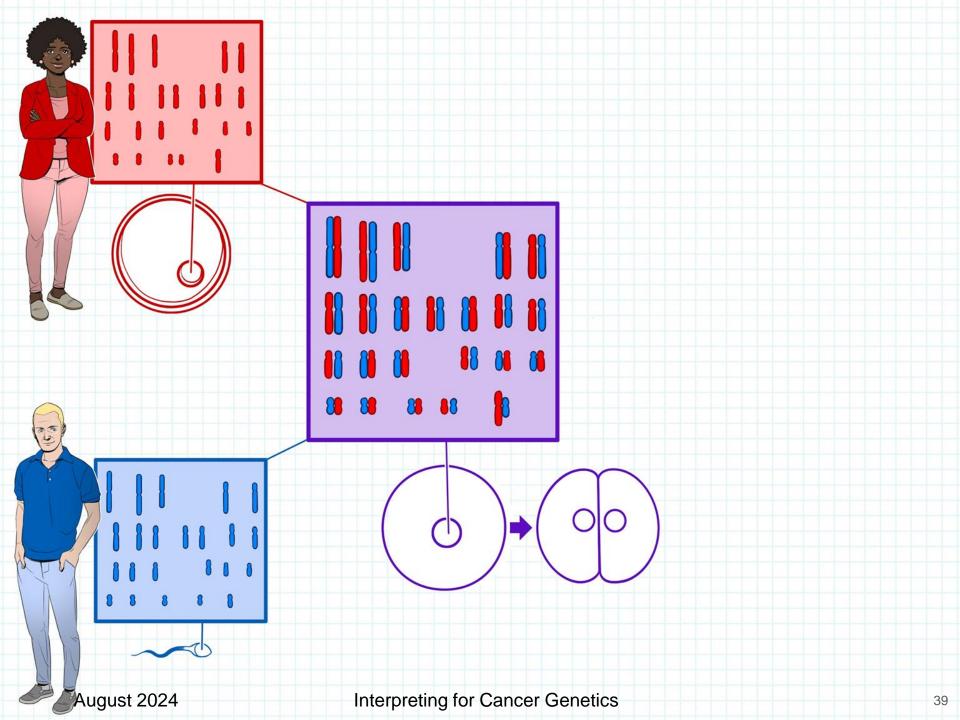
0

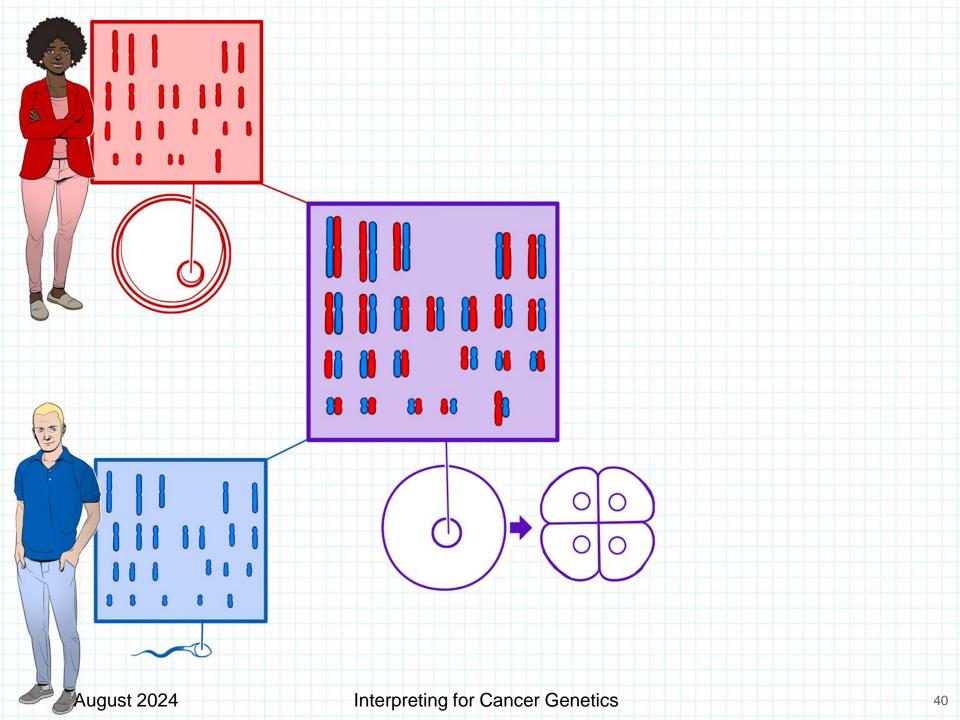


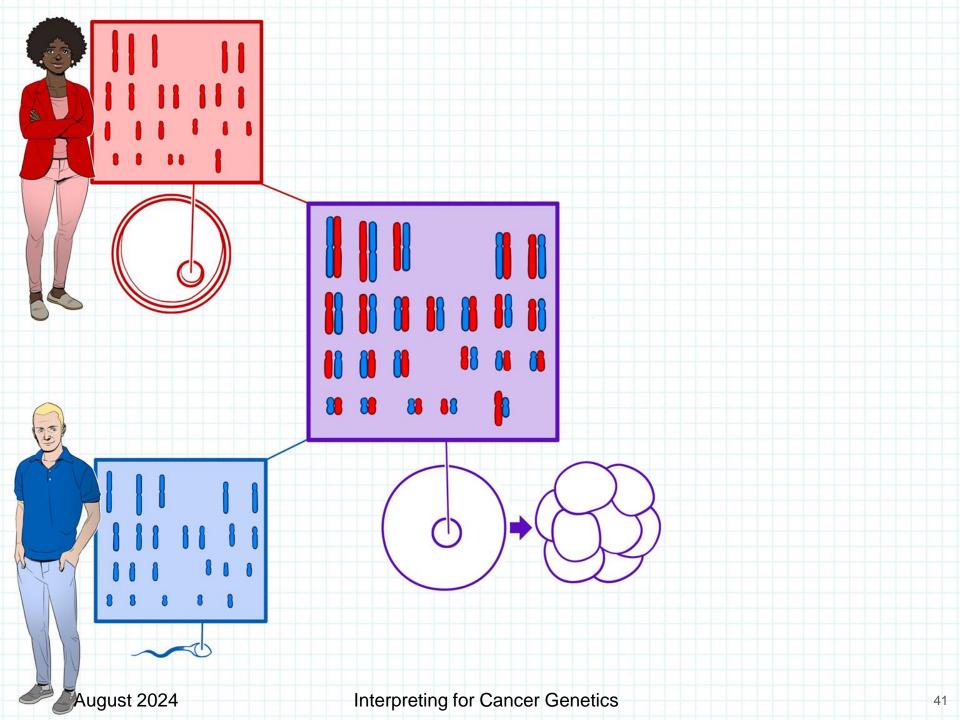


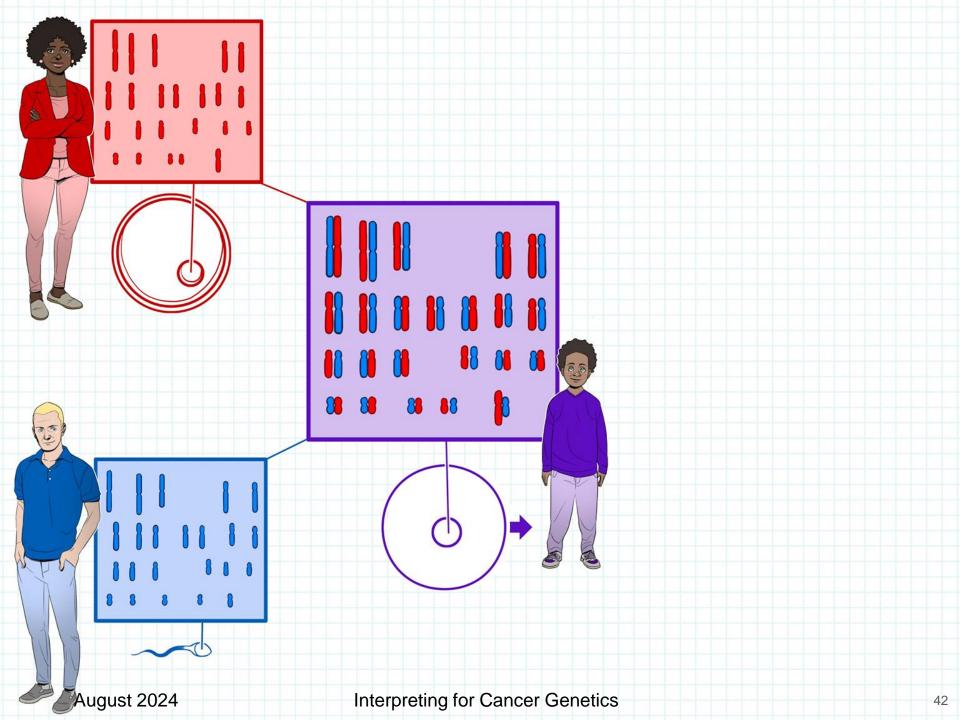


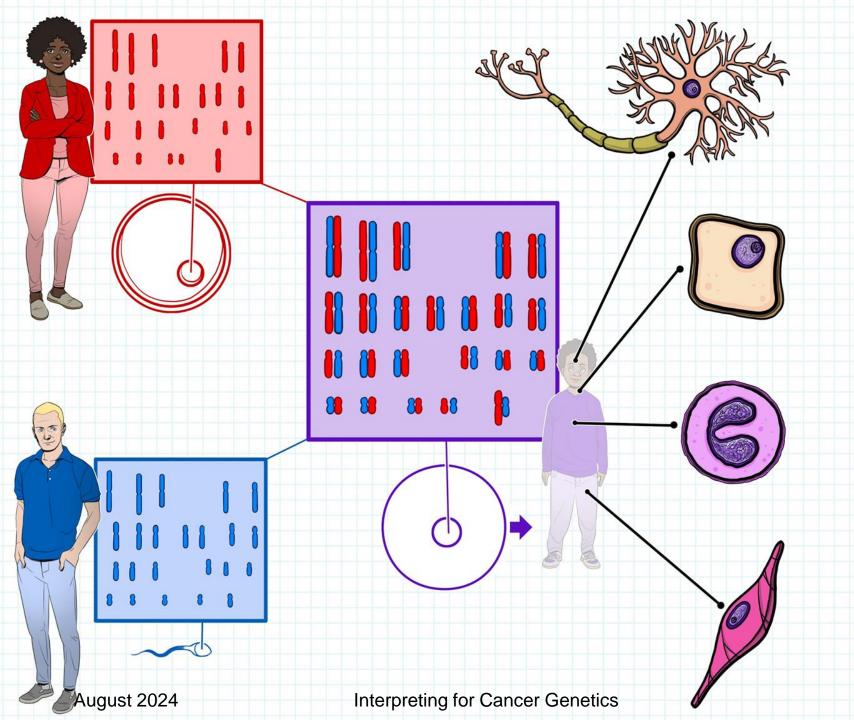


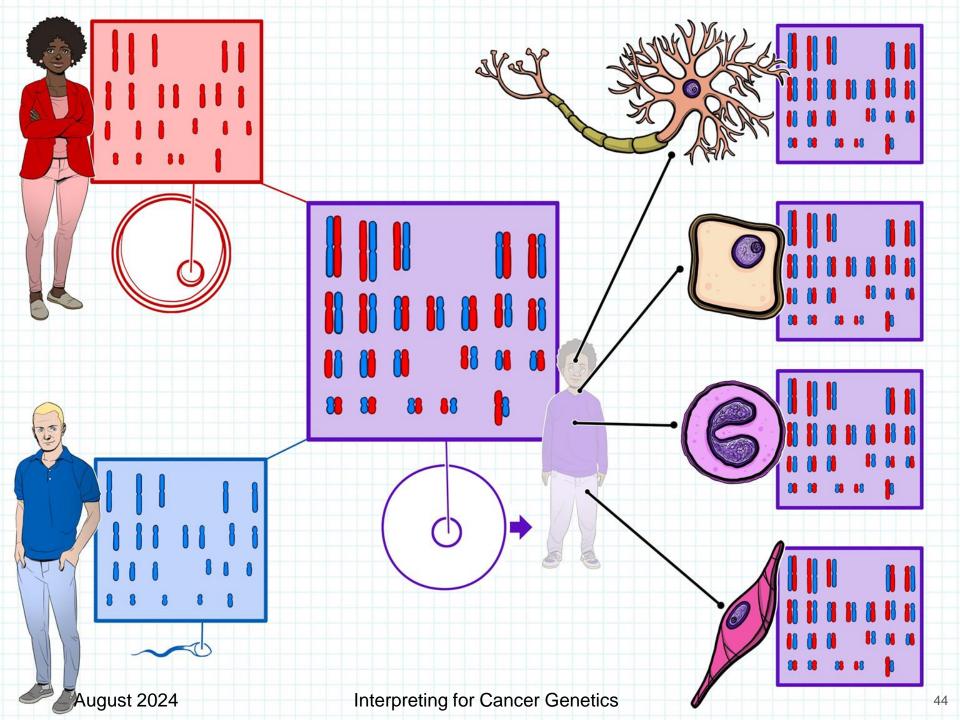








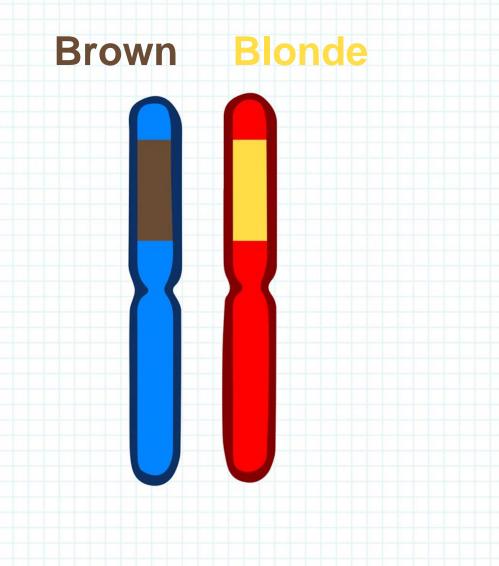


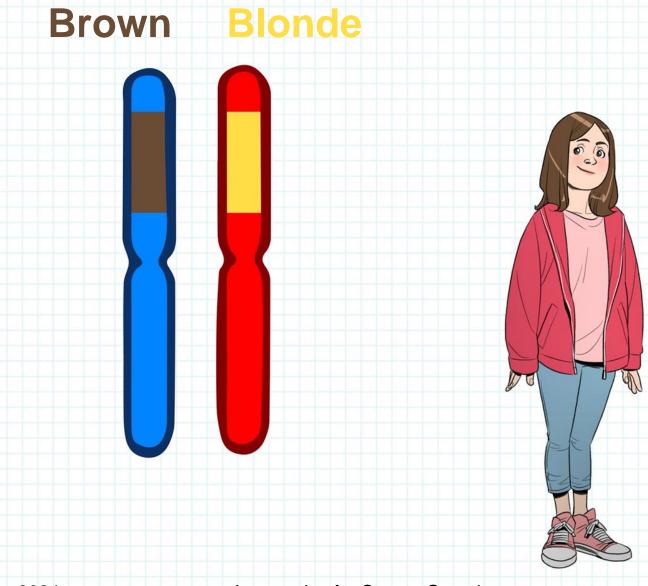


# DOMINANT

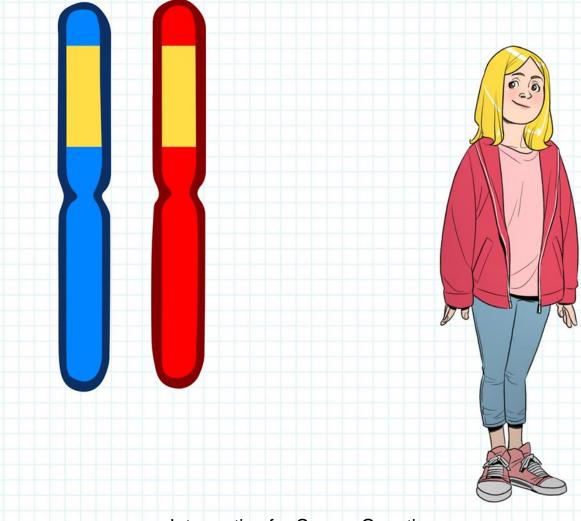
recessive

August 2024





## Blonde Blonde



## Quiz!

- How many chromosomes does a person typically have?
- How many chromosomes does an egg or sperm have?
- What does "replicate" mean?
- What does it mean if a gene is "dominant" or "recessive?"

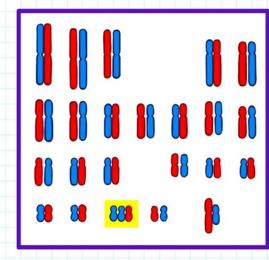
What is genetics?

What is DNA?

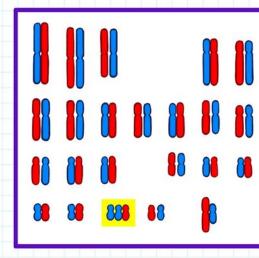
How do we pass on DNA?

How can DNA change unexpectedly?

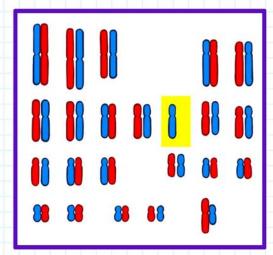
August 2024



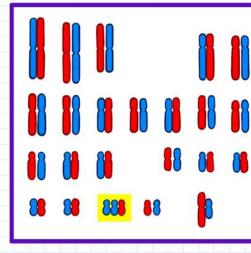
Extra chromosome



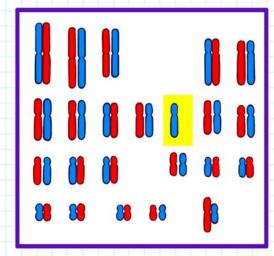
Extra chromosome



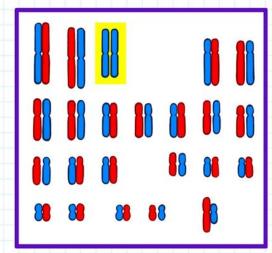
### **Missing chromosome**



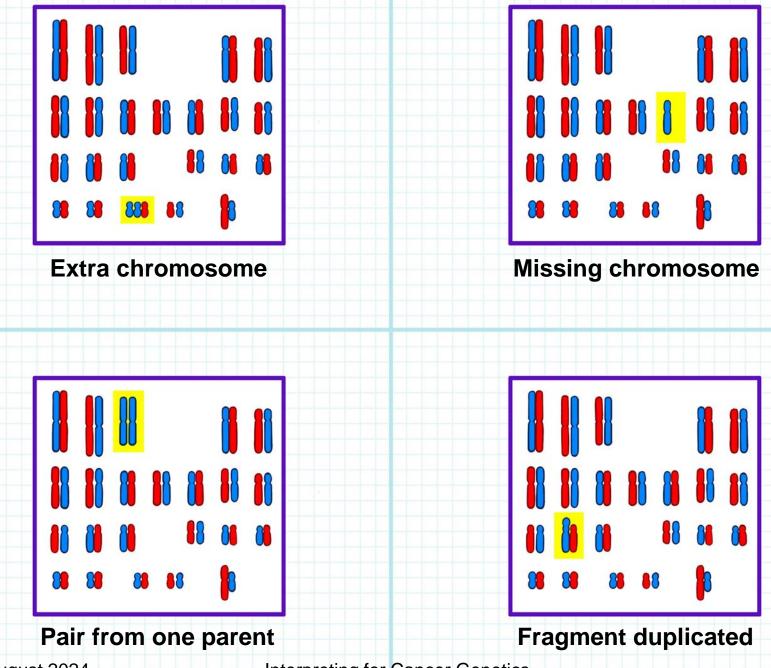
Extra chromosome



#### **Missing chromosome**



Pair from one parent



August 2024



# In genetics, a change at the gene-level is called a <u>variant</u>.

August 2024

Interpreting for Cancer Genetics

August 2024

Interpreting for Cancer Genetics

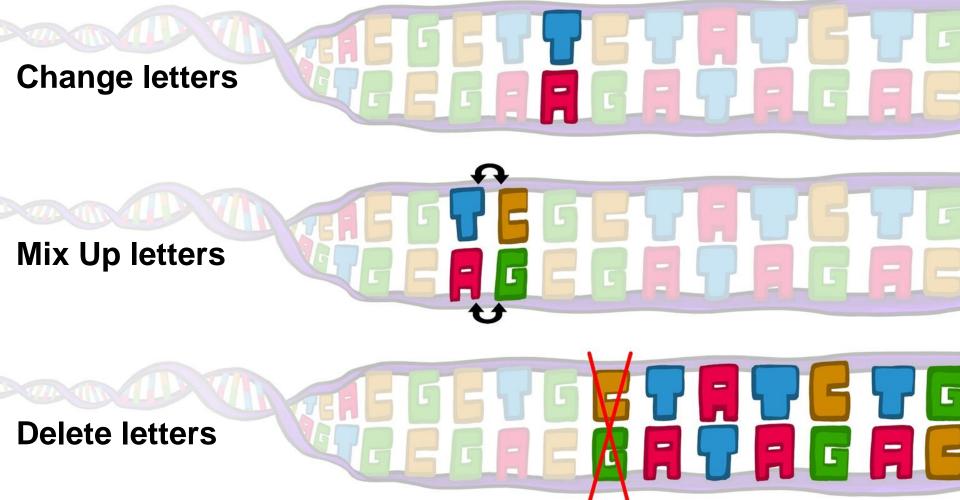
-



-

**Mix Up letters** 

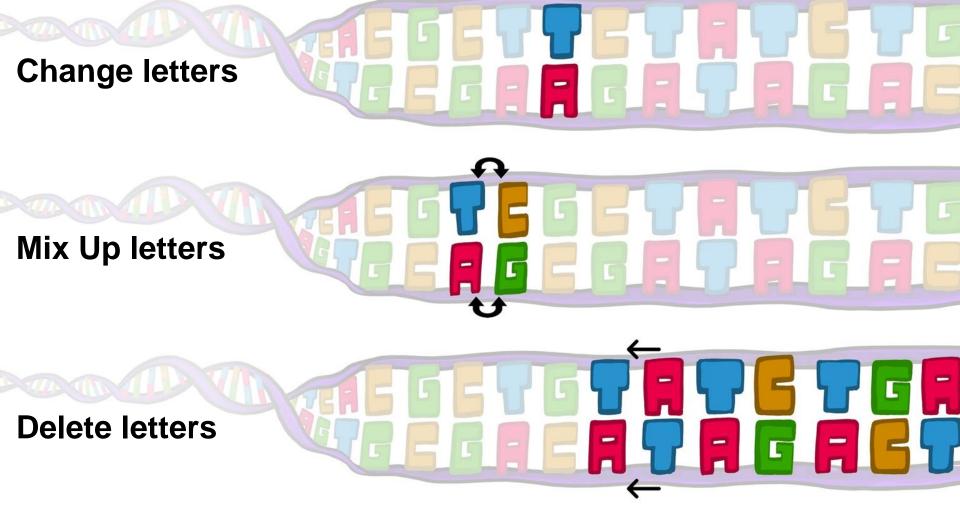
















**Delete letters** 

## Add letters

August 2024

Interpreting for Cancer Genetics

G

-

F

-

-

-

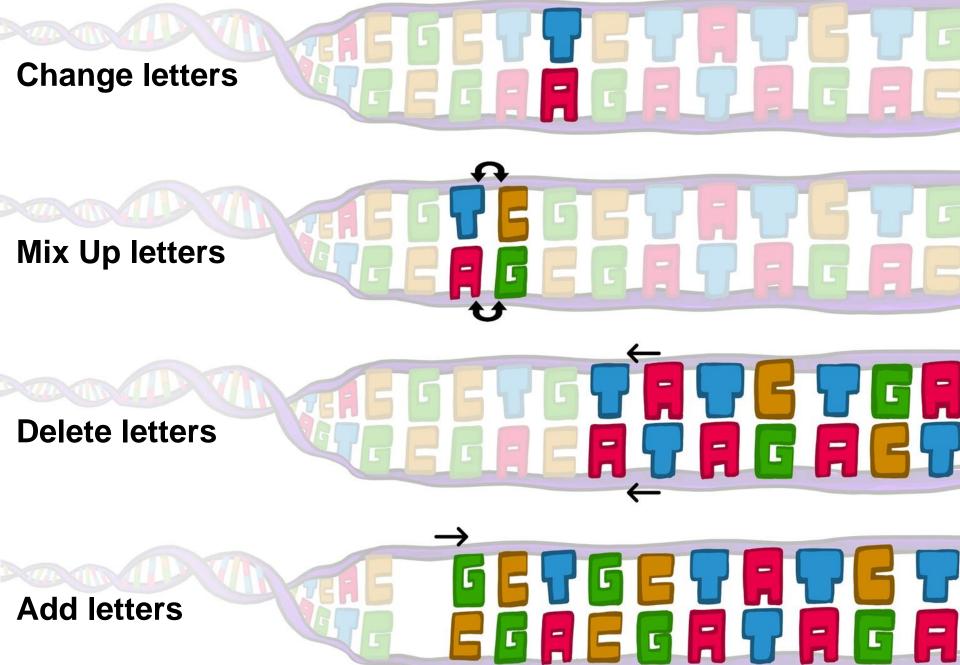
-

-

C

 $\leftarrow$ 

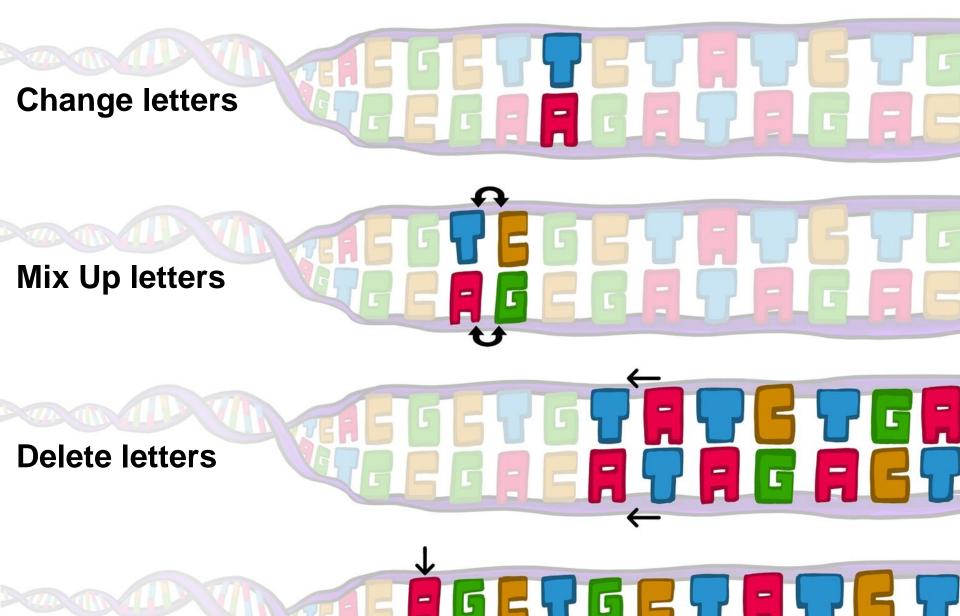
-



August 2024

Interpreting for Cancer Genetics

64



**Add letters** 

August 2024

Interpreting for Cancer Genetics

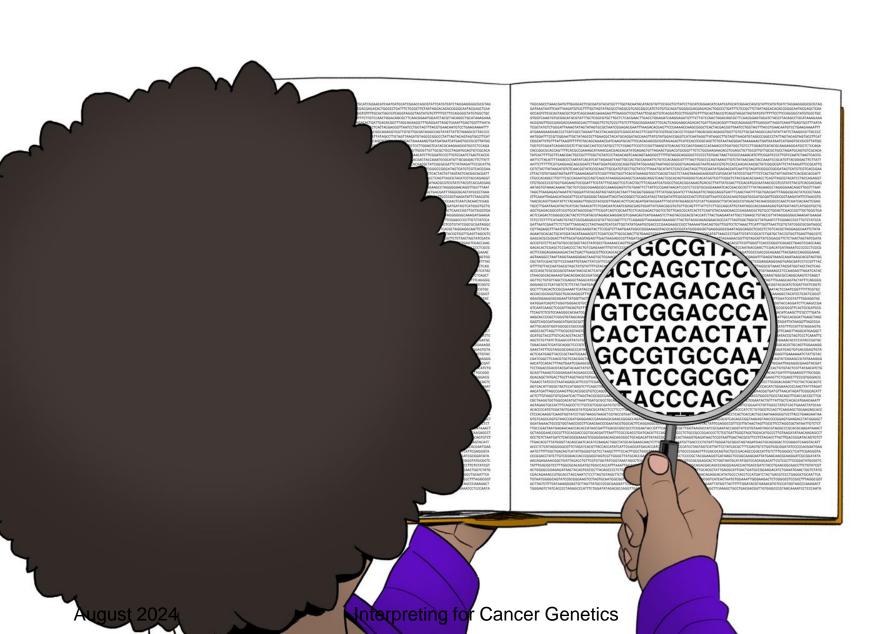
B

C

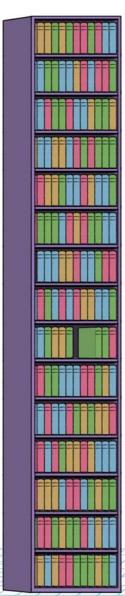
-

65

-

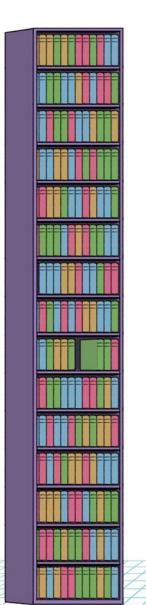


#### **"Benign"** Variant but no harm



August 2024

#### **"Benign"** Variant but no harm



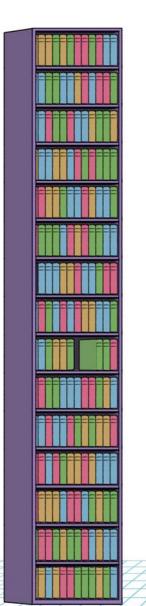
#### "Deleterious" or "Pathogenic"

Variant may cause harm or increase risk



August 2024

#### **"Benign"** Variant but no harm



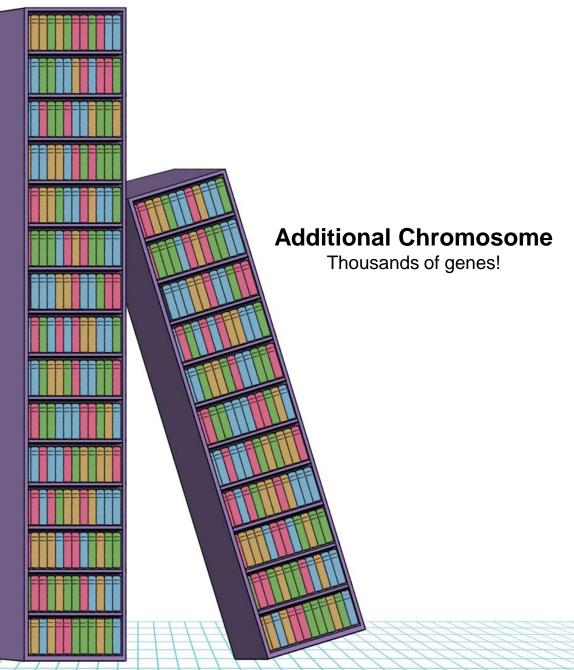
#### "Deleterious" or "Pathogenic"

Variant may cause harm or increase risk



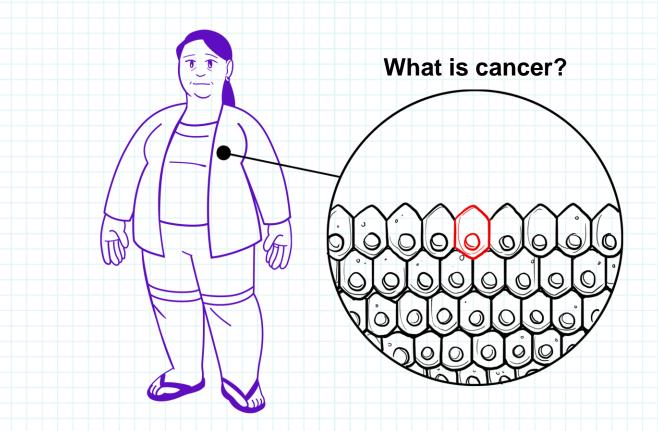
TO

August 2024

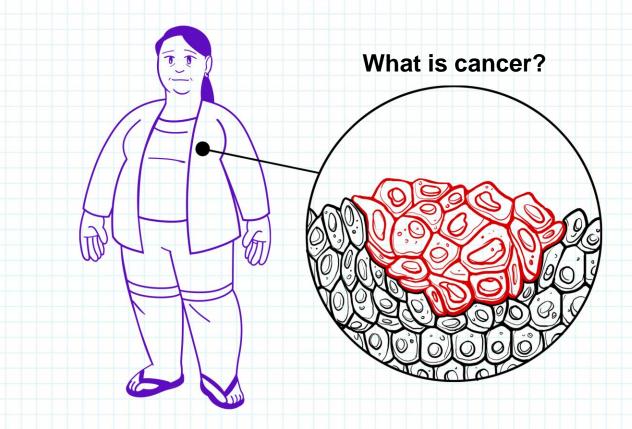


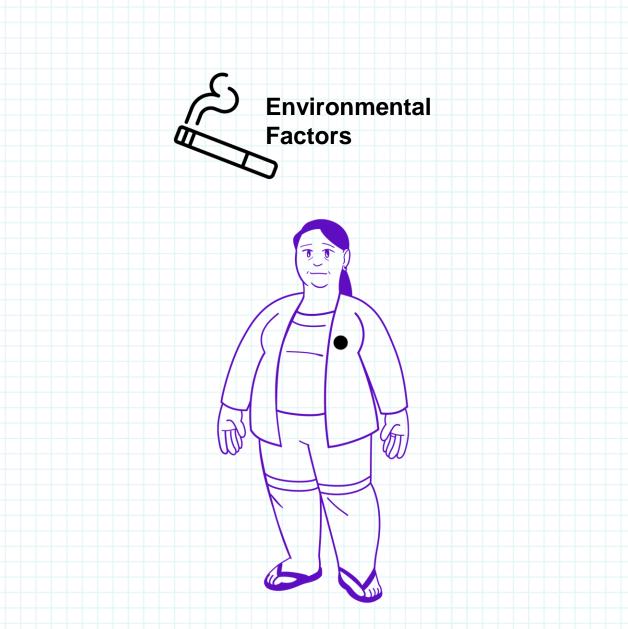
## Quiz!

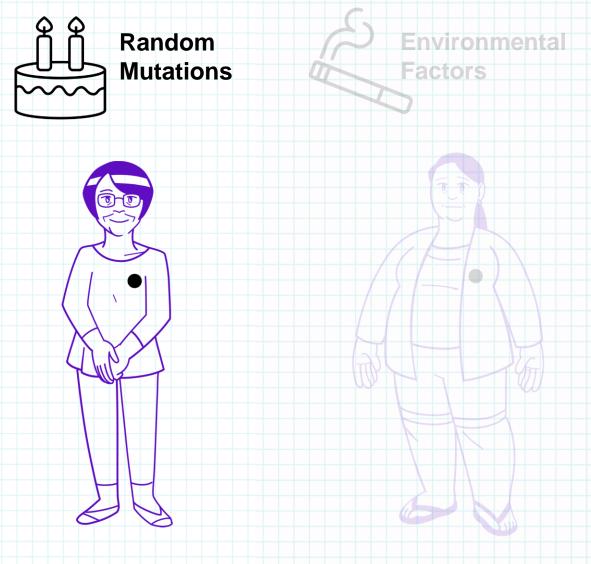
- What is a genetic change at the chromosomal level called?
- What is a genetic change at the gene level called?
- What does it mean if a change is "benign"?
- What does it mean if a change is "deleterious?
- What is a mutation?



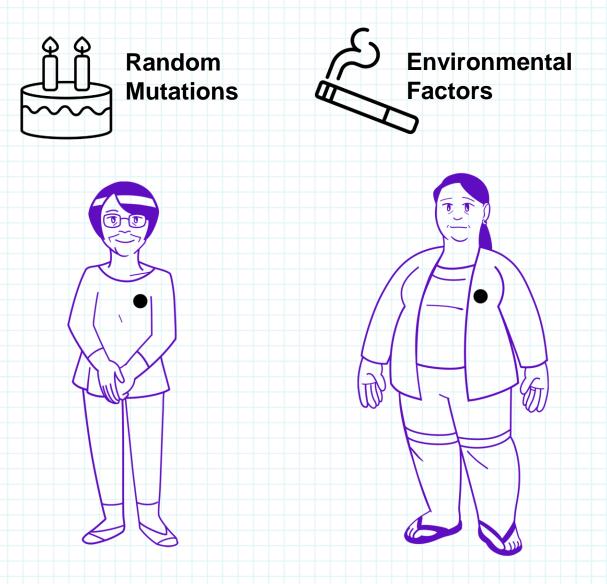
August 2024



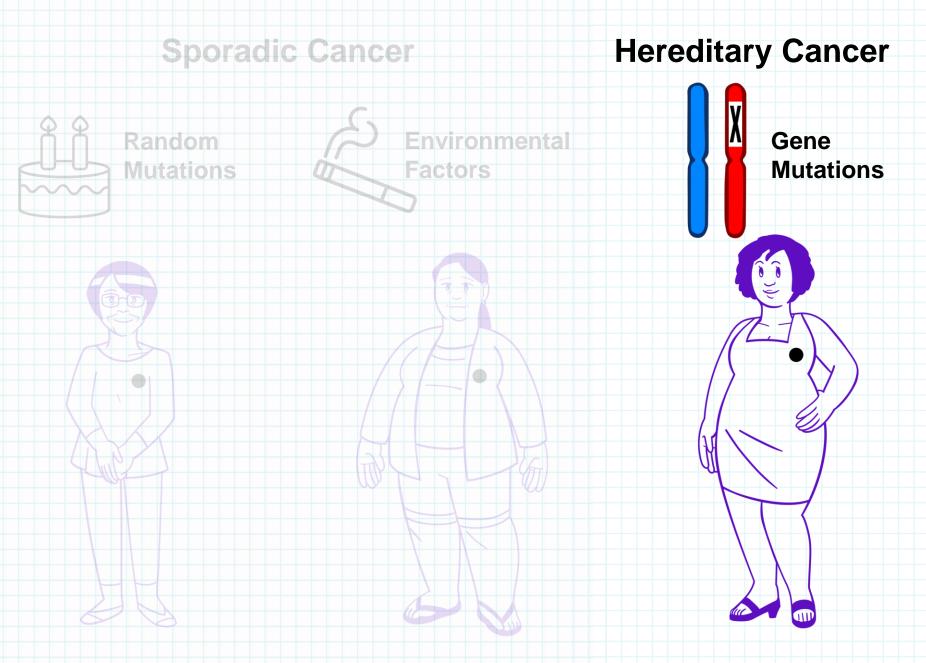


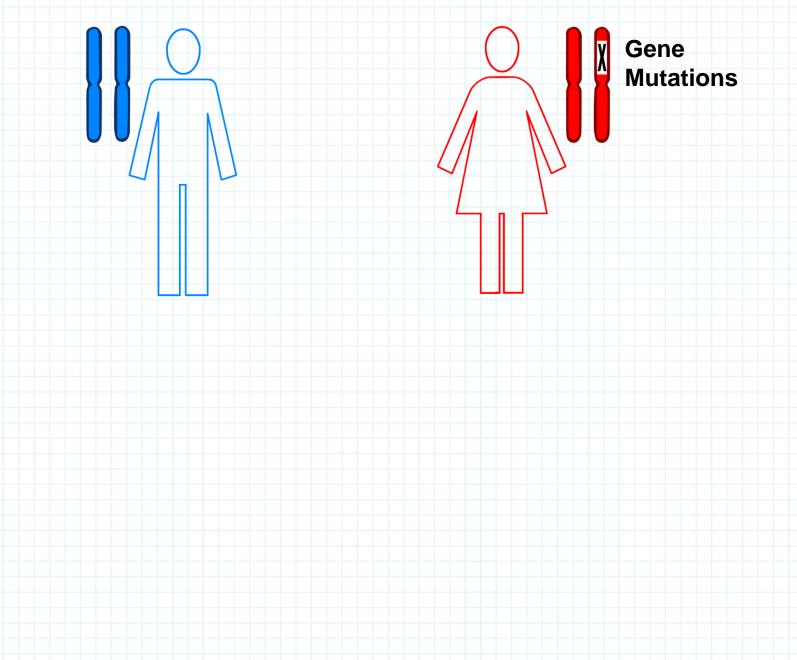


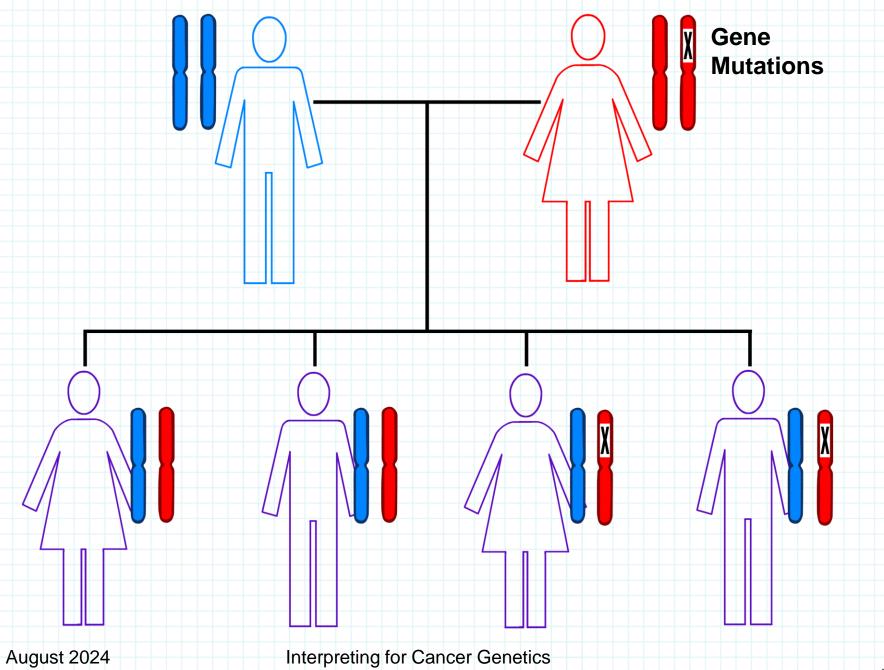
### **Sporadic Cancer**



August 2024







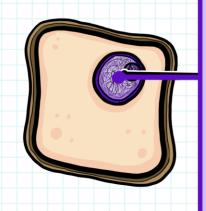
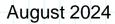


Image: Second second

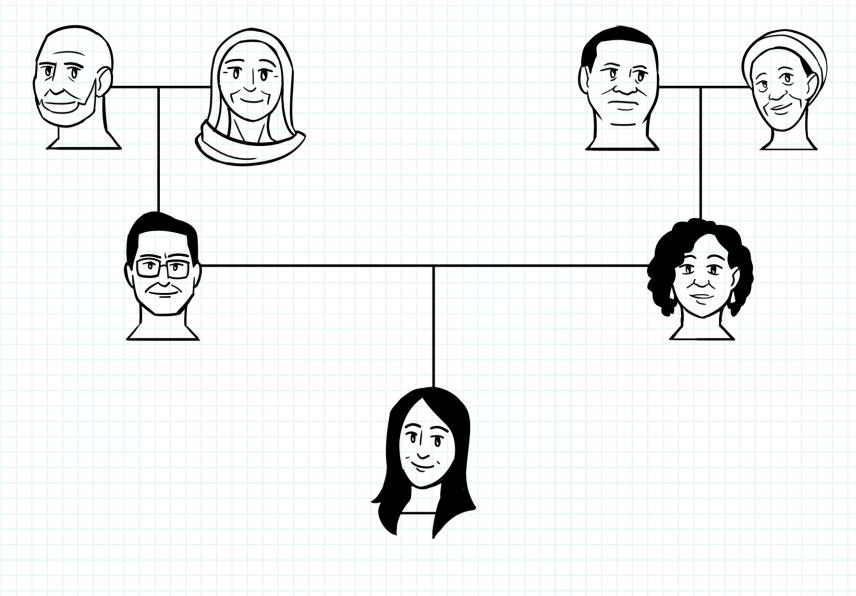
**Gene Mutation** 

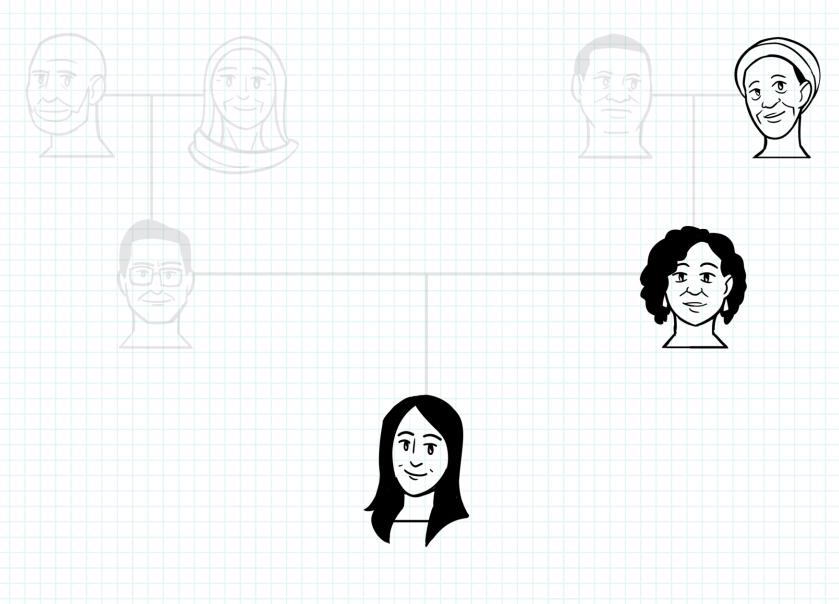


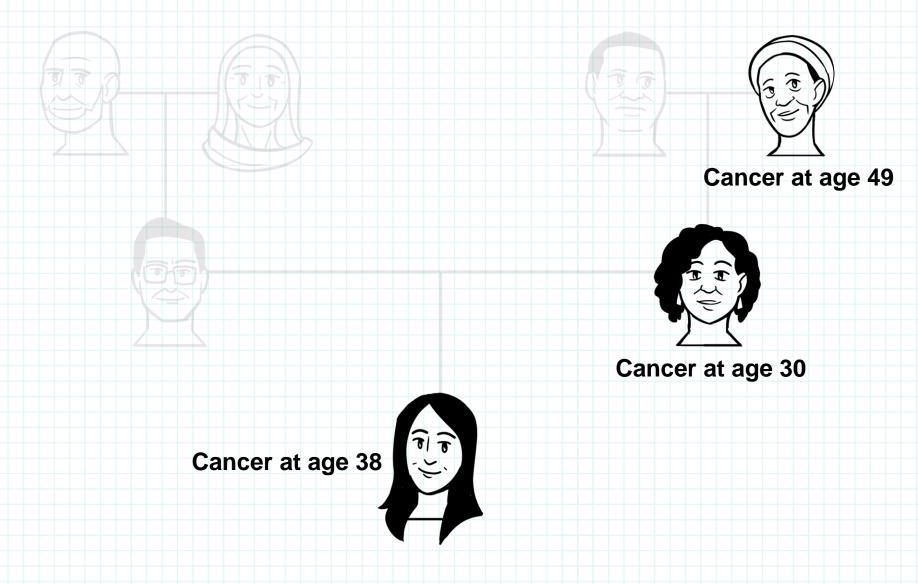


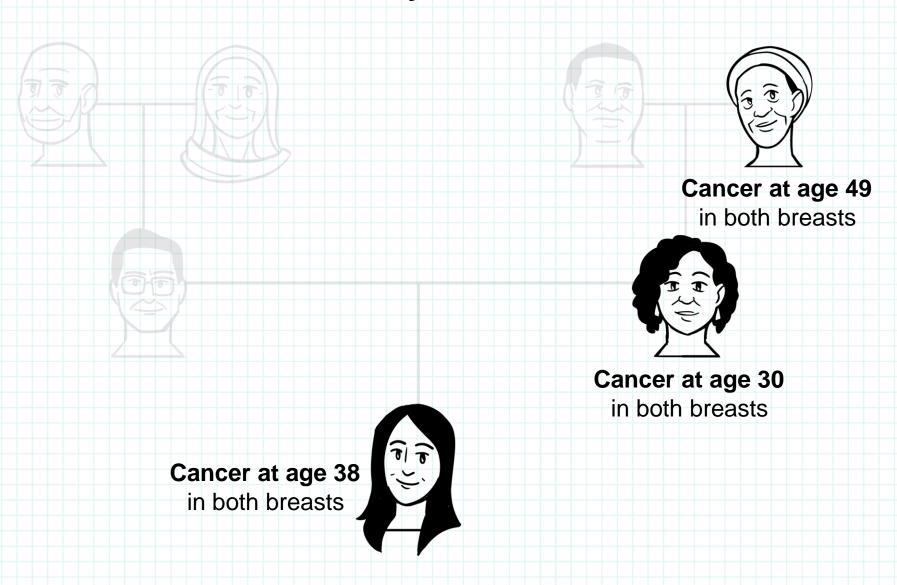
Interpreting for Cancer Genetics

8





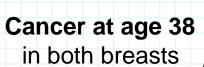




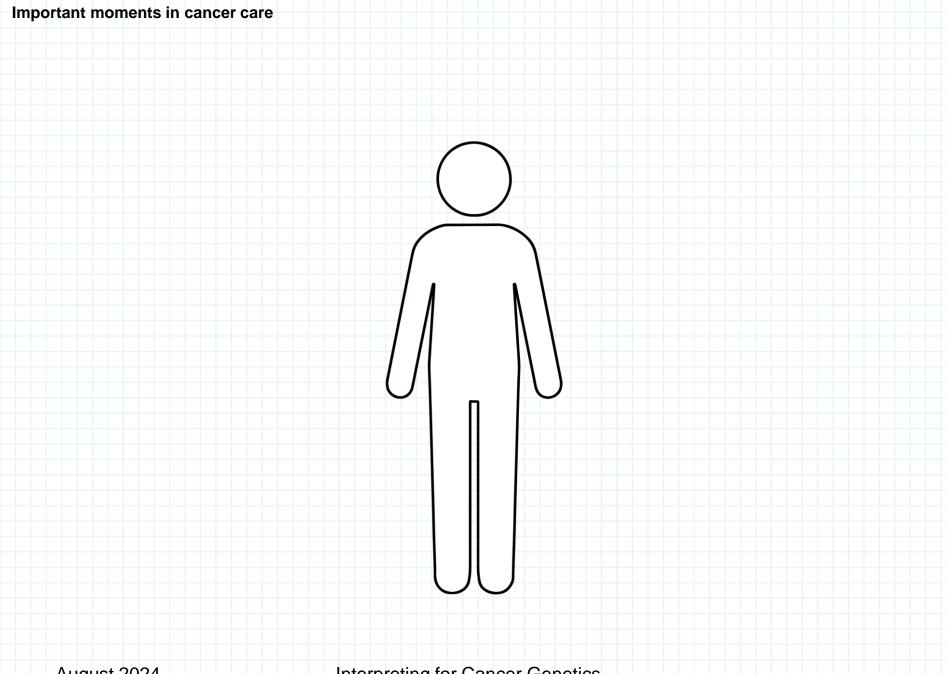


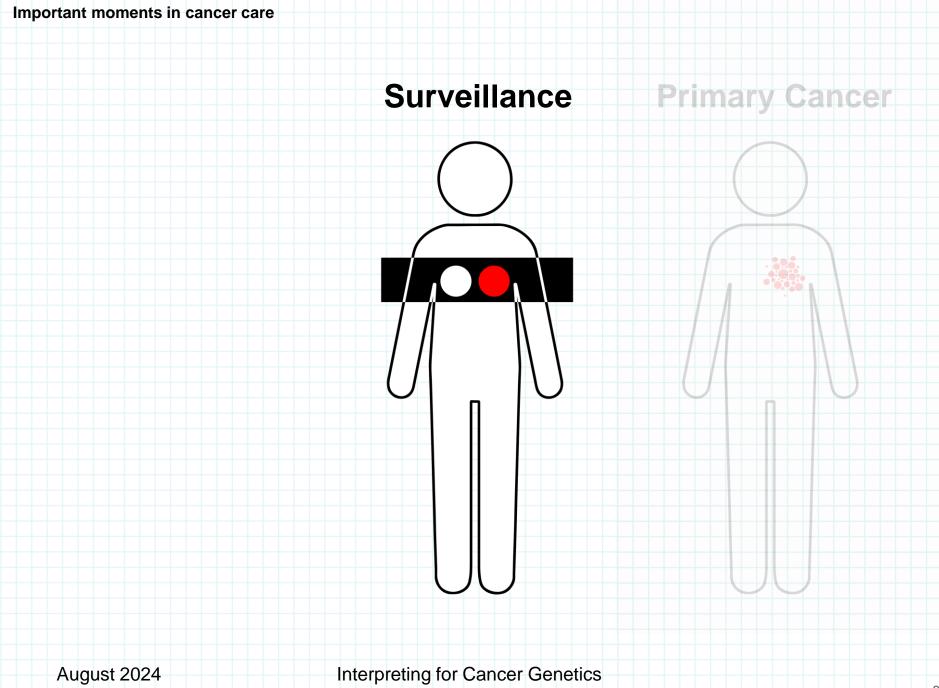
Cancer at age 85 in the lungs

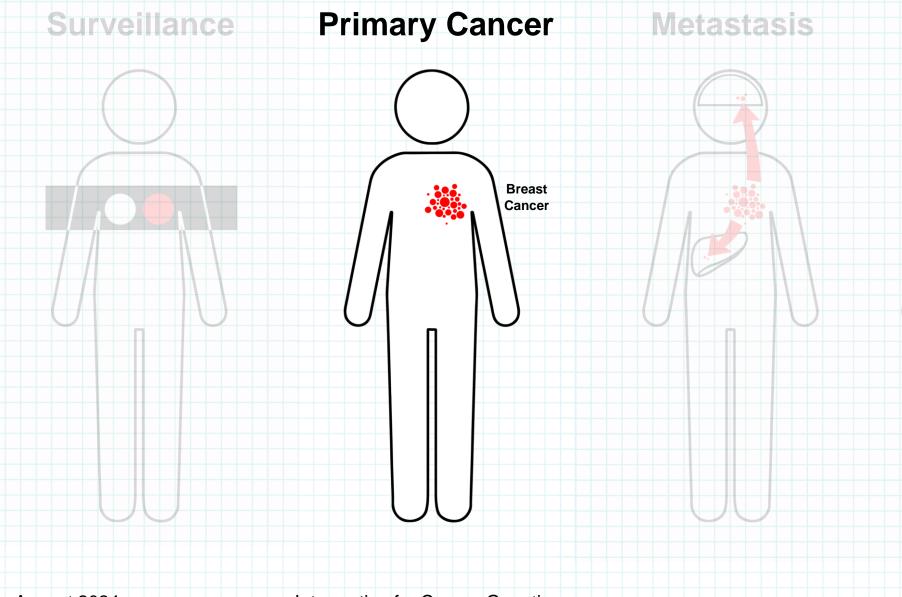


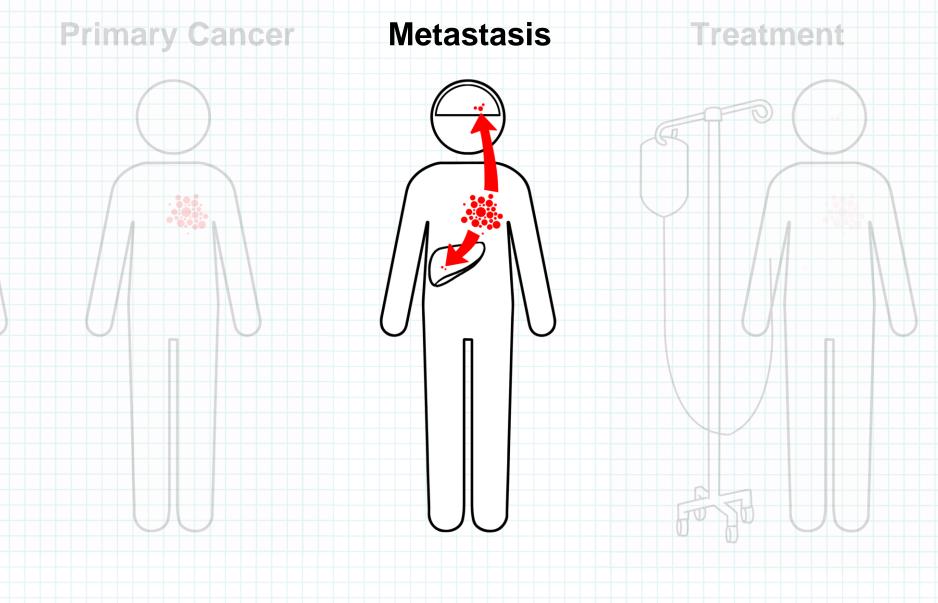


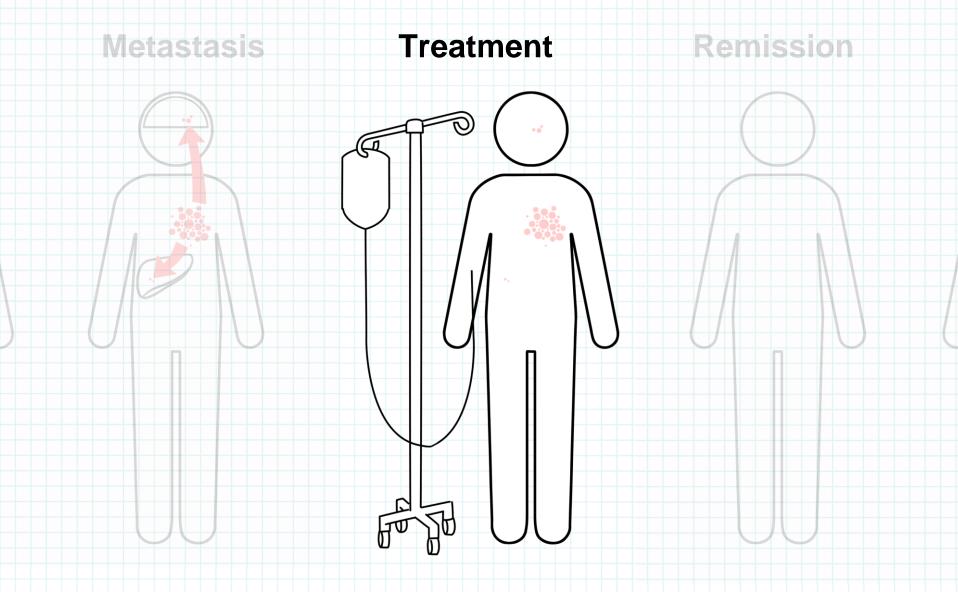


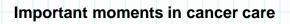


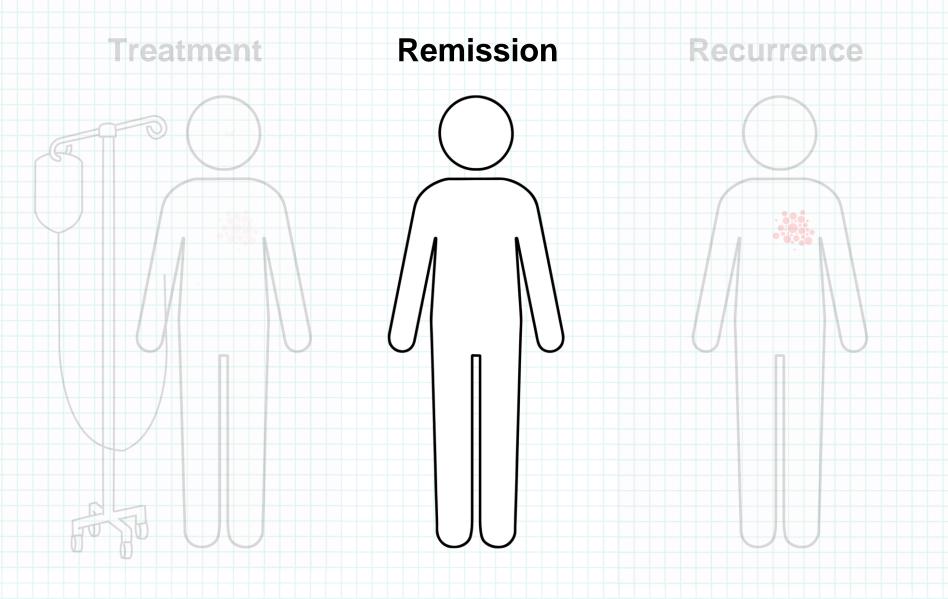


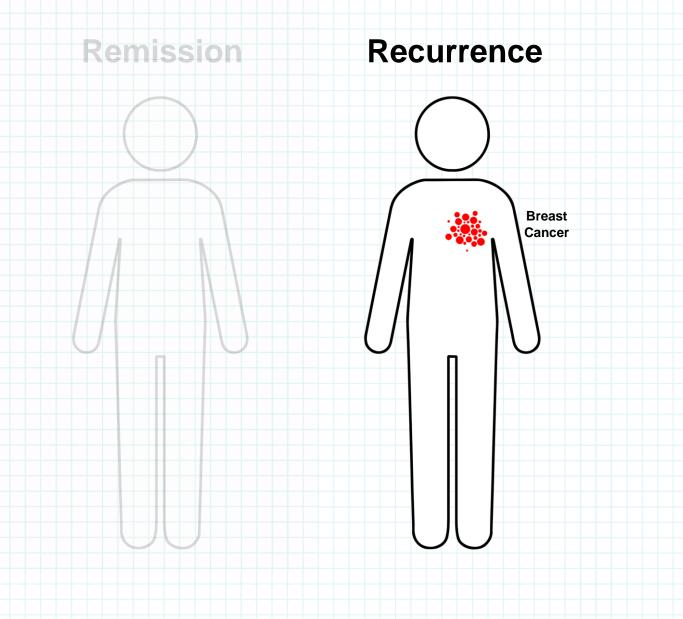


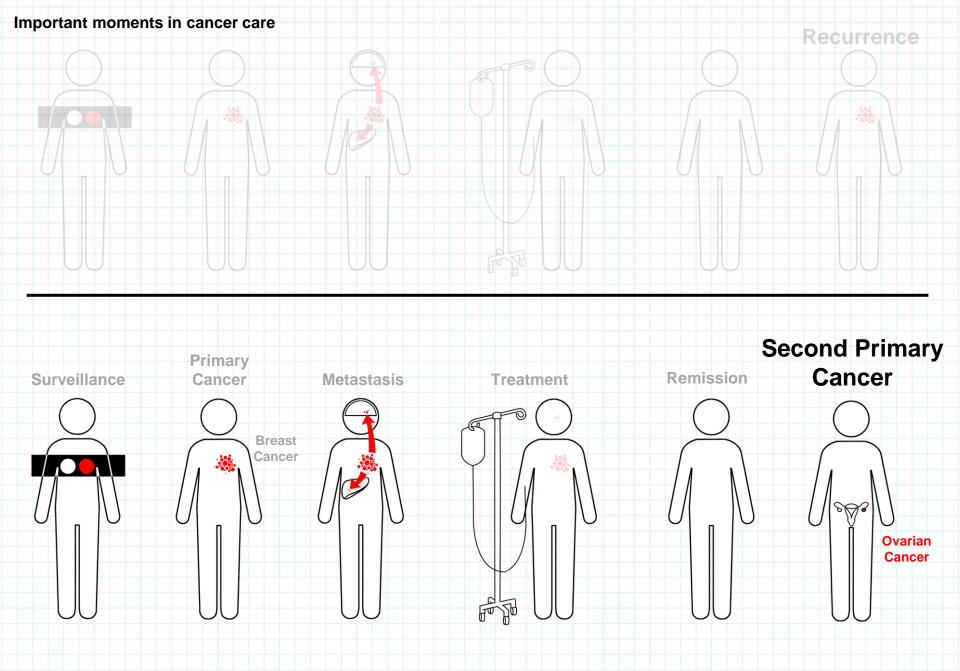












# Quiz!

- What is cancer?
- What is the difference between sporadic cancer and hereditary cancer?
- Which is more common?
- What are three red flags that suggest a person might have the gene for hereditary cancer?