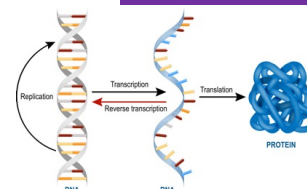
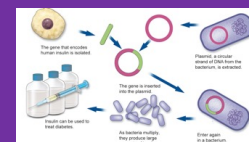
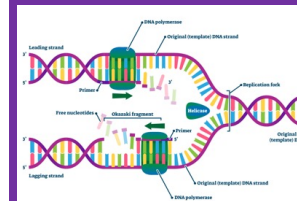
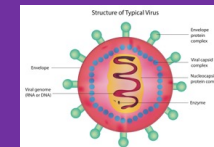
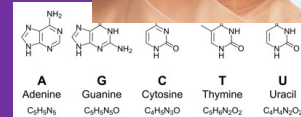
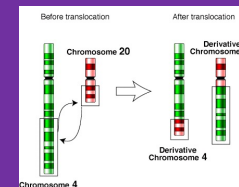
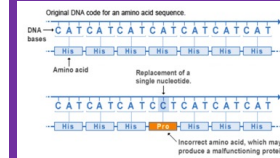
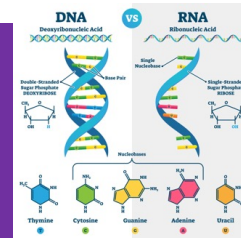


Molecular Genetics - Unit

- 4-5 weeks of teaching material
- 9 Lessons in Office and Google Format
- 8 Activities
- 1 Unit Test & 1 Quiz

1. Genetic Material - DNA and RNA
2. DNA Replication and Repair
3. DNA Organization and Aging
4. Transcription
5. Translation
6. Mutations
7. Genetic Engineering and Gene Therapy
8. Genetic Disorders, Screening, and Therapy
9. PCR and Gel Electrophoresis

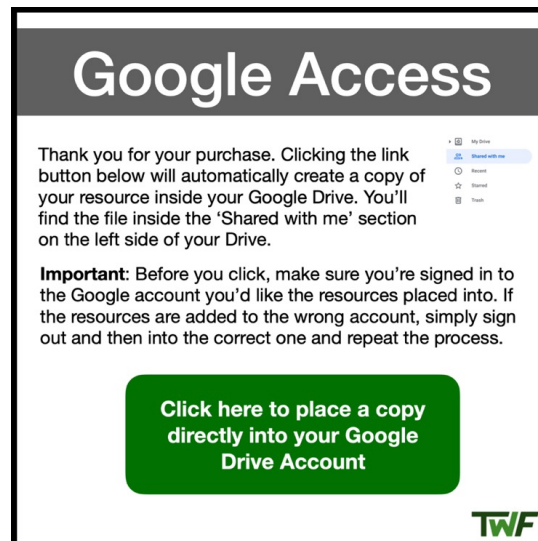
Crime Scene DNA Sample		
	DNA Segment 1	DNA Segment 2
100	—	
75	—	
50		—
25		—
0		



TWIF

Office and Google Versions

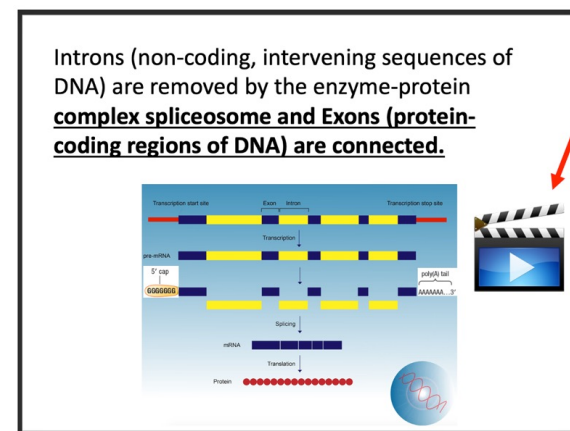
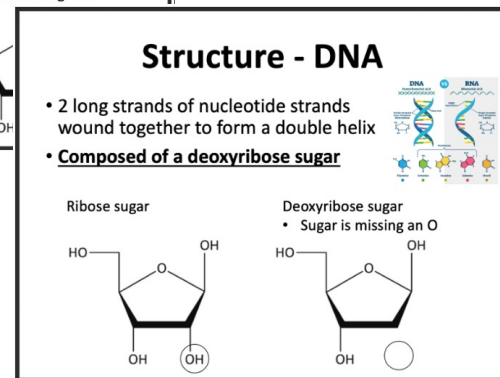
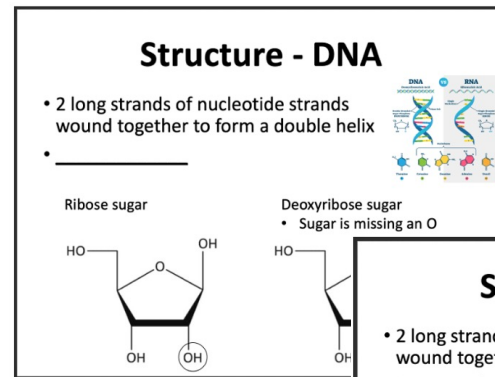
- The lessons inside this unit come in both PowerPoint and Google Slides format
- Each lesson also contains an Exit Ticket that you can use to check for student understanding
- Your resource is perfect for distance learning and integrates seamlessly with Google Classroom as I've included a link that will automatically create a copy of the resources and put them directly into your Google Drive with one click



Thank you for your interest

Inside the Unit

- 5 weeks of teaching material
- 9 lessons
- Office and Google versions of EACH lesson
- Teacher and student versions for each lesson
- Many videos and simulations embedded into the slides
- Student notes in Word and Google Doc



Thank you for your interest

Inside the Unit

- 1 Unit Test and 1 Quiz
- DNA Manipulation and GMOs - Lab Station Activity
- Mutations - Lab Station Activity
- Transcription and Translation - Lab Station Activity
- Genetic Material - Digital Scavenger Hunt
- Molecular Genetics - Speed Quizzing
- DNA Paternity Test - Reading
- Mutations - Digital Scavenger Hunt

The collage features six overlapping cards for a genetics unit:

- Transcription and Translation Lab Station Activity**: Includes a DNA double helix image and text stating "7 Lab Station Activities to get out of their seats and engage learning".
- Device-Based Scavenger Hunt Genetic Material**: Includes a QR code and lists features: "Includes 5 Unique Locations, Online form submission, Answer Key". It also states "Works on all smartphones, tablets, Chromebooks, and laptops".
- 100% Digital**: Lists "Simulations, Quizzes, Videos, Games, Word Scramble, and more" next to a colorful DNA model.
- DNA Paternity Test**: Features a scientific reading comprehension article and extension activities.
- Speed Quizzing**: Includes a quiz snippet about protein synthesis and genetic mutations, with a TWF logo. It describes it as "A fast-moving review activity where students quiz each other, swap cards, then move on to someone new."
- Device-Based Scavenger Hunt Mutations**: Includes a QR code and lists features: "Includes 5 Unique Locations, Online form submission, Answer Key". It also states "Works on all smartphones, tablets, Chromebooks, and laptops".

A yellow banner at the bottom of the collage reads **Molecular Genetics Unit**.

Thank you for your interest

The following lessons are included.
Please click to preview.

[Lesson 1 - Genetic Material](#)

[Lesson 2 - DNA Replication and Repair](#)

[Lesson 3 - DNA Organization and Aging](#)

[Lesson 4 - Transcription - Protein Synthesis](#)

[Lesson 5 - Translation - Protein Synthesis](#)

[Lesson 6 - Mutations](#)

[Lesson 7 - Genetic Engineering and Gene Therapy](#)

[Lesson 8 - Genetic Disorders, Screening, and Therapy](#)

[Lesson 9 - PCR and Gel Electrophoresis](#)

Genetic Material - DNA and RNA

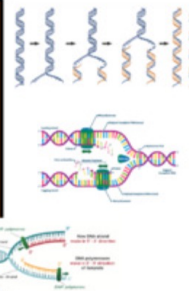
- Structure of Nucleotides
- Functions of Nucleic Acids
- Humans vs. Chimps
- DNA vs. RNA
- Nitrogenous bases
- DNA Facts
- Genes
- DNA Hierarchy



TWF

DNA Replication and Repair

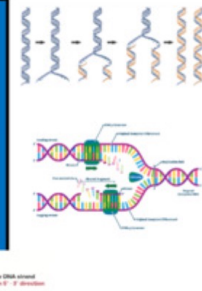
- Semiconservative vs. Conservative
- Strand Separation
- Building Complementary Strands
- Correcting Errors
- DNA Polymerase, Helicase and RNA Primase
- Okazaki Fragments
- Leading and Lagging Strands



TWF

DNA Organization and Aging

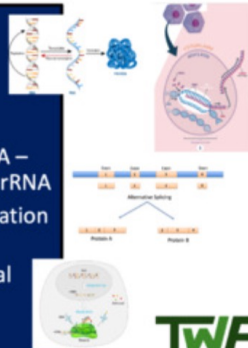
- DNA Organization
- Telomeres
- DNA Replication and the Importance of Telomeres
- Why We Age



TWF

Protein Synthesis - Transcription

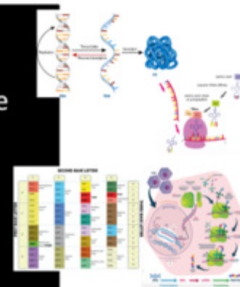
- One gene – one polypeptide
- Transcription
- DNA vs. RNA
- Three types of RNA – mRNA, tRNA, and rRNA
- Initiation → Elongation → Termination
- Post transcriptional Modifications



TWF

Protein Synthesis - Translation

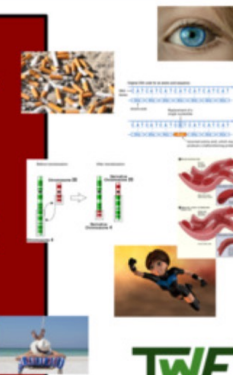
- Transcription Review
- Codons and the Genetic Code
- Amino Acids
- Ribosomes
- tRNA
- Start and Stop Codons



TWF

Mutations

- Mutations overview
- Small-scale mutations
- Missense mutations
- Nonsense mutations
- Silent mutations
- Frameshift mutations
- Large-scale mutations
- Causes of Genetic Mutations
- Mutagens



TWF

Genetic Engineering and Gene Therapy

- What Genetic Engineering is
- Case Study – Insulin Production
- CRISPR Technology
- Biopharming
- Transgenic Organisms
- Viruses and Gene Therapy
- Creating Vaccines using Viral Vectors
- Cloning



TWF

Genetic Disorders, Screening, and Therapy

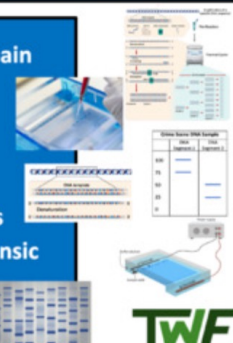
- Biotechnology and Health
- Phenylketonuria (PKU)
- Germ-line gene therapy
- Somatic gene therapy
- Genetic Screening
- Amniocentesis
- Down syndrome
- Edwards syndrome
- Duchenne muscular dystrophy



TWF

PCR and Gel Electrophoresis

- The Polymerase Chain Reaction
- Denaturation
- Annealing
- Elongation
- Gel Electrophoresis
- Application in Forensic Science



TWF