# DNA Workshop : Worksheet KEY

**First Website :**

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| --- | --- |
| TOPIC | CHECKPOINT ANSWER |
| Your Cells Contain Your DNA | 1. Cell Phone |
| DNA is Packaged in Chromosomes | C)One set from dad one set from mom |
| The Sex Chromosomes Determine Genetic Sex | 1. XX |
| The DNA Cookbook | C)GENES |
| How Do Genes Code for Proteins? | C)AMINO ACIDS |
| Not All DNA Codes for Proteins | 1. **FALSE** |
| The DNA Structure Is a Double Helix | C)A-T, C-G, T-A |
| DNA Differences Make Us Unique | A)TRUE |
| What Are Genetic Variants? | 1. TRUE |
| How New Genetic Variants Arise | 1. TRUE |
| New Genetic Variants Can Become More Common Over Time | 1. FALSE |
| One Trait, Many Genes | 1. Sometimes one, sometimes many genes |
| Lifestyle, Environment, and Your Genes | C)A comination of genetics + lifestyle + environment |
| Likelihood and Risk in Genetics | 1. 70% |
| How Scientists "Read" DNA | 1. TRUE |

**Second Website :**

**TRANSCRIPTION:**

1. **Which of the following strands of DNA is being used as the transcription unit?**

**TOP STRAND or BOTTOM STRAND**

1. **Name the enzyme responsible for adding the appropriate RNA nucleotides onto the DNA strand?**

**RNA POLYMERASE**

1. **After you have completed the Transcription Race, record the following:**
2. **TIMER Score : \_\_\_?\_\_\_**
3. **ACCURACY Score : \_\_\_\_?\_\_\_\_**
4. **After the mRNA strand is produced it leaves the nucleus and heads to the : RIBOSOME**
5. **How many strands does RNA have? ONE**
6. **Which mRNA nucleotide is complementary to a DNA Adenine? URACIL**

**TRANSLATION:**

1. **The codon AUG codes for what amino acid? METHIONINE**
2. **On which site in the Ribosome does the first codon sit? E P or A**
3. **List the anticodon on the tRNA molecule**

**that delivers the methionine. UAC**

1. **What colour is the Methionine Amino Acid in this animation? BLUE**
2. **What did the "UGA" codon on the mRNA represent? STOP – tells ribosome to break free to release fully formed polypeptide**
3. **When finished translation, list the amino acid colours in their proper primary structure for your polypeptide. (use O for orange, P for pink, B for blue, W for white and R for red)**

**B- R- B- R- O- P- W- O- P- W- R- B -O**

1. **How many total Amino Acids are there in your Polypeptide? 13**
2. **What is the job of the tRNA molecules? To carry Amino Acids to the growing polypeptide**
3. **What was your total score for the following:**
4. **# CORRECT : \_\_\_\_\_\_\_\_\_\_\_**
5. **# INCORRECT : \_\_\_\_\_\_\_\_\_\_\_\_\_\_**
6. **% SCORE : \_\_\_\_\_\_\_\_\_\_\_\_\_**
7. **YOUR TIME SCORE IN SECONDS: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Third Website: DNA FINGERPRINTING

1What is Jimmy's most valued possession?

Holographic Nova Lollipop

2. How many sisters does Jimmy have? 7

3. What do restriction enzymes do? They cut DNA at specific sequencing sites to create small DNA fragments  
  
4. What size of DNA fragments tends to move most easily through the agarose?

Small Charged  
  
  
5. What type of charge do the fragments of DNA have?   
Slightly Negative

6. Why do scientists cover the gel with a nylon membrane?   
To have something they can handle and manipulate.

7. What special property of the probes allows scientists to detect where the DNA fragments are located?  
The probes are Radio-actively Labeled  
  
8. Who committed this crime? HONEY

**Protein Synthesis & DNA Replication – KEY**

**EXON INTRON EXON**

**T A C C G G A C T G A G A G A C A G T G A A C T**

**To replicate (make more DNA) a complimentary strand.**

**A T G G C C T G A C T C T C T G T C A C T T G A**

**To Transcribe mRNA (keep the intron for now) from strand #1**

**A U G G C C U G A C U C U C U G U C A C U U G A**

**After having Ribozymes come in and process the mRNA into mature mRNA (get rid of the intron):**

**A U G G C C - U C U G U C A C U U G A**

**Now this mature mRNA will leave the nucleus and head out to find a Ribosome out in the Cytoplasm.**

**During translation (look up CODONS), the following polypeptide will form:**

**Methionine – Alanine – Serine – Valine – Threonine**

**The pieces of tRNA that will deliver these amino acids will house the following ANTICODONS:**

**UAC CGG AGA CAG UGA**