

# DNA Scavenger Hunt

By Becky Curtis

## DNA Scavenger Hunt

The Secret Code (mRNA codons)

UUU = A	CAA = H	AAA = O	UAG = V
UAC = B	GAC = I	UCA = P	CAG = W
AGG = C	CCC = J	GAG = Q	UGG = X
BCU = D	AAU = K	UCC = R	UCG = Y
AAG = E	CGC = L	GCG = S	ACC = Z
CUC = F	AUC = M	GGU = T	
GAU = G	GCA = N	CUG = U	

DNA

GCCTTTTITTTAGACCGTCGATTACGGCTAAAAAGGATGAAT

DNA

CATTTTCATTTCGGCTTTTTCATGTTTACC  
GUAAAAGUAAAGCGCAAAAAGUACAAUAG  
G O T U S H D E B D X

SCIENCEBOOK

# Teacher Instructions

This activity is a great way for students to simulate what happens during transcription and translation. Prior to completing the activity you should review DNA, RNA, transcription, translation, and base pairing. This activity should take approximately 50 minutes to complete. Clues can be removed if it needs to be completed in a shorter time frame.

## Materials Needed:

- Shoebox
- Science Book
- Picture of Dog (included)
- Garbage Can
- Picture of Goats (included)
- Pencil Sharpener
- Paper Bag w/ Smiley Face
- Plant
- Box
- Envelopes

# Directions

- Have students work in teams of 2 people.
- Make enough copies of DNA strips for the number of groups in the class.
- Place all b strips in one envelope, all c strips in a second envelope, etc.
- Students are given the first clue on the handout so do not use clue a in the envelopes. If you opt to not use the handout make sure to distribute clue a to students as well as the separate secret code.
- Hide clues throughout the classroom under or behind the appropriate props. For example, clue b (Look in Science Book) should be hidden in the shoebox from clue a.
- In the final location (box on teachers desk) place reward for completing scavenger hunt. I have used cookies in the past and that is what is on the reward sheet that is included in this activity.

**Optional:** Student's can be offered extra credit for completing the scavenger hunt in 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> place.

## Helpful Hints

- Have students transcribe the DNA into mRNA and then indicate the codons with brackets before deciphering the code.

Ex: DNA - TCCTTTCGATTC

mRNA - AGGAAAGCUAAG

- Encourage the students to compete against one another and remind them there is a reward for the first 3 teams to finish.

- Have students include DNA strips from envelopes with their handout and stress they must go in order to find the correct sequence of clues.

- Remind students to be subtle about removing clues when they find them.

## Reminders For Your Students

- Write neatly.
- Take your time even though you are racing your classmates.
- Have fun!

Name: \_\_\_\_\_ Date: \_\_\_\_\_

## DNA Scavenger Hunt

DNA carries the genetic code to the ribosome's via messenger RNA or mRNA. RNA is a single strand that contains the bases adenine, guanine, cytosine and uracil (DNA contains thymine instead of uracil). The process of taking DNA and making RNA is called transcription and occurs in the nucleus. Translation is the next step and occurs in the cytoplasm of the cell within the ribosomes. The mRNA that is made during transcription travels out of the nucleus to the ribosome where it is translated into an amino acid sequence using the genetic code.

In this activity you will be transcribing DNA into mRNA and then translating the message using the secret code. The clues will take you on a scavenger hunt throughout the classroom.

**Directions:** You have been given the DNA code. Your first step is to transcribe the DNA into RNA. Then find the codon on the Secret Code to translate what the secret message is. You must go in the order of the clues and attach all of your clues to the answer sheet. **Good Luck!!!!**

The Secret Code (mRNA codons)			
UUU = A	CAA = H	AAA = O	UAG = V
UAC = B	GAC = I	UCA = P	CAG = W
AGG = C	CCC = J	GAG = Q	UGG = X
GCU = D	AAU = K	UCC = R	UCG = Y
AAG = E	CGC = L	GCG = S	ACC = Z
CUC = F	AUC = M	GGU = T	
GAU = G	GCA = N	CUG = U	

### Example

DNA: CTA TTT TTT CGA GCG GAC TCC TTA

mRNA: GAU AAA AAA GCU CGC CUG AGG AAU

Clue: G O O D L U C K = Good Luck

Name: \_\_\_\_\_ Date: \_\_\_\_\_

## Student Clue Answer Sheet

**Here is your 1<sup>st</sup> Clue!**

**DNA:** CTATTTCATTTCGCGTTTTTTTCATGTTTACC

**mRNA:** \_\_\_\_\_

**Clue:** \_\_\_\_\_

**Clue #2**

**DNA:** \_\_\_\_\_

**mRNA:** \_\_\_\_\_

**Clue:** \_\_\_\_\_

**Clue #3**

**DNA:** \_\_\_\_\_

**mRNA:** \_\_\_\_\_

**Clue:** \_\_\_\_\_

**Clue #4**

**DNA:** \_\_\_\_\_

**mRNA:** \_\_\_\_\_

**Clue:** \_\_\_\_\_

**Clue #5**

**DNA:** \_\_\_\_\_

**mRNA:** \_\_\_\_\_

**Clue:** \_\_\_\_\_

**Clue #6**

**DNA:** \_\_\_\_\_

**mRNA:** \_\_\_\_\_

**Clue:** \_\_\_\_\_

**Clue #7**

DNA: \_\_\_\_\_

mRNA: \_\_\_\_\_

Clue: \_\_\_\_\_

**Clue #8**

DNA: \_\_\_\_\_

mRNA: \_\_\_\_\_

Clue: \_\_\_\_\_

**Clue #9**

DNA: \_\_\_\_\_

mRNA: \_\_\_\_\_

Clue: \_\_\_\_\_

**Clue #10**

DNA: \_\_\_\_\_

mRNA: \_\_\_\_\_

Clue: \_\_\_\_\_

**Review Questions:**

1. What are 2 differences between DNA and RNA?
2. How do the bases in DNA pair up?  
A - \_\_\_\_\_ G - \_\_\_\_\_ T - \_\_\_\_\_ C - \_\_\_\_\_
3. What is a codon?



Name: \_\_\_\_\_ Date: \_\_\_\_\_

## Student Clue Answer Sheet - **KEY**

### Here is your 1<sup>st</sup> Clue!

DNA: CTATTTCCATTTTCGCGTTTTTTTCATGTTTACC

mRNA: GAU-AAA-GGU-AAA-GCG-CAA-AAA-AAA-GUA-CAA-AUG

Clue: Go to shoebox

### Clue #2

DNA: GCGTTTTTTTTACTGCGTCGCTCCCTGTTCCGTTTCCTTCATGTTTTTTTTTA

mRNA: CGC-AAA-AAA-AAU-GAC-GCA-GCG-AGG-GAC-AAG-GCA-AGG-AAG-UAC-AAA-AAA-AAU

Clue: Look in Science book

### Clue #3

DNA: GAGCTGCGTCGAAGTCTGTCCCCAGACAGGTTCTTTGAGCGATTTCTA

mRNA: CUC-GAC-GCA-GCU-UCA-GAC-AGG-GGU-CUG-UCC-AAG-AAA-CUC-GCU-AAA-GAU

Clue: Find picture of dog

### Clue #4

DNA: AAACGCTTACCATTCAAATCCGTTTTTCAGGGAGTTTAGGTCCGCGGACTTC

mRNA: UUU-GCG-AAU-GGU-AAG-UUU-AGG-CAA-AAG-UCC-CUC-AAA-UCC-AGG-CGC-CUG-AAG

Clue: Ask teacher for clue

### Clue #5

DNA: GCGTTTTTTTTTAGACCGTCGATTCAGGCTAAAAAGGATGAACTATTCTCCA  
AACGT

mRNA: CGC-AAA-AAA-AAU-CUG-GCA-GCU-AAG-UCC-GAU-UUU-UCC-UAC-UUU-GAU-AAG-AGG-UUU-GCA

Clue: Look under garbage can

### Clue #6

DNA:

GCGTTTTTTTTTAATGTTTCGTTCTGCGTCGAAGTCTGTCCCCAGACAGGTTCTTTGA  
GCTATTTAAACCACGC

mRNA: CGC-AAA-AAA-AAU-UAC-AAG-CAA-GAC-GCA-GCU-UCA-GAC-AGG-GGU-CUG-UCC-AAG-AAA-CUC-GAU-AAA-UUU-GGU-GCG

Clue: Look behind picture of goats



## KEY

### Clue #7

DNA:

CTATTTCCATTTAGTTTCCGTTCCCTGGCGCGCGTTAAAAGGAGTTTCCGTTT  
CAGG

mRNA: GAU-AAA-GGU-AAA-UCA-AAG-GCA-AGG-GAC-CGC-GCG-CAA-  
UUU-UCC-UCA-AAG-GCA-AAG-UCC

Clue: Go to pencil sharpener

### Clue #8

DNA:

GCGTTTTTTTTTACTGCGTAGTAAAAGTTTCAGGATGAACTAGTCCTGCCAG  
TTCGCTAGCTGGCGTTCAGCGAGAAATCCTTC

mRNA: CGC-AAA-AAA-AAU-GAC-GCA-UCA-UUU-UCA-AAG-UCC-UAC-  
UUU-GAU-CAG-GAC-GGU-CAA-GCG-AUC

Clue: Look in paper bag with smiley face

### Clue #9

DNA: GCGTTTTTTTTTAGACCGTCGATTCAGGAGTGCGAAACGTCCA

mRNA: CGC-AAA-AAA-AAU-CUG-GCA-GCU-AAG-UCC-UCA-CGC-UUU-GCA-  
GGU

Clue: Look under plant

### Clue #10

DNA:

GCGTTTTTTTTTACTGCGTATGTTTACCTTTCGTCCATTCAAATCCGTTTTTCAG  
GCGCCGATTCCGCTTA

mRNA: CGC-AAA-AAA-AAU-GAC-GCA-UAC-AAA-UGG-AAA-GCA-GGU-  
AAG-UUU-AGG-CAA-AAG-UCC-GCG-GCU-AAG-GCG-AAU

Clue: Look in box on teachers desk

### Review Questions:

- What are 2 differences between DNA and RNA?
  - DNA has a double strand & RNA is a single strand
  - DNA has the bases A, T, G, & C; RNA has the bases A, U, G, & C.
  - DNA has the sugar deoxyribose & RNA has the sugar ribose.
- How do the bases in DNA pair up?  
A - T   G - C   T - A   C - G
- What is a codon?  
3 bases of mRNA that code for a specific amino acid.

DNA

CATTTTCCATTTTCGCGTTTTTTTTTCATGTTTACC

a

DNA

GCGTTTTTTTTTACTGCGTCGCTCCCTGTTCCGTTCTTCATGTTTTTTTTTA

b

DNA

GAGCTGCGTCGAAGTCTGTCCCCAGACAGGTTCTTTGAGCGATTTCTA

c

DNA

AAACGCTTACCATTCAAATCCGTTTTTCAGGGAGTTTAGGTCCGCGGACTTC

d

DNA

GCGTTTTTTTTTAGACCGTCGATTCAGGCTAAAAAGGATGAACTATTCTCCAAACGT

e

DNA

GCGTTTTTTTTTAATGTTTCGTTCTGCGTCGAAGTCTGTCCCCAGACAGGTTCTTTGAGCTA  
TTTAAACCACGC

f

DNA

CTATTTCCATTTAGTTTCCGTTCCCTGGCGCGCGTTAAAAGGAGTTTCCGTTTCAGG

g

DNA

GCGTTTTTTTTTACTGCGTAGTAAAAGTTTCAGGATGAAACTAGTCCTGCCAGTTTCGCTA  
GCTGGCGTTCAGCGAGAAATCCTTC

h

DNA

GCGTTTTTTTTTAGACCGTCGATTCAGGAGTGCGAAACGTCCA

i

DNA

GCGTTTTTTTTTACTGCGTATGTTTACCTTTCGTCCATTCAAATCCGTTTTTCAGGCGCCGA  
TTCCGCTTA

j

# DNA Scavenger Hunt

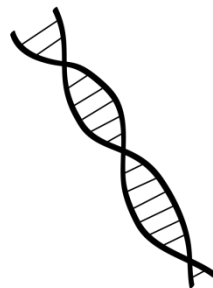
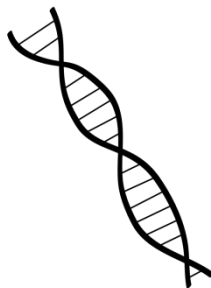
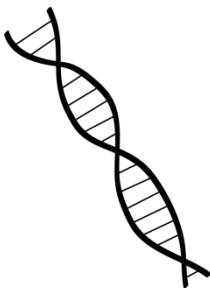
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AAG = E	CGC = L	GCG = S	ACC = Z
CUC = F	AUC = M	GGU = T	
GAU = G	GCA = N	CUG = U	

# Congratulations!!!!!!

You have finished the  
DNA Scavenger Hunt  
in 1<sup>st</sup> place. Fill this  
out and return to your  
teacher for extra  
credit.

Name: \_\_\_\_\_

Name: \_\_\_\_\_

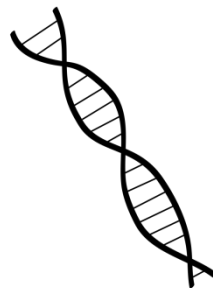
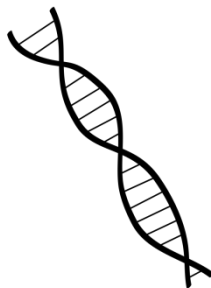
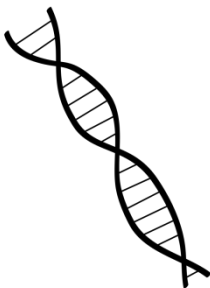


# Congratulations!!!!!!

You have finished the  
DNA Scavenger Hunt  
in 2<sup>nd</sup> place. Fill this  
out and return to your  
teacher for extra  
credit.

Name: \_\_\_\_\_

Name: \_\_\_\_\_



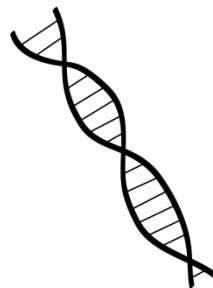
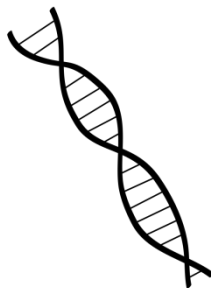
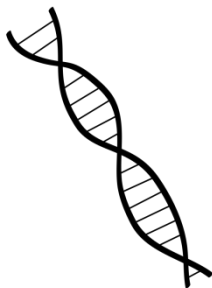


# Congratulations!!!!!!

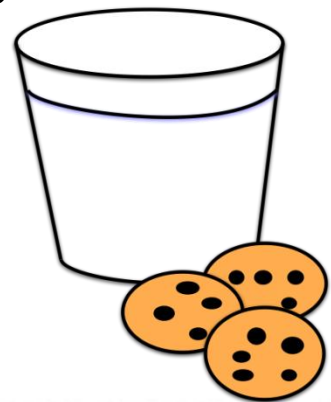
You have finished the  
DNA Scavenger Hunt  
in 3<sup>rd</sup> place. Fill this  
out and return to your  
teacher for extra  
credit.

Name: \_\_\_\_\_

Name: \_\_\_\_\_



Congratulations  
on successfully  
completing the  
DNA Scavenger  
Hunt! Please  
take 2 cookies  
as your reward.  
**Enjoy!!!!**









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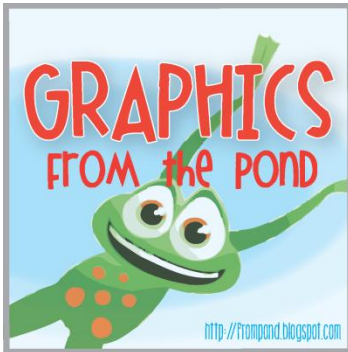
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