

The following material will appear on the upcoming exam. Use this preview to familiarize yourself with the material, and guide you in studying. Be sure to look up the definitions of any words you do not know. You are free to discuss this material or ask questions about it.

Use a #2 pencil to fill in the information on your NCS answer sheet.

- 1) Enter your **last name** and **first name** as indicated and darken the corresponding circles
- 2) Enter your **CWID** in the spaces indicated for “Student ID” and darken the corresponding circles.
- 3) Enter **1914** in the spaces indicated for “Course number” and darken the corresponding circles.
- 4) Enter the **form** of the exam (**001** or **002**) in the spaces indicated for “SEC” and darken the corresponding circles
- 5) Write your **O-Key Account Username** above the words “Last Name”.

mRNA-Codon-to-Amino-Acid Decoder Chart									
1 st Letter	2 nd Letter								3 rd Letter
	U		C		A		G		
U	UUU	Phenylalanine	UCU	Serine	UAU	Tyrosine	UGU	Cysteine	U
	UUC		UCC		UAC		UGC		C
	UUA	Leucine	UCA		UAA	STOP	UGA	STOP	A
	UUG		UCG		UAG		UGG	Tryptophan	G
C	CUU	Leucine	CCU	Proline	CAU	Histidine	CGU	Arginine	U
	CUC		CCC		CAC		CGC		C
	CUA		CCA		CAA	CGA	A		
	CUG		CCG		CAG	CGG	G		
A	AUU	Isoleucine	ACU	Threonine	AAU	Asparagine	AGU	Serine	U
	AUC		ACC		AAC		AGC		C
	AUA		ACA		AAA	AGA	A		
	AUG	Methionine; START	ACG		AAG	Lysine	AGG	Arginine	G
G	GUU	Valine	GCU	Alanine	GAU	Aspartate	GGU	Glycine	U
	GUC		GCC		GAC		GGC		C
	GUA		GCA		GAA	GGA	A		
	GUG		GCG		GAG	GGG	G		

important equations: $r = b - d$ $G = rN$ $G = rN [(K-N)/K]$

In 2014 it was estimated that there were 1864 giant pandas.

A patient walks into the doctor complaining of runny nose, high fever and a cough. The doctor prescribes antibiotics and the patient does not improve.

A fungus develops its own antibiotics to a bacterial infection. Over time the antibiotic is no-longer effective and therefore the bacteria are resistant.

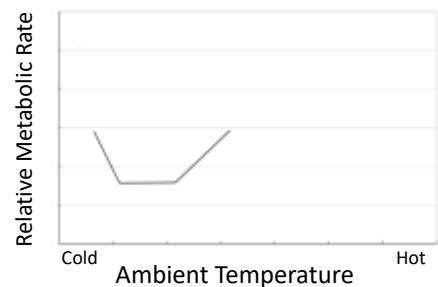
A snake and a mouse have been in the same field for the last three days. The snake has tried to eat the mouse each day and has failed to catch it because the reptile has been too slow. Every day the temperature has been consistently the same when the chase occurs; however, on a fourth day the temperature drops 10°C.

A mouse gets locked in a freezer for 15 minutes. Eventually the **body temperature** of the mouse decreases by 5°C.

At 34.44 m (113 ft) the blue whale is the largest animal ever to live on this planet. Because blue whales cannot drink sea water, they get their water from their food (tiny zooplankton).

Chris was exposed to bacterial meningitis and contracted the disease. Unfortunately, she did not receive a mumps vaccine that would have helped prevent the illness.

The figure to the right represents metabolic rate plotted against ambient temperature for an animal.



Runoff of fertilizers from nearby agricultural fields contributes to algal blooms in lakes.

A red ladybug with black spots finds itself in a green Sprite™ bottle.

A rogue state has developed a new neurotoxin that causes spasms and convulsions.

A small protein in the pancreas is coded by a DNA sequence that's 204 nucleotides long.

A man with type B blood has a son who is type AB, another son who is type A and has just had a daughter who is type o. He begins to grow suspicious of his wife.

Some voles are monogamous, while other are polygamous.

Dr. French decides to perform a study on BIOL 1114 students in which he evaluates if study time affects performance on the final. He suspects that students who study more will do better.

A couple has four sons.

The allele for green seeds in garden peas is recessive to yellow seeds.

Populations of roly-polies (*Armadillidium vulgare*) grow rapidly in the spring, stabilize in the summer, and begin to decline in the fall. A researcher builds an artificial tank and introduces 5000 roly-polies early in the spring. After a month, under spring conditions, the researcher notes that there were 1000 births, and 200 deaths...The researcher surveys the total population in the summer months and estimates it to stabilize around 20,000 individuals.

Widow's peak is a dominant trait in humans that produces a v-shaped hairline.

Below is the middle portion of the "O" gene, which encodes the leptin protein:
GCA TCT GCG TCC GCT GCC.

In manatees the synthesis of leptin and normal leptin receptors is controlled by the O and D (dominant) alleles, respectively.

Biomagnification of mercury (Hg) in aquatic food webs has been reported in different parts of the world.

A population of algae colonized a lake with high concentrations of nutrients that come from an agricultural field.

Snake venom often works by inhibiting prey movement.

Photosynthetic dinoflagellates are a type of unicellular algae found in both saltwater and freshwater ecosystems. Many species of dinoflagellates produce a structural support molecule (cellulose) by linking many glucose molecules together. Shellfish, such as clams, feed by moving water over their gills and filtering algae, such as dinoflagellates, out of the water and into their digestive systems. Many humans will then eat the shellfish as part of their diet.