

Exam #3 Preview Material November 21, 2005

| mRNA-Codon-to-Amino-Acid Decoder Chart | | | | | | | | | |
|--|-------------------|------------------------|-----|-----------|------------|------------|-----|------------------------|---|
| 1 st Letter | U | 2 nd Letter | | | | | | 3 rd Letter | |
| | | | 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 | Glutamine | 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 | Lysine | AGA | Arginine | A |
| AUG | Methionine; START | ACG | AAG | AGG | G | | | | |
| G | GUU | Valine | GCU | Alanine | GAU | Aspartate | GGU | Glycine | U |
| | GUC | | GCC | | GAC | | GGC | | C |
| | GUA | | GCA | | GAA | Glutamate | GGA | | A |
| | GUG | | GCG | | GAG | | GGG | | G |

r=b-d G=rN G=rN(K-N/K)

Influenza A virus (type H3N8) has caused a flu-like illness in horses for many years. In 2004, 22 greyhound dogs at a racetrack in Florida became ill with a similar flu-like illness that included respiratory problems and 8 of the dogs died. The H3N8 type virus made them sick and killed them. Suppose that the virus H3N8 from greyhounds is introduced into a population of greyhounds in an Oklahoma kennel.

Hemochromatosis is a condition in which too much iron is absorbed by the intestine. It is caused by a **recessive autosomal** allele. Grace and Aubrey have two children who have hemochromatosis and two who do not. Neither parent has the disease.

The following fragment of DNA is from the center of a gene AAATCCGCTTTGTAA

Bird flu is an infection caused by avian (bird) influenza (flu) viruses called H5N1. These flu viruses occur naturally among birds such as ducks and geese. Wild birds worldwide carry the viruses in their intestines, but usually do not get sick from them. However, bird flu is very contagious among birds and can make some domesticated birds, including chickens, ducks, and turkeys, very sick and kill them.

Recently at a hospital three babies were accidentally given to the wrong parents. There was confusion because two of the babies were affected with a rare **X-linked dominant trait**.

Parents' Characteristics:

Congenital Generalized Hypertrichosis (CGH) - X-linked Dominant

- Couple 1 - Male is affected, female is normal
- Couple 2 - Both are normal
- Couple 3 - Male is normal, female affected but her father was normal.

| Blood types: | Male | Female |
|--------------|------|--------|
| Couple 1 | O | AB |
| Couple 2 | B | A |
| Couple 3 | O | O |

Babies' Characteristics:

| | | | |
|----------------------|--------|----------------------|--------------|
| Baby J.D (Male) | No CGH | Baby J.D (Male) | Type B blood |
| Baby Thelma (Female) | CGH | Baby Thelma (Female) | Type A Blood |
| Baby Louise (Female) | CGH | Baby Louise (Female) | Type O blood |