DNA
- Double Helix (two backbones)
- Made up of base pairs, A paired with T and G paired with C (binary, polar).
- When DNA copies it breaks down the middle allowing for new pairs to link to the available slots (A looks for T, C looks for G, etc).
- DNA contains the entire set of genetic "Instructions" for our body

- GENES- are pieces of DNA that contain instructions for making certain proteins
- -function and physical data of heredity (from parents)

DNA → mRNA
- DNA is TRANSCRIBED into mRNA
- A strand of DNA is read and matched to create a new stand
- - A now pairs with U, G with C, and vice versa
- mRNA delivers DNA's genetic message to the cytoplasm of a cell where proteins are made.

mRNA → PROTEINS
- mRNA is TRANSLATED into Proteins by matching codeons (sets of 3 bases) to amino acids.
- proteins are created from combinations of 20 amino acids (fixed number) offering 100 million possibilities.
- -each amino acid is coded by a set of 3 bases (UCG= serine)
- Proteins travel outside the nucleolus to deliver messages
- Proteins fold into various 3D shapes
- - scientists know that the instructions for the shapes are located in the amino acids but…
- Proteins are generated by groups of amino acids (20 fixed number)
- Proteins perform a wide variety of functions within the cell

"Scientists have searched for rules governing folding but have found no reliable way to predict a 3-dimensional structure from a simple sequence."

CHROMOSOMES are compacted spools of DNA (over 3 feet stretched)
- DNA “packages” allows for them to fit in the nucleus of the cell
- Human beings are composed of 22 PAIRS of chromosomes knowing as AUPOSOMES and one sex chromosome
- Abnormal number of chromosomes = defects, or problems (down syndrome etc.)
- sex chromosome- binary system (X,Y). composed of X and Y Chromosomes.
- - MALE= XY
- - FEMALE= XX

Chromosomes are viewed during MITOSIS (cell division: Replicated then organized)
- they are stained with Giemsa dye giving them their striped appearance
- - regions rich in Adenine (A) and Thymine (T) base pairs.
- - By looking at chromosomes scientists can look for disorders

Chromosomes are viewed based upon the following criteria:
- Size
- Banding pattern
- Centromeres- contracted regions left over from MITOSIS where the two chromosomes connected.
- - submetacentric chromosomes are off balance (one arm is longer than the other)

KARYOTYPE- the diagram used to layout and organize Chromosome pairs
- - Chromosomes are arranged by size, largest to smallest, and numbered accordingly.
- - Made during the METAPHASE of mitosis (when they line up)
- - Karyotypes are pictures of all of our DNA, which contains 100,000 genes.

ALLELES- Variables within a Gene (eye color, hair color, etc.)
- Can be dominant or recessive

Example. Blue eyes is a recessive trait, Brown Eyes is a Dominant Trait:

R-Blue + R-Blue = Blue Eyes (must have both recessive to win)

R-Blue + D-Brown = Brown Eyes (Dominant always wins)

PHENOTYPE= observable Trait of an individual (brown eyes)

GENOTYPE= Genetic identity that does not show outward Characteristics

For more information: http://gslc.genetics.utah.edu/
TRANSCRIPTION AND TRANSLATION

TRANSCRIPTION: In the nucleus, the cell’s machinery copies the gene sequence into messenger RNA (mRNA), a molecule that is similar to DNA. Like DNA, mRNA has four nucleotide bases - but in mRNA, the base uracil (U) replaces thymine (T).

The mRNA travels from the nucleus to the cytoplasm.

TRANSLATION: The protein-making machinery, called the ribosome, reads the mRNA sequence and translates it into the amino acid sequence of the protein. The ribosome starts at the sequence AUG, then reads three nucleotides at a time. Each three-nucleotide codon specifies a particular amino acid. The “stop” codons (UAA, UAG and UGA) tell the ribosome that the protein is complete.

human vs. Chimp DNA

[Diagram of DNA structure and transcription process]
D | MA as Genetics

DNA = BOOK 1:
- includes the “data” of our work: Research.
- **DOUBLE HELIX**: Two backbones of our structure, Design and Media arts.
- **BINDING SITES (Bases)**: Binding sites are what creates a bridge between the two backbones of Design and Media arts, in order to create the structure of the department (or in our case the data that describes a certain aspect of the department). These include groups of students, professors, lectures, technology and environmental spaces. These are interdependent on each other. Students require teachers, lectures require attendance, technology requires someone to use it etc.
- The Duplication of DNA (or spreading of ideas) allows for new pairs (or new ideas) to link on.

**KARYOTYPE AS STRUCTURE FOR THE CONTENTS:**
- DNA Strands (sets of data) are organized into Chromosomes (chapters) based upon –
  - Patterns in data
  - Data that is off balanced
  - overall importance

RNA = BOOK 2:
- The translation of what we plan to propose and how we communicate our ideas to students so that they can be implemented, as well as the rest of the body of the department.
- **Base sites** still exist as functions of the department, but now are modified to reflect a new direction
- RNA is translated into actual student experiences through the matching of codeons (combinations of 3 bases) to amino acids (courses)

**Example:**

Codeon 1

A - Cameron McNall
U - Woodshop
G – experimental architecture
The code for AUG would thus reference an amino acid (class for architectural modeling).

**Codeon’s can be combined to create millions of possibilities for proteins (student experiences/ design knowledge)**

A- Cameron Mcnall  
U - Woodshop  
G – experimental architecture

A- Scott Hessles  
C – video exiting software and equipment  
G – installation video

AUG+ ACG= a student interested in experimental video projections in architectural spaces.

**PROTEINS IN POST**

As Proteins, each student will hold a unique composition based upon the combinations of amino acids (courses) they chose over the process of their translation into a three dimensional designer. Once constructed, they will be able to venture through the body (the professional world) to perform a variety of functions.

Through the process students will obtain dominant traits (classes they like) and recessive ones (classes they do not like).

Students will graduate with an obvious Phenotype (observable categorization, graphic designer, media artist, photographer, film maker, creative director, etc.) but will still hold traceable genotypic characteristics (knowledge from the classes they did no process in).
AMINO ACIDS

[C CG] - PRINT MEDIA
[AUG] - BRANDING
[GUA] - DESIGN FOR VIDEO
[UCC] - INTEGRATIVE TYPE
[AGG] - ADV DESIGN FOR VIDEO
[UUU] - DYNAMIC TYPE
D | MA

X. Design

DNA | ETHNOGRAPHY

Y. Media Arts

A. RECOMMENDATIONS
B. INSTITUTION RESEARCH
C. SIMILE/IDENTITY WORDS
D. PLATAPUS I
E. PLATAPUS II
F. ETHNOGRAPHY

ARYOTYPE: Design | Media Arts
GL: 7-03-04
FRAME NO.: INITIALS: U.C.L.A.