

Content List Document for the LEGO® DNA Learning Center Set

As of 5-12-11 K Vandiver

The 3 large boxes – page 1

DNA/RNA Storage Box

- 1 12 DNA/RNA kits Numbered 1-12
- 2 36 layout mats Numbered 1-12 on the back
 - 12 layout mats are A & T nucleotides of DNA: the yellow and red bases on gray sugars
 - 12 layout mats are G & C nucleotides of DNA: the blue and green bases on gray sugars
 - 12 layout mats are RNA nucleotides: the blue, green, yellow, brown (U)bases on Orange sugar.
- 3 12 DNA/RNA booklets These are labeled “ DNA/RNA Booklet 1” Numbered 1-12

Protein Storage Box

- 1 12 Protein kits Numbered 1-12
- 2 24 Layout mats Numbered 1-12 on the back
 - 12 layout mats are Hydrophobic amino acids: the yellow amino acids
 - 12 layout mats are Hydrophilic amino acids: the red, blue, and green amino acids
- 3 12 Protein booklets These are titled “Protein Booklet 1” Numbered 1-12
- 4 Cell Membrane Mats Each model has 5 parts. These are designed to be taped around a cardboard box the size of a Photocopier box for paper.
 - 2 top views WITH THE PORE Note: the 3rd top view is located in the Teacher Box
 - 2 side view A short piece
 - 2 side view B long piece
 - 2 side view C short piece
 - 2 side view D long piece

tRNA Storage Box

1. 8 tRNA kits Numbered 1-8
2. 8 “layout mats” keep inside each kit because they are not the same.

The kits are different: 1 alpha, 2 alpha mutated, 3 beta, 4 beta mutated, 5 alpha, 6 alpha mutated, 7 beta, 8 beta mutated
3. 8 tRNA booklets This is called tRNA Booklet 1 Numbered 1-8
4. 8 Ribosome Mats numbered 1-8 on the back so you don't have to hand them out with the matching set.

NOTE : The #9 tRNA kit is in the teacher box: The #9 tRNA kit is exceptional – anticodons can be rearranged. Should not be given to students. Also the #9 booklet and ribosome is in the teacher box

Content List for Each LEGO® Storage Box

As of 5-12-11 K Vandiver The 2 smaller boxes – page 2

Teacher Box

This teacher box was designed to function as a sampler for the LEGO Set

It contains what you need to try out the activities for yourself.

“Gene strips” and “Amino acid cards” are not in the box and may be found in the teacher accessory box.

1 There are 3 LEGO kits in the teacher box:

- **2 DNA / RNA kits Number 13 is Extra and Number 14 is the Teacher Kit**
- **2 Protein kits Number 13 is Extra and Number 14 is the Teacher Kit**

Note: To demonstrate the full 4 chain channel protein, two protein kits are necessary. One protein kit can make 1 beta chain and 1 alpha chain.

- **1 tRNA kit Number 9** Note: #9 tRNA kit is not glued. The anticodons can be prepared individually. The original tRNA kit came prepared with the anticodons for translating the alpha chain.
 - Inside this tRNA kit there are 4 different Layout Mats, one for each channel protein. All can be prepared from the contents of this kit.

2 Layout mats for each kit are here:

- 2 layout mats are **A & T nucleotides of DNA**: the yellow and red bases on gray sugars
- 2 layout mats are **G & C nucleotides of DNA**: the blue and green bases on gray sugars
- 2 layout mats are **RNA nucleotides**: the blue, green, yellow, brown (U) bases on orange sugars
- 2 layout mats are **Hydrophobic amino acids**: the yellow amino acids
- 2 layout mats are **Hydrophilic amino acids**: the red, blue, and green amino acids

3 Other mats:

- 1 Ribosome Mat marked “Teacher” #9
- 1 Cell Membrane Mat (top view with the pore) marked “Teacher” #9

4. Teacher Guide Book Including:

- “Molecular Workbench” DVD
- Flash drive with Power Points, Animations, Word doc Files of Student Classwork papers.

Teacher Accessory Box

1 1 Plastic box labeled “Lost & Found”

2 1 Plastic box labeled “Fix-it Box”

3 8 “Gene Strips” These show a double stranded DNA nucleotide sequence for the following proteins:

- 1 alpha, 2 alpha mutated, 3 beta, 4 beta mutated
- 5 alpha, 6 alpha mutated, 7 beta, 8 beta mutated

4 8 packets of “Amino Cards” in re-closable plastic bags:

- 1 alpha, 2 alpha mutated, 3 beta, 4 beta mutated
- 5 alpha, 6 alpha mutated, 7 beta, 8 beta mutated

POSTERS

- 1 One Poster by David Goodsell Cell Panorama – Eleven foot long. Source: 3D molecular Designs
- 2 One Poster by David Goodsell Poster of Muscle --std size. Source: Exploratorium Store