

## Virtual Labs:

### Building DNA, transcription, translation & extraction

*Go through the steps outlined below to review genetic concepts learned in class.*

#### 1. First: Review

- Go to the following website: <http://learn.genetics.utah.edu/content/begin/tour/> and go through each of the following mini-lessons:
  - a) What is DNA?
  - b) What is a Gene?
  - c) What is a Chromosome?
  - d) What is a Protein?

#### 2. Next: Build a DNA!

- Go to <http://learn.genetics.utah.edu/content/begin/dna/builddna/>
- Click on “Start Building” button
- Watch the right hand side of your screen as you build your DNA “ladder”. (You can stop after building a few segments)
- Read the explanations provided (scroll down the screen)

#### 3. Next: DNA Transcription and Translation

- Go to <http://learn.genetics.utah.edu/content/begin/dna/transcribe/> & click “*Click Here To Begin*”

##### Transcription:

- Type in the complementary base pair to build your mRNA strand (remember the A – U and C – G pairing rule applies for RNA). Once completed you will start the Translation step.

##### Translation:

- Move your mouse over your mRNA strand until you find the “Start” code – **AUG**.
- Click on the **AUG**. This will start the translation process.
- Follow your mRNA triplet code to find the corresponding amino acid.
- Click and drag the amino acid to the mRNA strand.
- Once completed, the screen will show “**You have successfully created a protein!**”

#### 4. Next: Virtual Lab – Cheek cells DNA Extraction

- Go to <http://learn.genetics.utah.edu/content/labs/extraction/>
- Follow the directions to see the steps involved in extracting DNA from cheek cells.
- Remember to click & drag to move around your lab equipments.

By the end of this lab, you should be able to answer the following:

- ✓ What are some benefits of being able to extract human DNA?
- ✓ What materials do you need to collect cheek cells sample?
- ✓ What are the 2 components of the lysis solution? What are their purpose?
- ✓ Why do we add concentrated salt solution afterwards?
- ✓ What happens when the DNA sample + salt solution is centrifuged? Where would you find the DNA – in the pellet at the bottom of the tube or in the liquid?
- ✓ Why do we add isopropyl alcohol afterwards? What can you see at this stage?
- ✓ Why do we centrifuge the DNA sample + isopropyl alcohol in the last stage? Where would you find the DNA – in the pellet at the bottom of the tube or in the liquid?