Build a Nephron Model

* In this activity, you will build a nephron using the materials provided. Make sure that you use the correct material for each structure. After you completely build the nephron with its associated capillary beds, and arterioles, then you will label each structure.
* After labeling each structure you will then label where each process of Urine Formation is taking place. Also indicate where active transport occurs along the nephron.

Upon completion: Check your model against the check list below to make sure you have reached the goals of this assignment:

Use the check list below as a guide for building and checking your model:

1. Afferent and Efferent Arteriole - Red Twine
2. Peritubular Capillary Bed - Red Pipe Cleaner
3. Glomerulus - Pink Pipe Cleaner
4. Bowman's Capsule - Brown Pipe Cleaner
5. Proximal Convoluted Tubule - Blue Pipe Cleaner
6. Loop Of Henle (Ascending/Descending) - Yellow Pipe Cleaner
7. Distal Convoluted Tubule - Black Pipe Cleaner
8. Collecting Duct - Green Pipe Cleaner
9. Various Decorative Sequins for key substances – just use 2-3 at each location

\*\*\* Also make sure to draw on small arrows to indicate whether the substance (sequen) below is moving into (🡨) the nephron or out of (🡪) the nephron at that specific location.

Water = BLUE

Sodium = GREEN

Nitrogenous wastes = YELLOW

Glucose = PINK

Amino Acids = PURPLE

Drugs/H+/Penicillin = SILVER

Label each process around the proper location on your model:

1. Pressure Filtration
2. Tubular Reabsorption
3. Tubular Secretion
4. Water Reabsorption
5. Metabolic Wastes (Nitrogenous Wastes, urea, ammonia) final product = URINE

\*\*\* Use Figure 16.6 on p. 308 as a guide

Criteria OVER on the back 🡪

**CRITERIA FOR MARKING:**

**Structural Features:**

**All 5 structures of the Nephron included and labeled : \_\_\_\_/5**

**All key blood vessels included and labeled \_\_\_\_\_/4**

**Urine Formation Processes:**

* **First 4 key processes labeled and locations of processes correctly**

**identified on model and is a legend or key included \_\_\_\_\_/4**

**ATP – Active Transport Sites Labeled**

**ATP indicated at proper locations? \_\_\_\_\_/3**

**Key Molecules and direction of arrow (into or out of nephron) for each at the correct location and is there a key/legend included specifying what each sequin represent:**

**-Water molecules reabsorbed at proper locations \_\_\_\_\_/3**

* **Amino acids \_\_\_\_\_/1**
* **Sodium Ions \_\_\_\_\_/1**
* **Drugs/Penicillin \_\_\_\_\_/1**
* **Detailed Legend/Key for all molecules \_\_\_\_\_/2**

**TOTAL = \_\_\_\_\_\_\_\_\_\_\_\_\_/24**