# **Lab 10 Protocol: Renal Function**

## **Activity 1:**

Obtain a urinalysis test strip, and color analysis chart from your lab instructor. Note the time for reading each measurement (make sure you understand what each piece of the test strip is measuring). Take the strip and chart with you to the Toilette, begin urination, place the test stick under the stream of urine so that all of the analysis areas are touched by the urine. Blot excess urine from the stick with some toilette paper. Critically time and take note of the color of each test area – compare them to the color chart you were given. When you are done, dispose of your urine stick in the trash can (as well as the chart if soiled). **Do not forget to wash your hands when you finish!** Analyze your urine measurements – what does it indicate about your urinary health?

**POPS PROJECT:**

Record your values from the urine strip for leukocytes, nitrite, urobilinogen, protein, blood, specific gravity, ketones, bilirubin, glucose.

## **Activity 2:**

You will have access to six unknown urine samples. These unknowns are not real urine, they are simulated urine made in the lab. However, please make sure to wash your hands before and after these tests. You will be provided with Chemstrip urine test strips.

* For each urine sample, immerse the test strip into the urine sample for no longer than one second. Draw the test strip along the rim of the specimen container to remove excess urine.
* Apply the test strip to a portion of filter paper (or paper towel) to remove excess urine.
* For each urine sample compare and record the color values (and corresponding numerical values) indicated on the strip for: specific **gravity, ketones, pH, blood, glucose, and protein. Use the information obtained to find the name of “who” each unknown belongs to.**

**UNKNOWN 1 \_\_\_\_ A. “Charlie”**

**A 40 year old male with diabetes insipidus**

**UNKNOWN 2 \_\_\_\_ B. “Walter”**

**A 70 year old male**

**UNKNOWN 3 \_\_\_\_ C. “Astrid”**

**A 20 year old female with untreated diabetes mellitus Type 2**

**UNKNOWN 4 \_\_\_\_ D. “Olivia”**

**A 30 year old, active female that drinks a lot of tap water**

**UNKNOWN 5 \_\_\_\_ E. “Nina”**

**A 65 year old female with chronic urinary tract infections**

**UNKNOWN 6 \_\_\_\_ F. “ Peter”**

**A 30 year old active male runner**

## **Activity 3- Simulated experiment with urinalysis.**

A class was divided into the following groups that drank the designated solutions.

**Group 1:** This is the control group would consume no fluids.

**Group 2:** Members of this group consumed 500 ml of distilled water.

**Group 3:** Members of this group consumed 500 ml of a 5% sucrose (table sugar, a dimer of fructose and glucose) solution.

**Group 4:** Members of this group consumed 500 ml of 1 % sodium bicarbonate (also known as baking soda = NaHCO3) solution.

**Group 5:** Members of this group consumed 500 ml of regular coffee (not decaffeinated).

- **Sample Collection**: The members of each group voided (emptied their bladders) prior to beginning the experiment. Some urine from this sample was saved for microscopic analysis described below. At 25-30-minute intervals following the consumption of the designated fluids members of each group collected the maximal urine volumes possible and performed the required analyses.

**Urinalysis**

1. With the volumetric containers provided, the volume of each urine sample was determined and recorded. The subjects then performed urinalysis on urine samples at 0 minutes, 30 minutes, 60 minutes, and 90 minutes after the fluids were consumed.

2. You are to predict the results of urinalysis for each group (indicate a “up” for increased amount, a “down” for a decreased amount and “no” for no change) -volume -specific gravity -ketones -pH -blood -glucose -protein

**\*\* Note: we are not looking for “right” answers here, we are more interested in the logic that you used to come up with your answers.**