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| **Session X:**  | **Today we make pee…**Kidney physiology |

##

## Assessed criteria

Criterion E: AIE

Explanation with pictures: [LINK](https://refusetoreinventthewheel.wordpress.com/2015/05/11/today-we-made-pee/amp/)

**Materials:**

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| **Item** | **What it represents** |
| Red Stones | Red Blood Cells |
| White Stones | White Blood Cells |
| Green Stones | Proteins |
| 10 Small Red Beads | Amino Acids |
| 10 Small Blue Beads | Glucose |
| 10 Small White Rice Grains | Salt |
| 10 Small Yellow Beads | Urea |
| Red Spoon | Amino Acid Transporter Protein |
| Green Spoon | Glucose Transporter Protein |
| White Spoon | Salt Transporter Protein |
| Eye Dropper | Cell Membrane (osmosis) |
| A Plastic Cup | Nephron |
| 2 Plastic Cups | Blood in Renal Artery & Renal Vein |
| Latch Hook Canvas | Glomerulus |

**Method:**

1. First watch this introduction (Maybe your teacher puts it on the class screen): [LINK](https://www.youtube.com/watch?v=FN3MFhYPWWo)
2. Pour the blood components into the Renal Artery Cup and add water.
3. Lay the screen over the Nephron.
4. Pour the blood from the Renal Artery over the top of the screen to form a single layer.
5. Pour the materials that stay on top of the filter (the large beads) into the Renal Vein cup.
6. Model complete reabsorption- use transport protein spoons to return all of the glucose and amino acids from the nephron bowl to the renal vein cup.
7. Model selective reabsorption- use transport protein spoons to return 5 salt molecules to the Renal Vein cup.
8. Transfer enough water from the nephron to fill the cup halfway. Giving each group a different amount of water to start with is a good way to model how drinking more water produces more urine.
9. What didn’t have a transport spoon? These substances are excreted as urine.
10. Write a summary on the functioning of the kidney.
11. Together with your partner, do some research to complete this labelling exercise: [LINK](https://www.purposegames.com/game/label-a-nephron-game) Tell your teacher the time you needed to do it, let’s see who wins!
12. Now label the entire system on the interactive whiteboard in the classroom: [LINK](https://subscription.echalk.co.uk/Science/biology/UrinarySystem/urinarySystemAndKidney.html)
13. Watch this video to finish the activity and to make sure you understood all processes involving the production of urine. [LINK](https://www.youtube.com/watch?v=tx9hYFeEd1E)