

The Blood Brain Barrier - A Mystic Portal Into Your Mind

Items needed:

- Two clear drinking glasses per group of children
- Skittles
- Multi-colored marshmallows
- Colored mineral oil
- Rubbing alcohol
- Chocolate chips
- Alka-Seltzer
- Table
- Bucket
- Hot water
- Food coloring

This model will demonstrate some of the unique properties of the Blood-Brain Barrier (BBB). The “barrier” will consist of three layers. The bottom layer, which will represent the brain, will be colored water. The actual “barrier” layer will be colored mineral oil. The external area (such as blood vessels) will be represented by a layer of rubbing alcohol, which floats on the oil.

The skittles will represent glucose, the Alka-Seltzer will play the role of caffeine. The chocolate chips can demonstrate the effects of aspirin, because the chocolate chips take a long time to dissolve. This will be showing the twenty minutes or so that it takes to get relief from a headache. All of these items sink through the top two layers, and land in the “brain” (water) layer of the model where they dissolve.

Marshmallows, of several different colors will be used to show different things that cannot pass the barrier, such as viruses (green marshmallows), bacteria (orange marshmallows), and blood cells (pink marshmallows). It may also be possible to draw a picture of a virus, bacteria and blood cell on each marshmallow with a Sharpie pen. Marshmallows float contentedly on top of the rubbing alcohol layer, in the “blood vessels.”

Necco’s wafers, or the candy hearts, will be used to show that there are structures in the BBB. These candies float at the bottom of the oil layer, just above the water layer.

Before the students are allowed to see these phenomena for themselves, they will be given a short presentation on the Blood Brain Barrier and it’s functions utilizing a poster as a visual aid. A large sign will be displayed during the hands-on part of their time with us listing what each candy represents in our model.