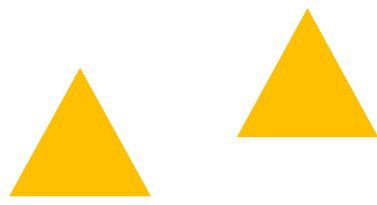

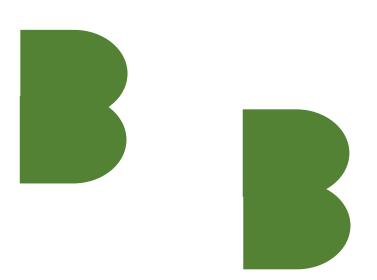

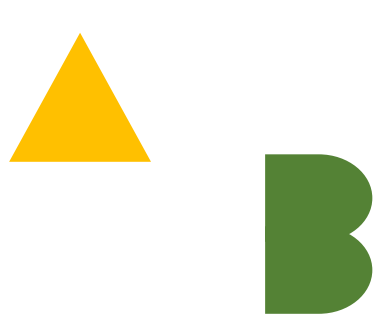





Three Low Key, But High Impact, Teaching Techniques for Undergraduate Biology Labs

Lydia Chiasson, PhD
Department of Biology, Mount Royal University, Calgary, AB

Construction Paper Cut Outs for ABO Blood Typing

Blood Type	Antigens	Antibodies	Can Be Received	Learning Outcomes:
A			A, O	Understand ABO and Rh blood typing and reason for transfusion reactions from mismatched blood. ¹
B			B, O	
AB		None	A, B, AB, O	Students arrange construction paper cutouts to represent different blood types that could be received (or donated).
O	None		O	

For Rh factor, place  antigens on red blood cell surface to represent Rh+.

Rh antibodies = 

"Glow-in-the-Dark" Viruses for Epidemiology

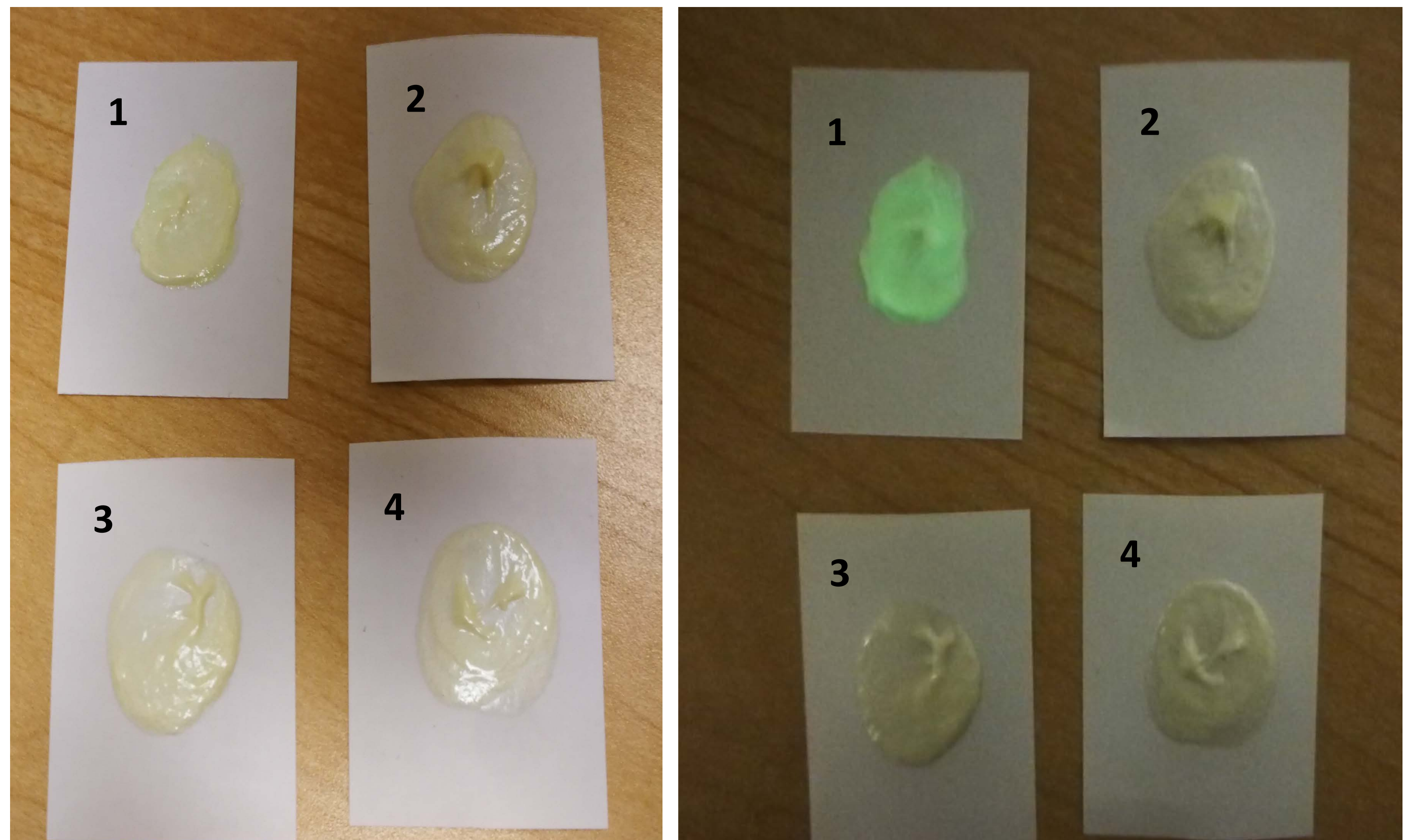
Learning Outcomes:

Understand how infectious diseases spread through direct contact and become epidemics.²

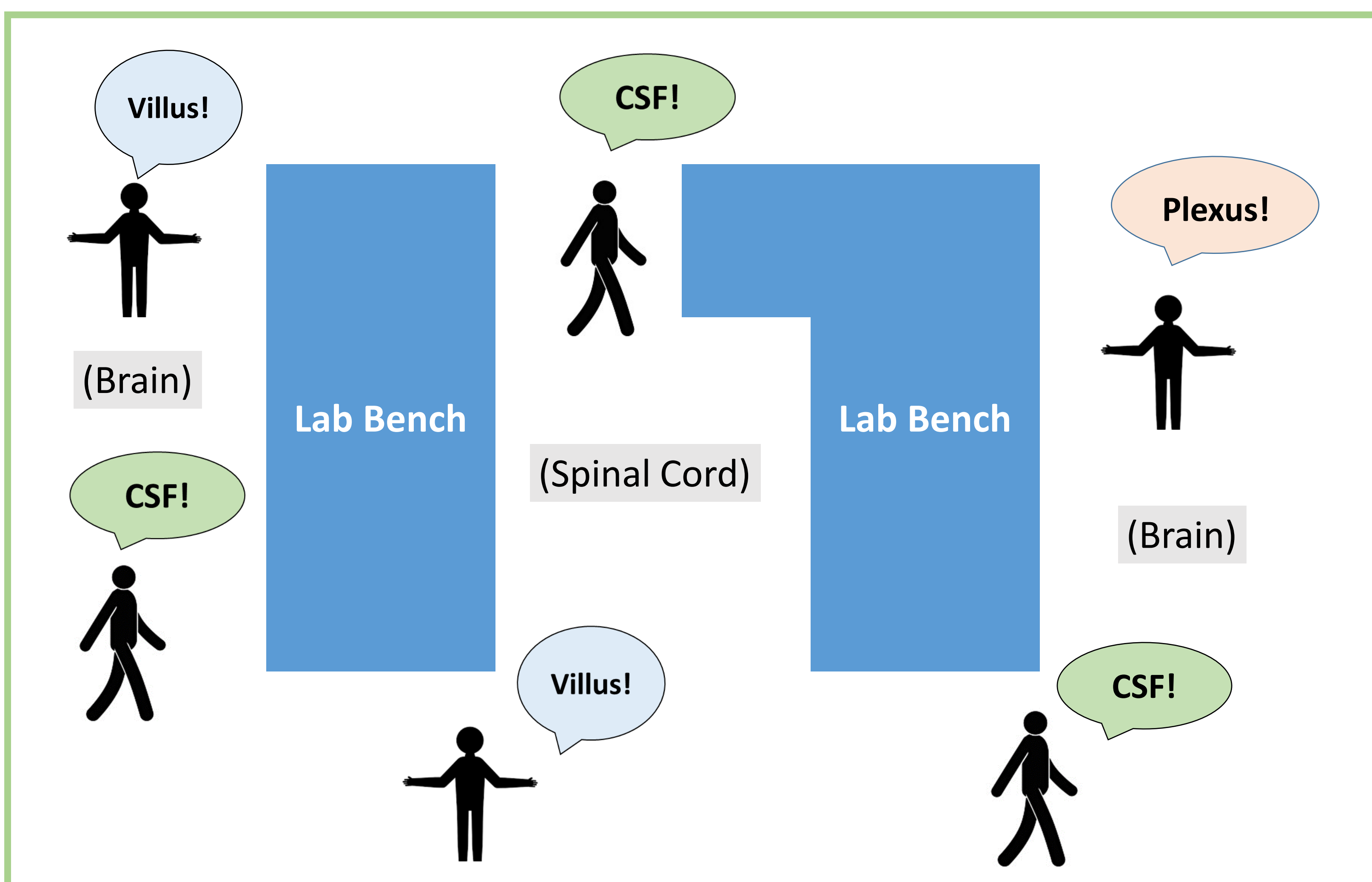
Apply moisturizer to numbered squares but secretly apply glow-in-the-dark face paint to one paper square.

Each student receives a numbered square and exchanges "bodily fluid" with 3 different individuals by rubbing their paper squares together.

Dim the lights to reveal those infected with "glow-in-the-dark" virus and students determine the individual who began the epidemic.



Collaborative Game for Flow of Cerebrospinal Fluid



Learning Outcomes:

Understand the formation, circulation and drainage of cerebrospinal fluid (CSF).¹

Students are designated as CSF, choroid plexuses (produce CSF), or arachnoid villi (reabsorb CSF).

CSF released by choroid plexuses can move between lab benches (= spinal cord) or around benches (= brain) or be reabsorbed by arachnoid villi.

References

- ¹Marieb, E.N., & Hoehn, K. (2019). *Human Anatomy & Physiology* (11th ed.). Hoboken, NJ: Pearson Education, Inc.
²Department of Biology. (2019, Fall). *BIOL 1216 Lab Manual*. Calgary, Canada: Mount Royal University.