

Biology Lab



Overview:

Discover the fascinating world of cellular composition with our Chemical Composition of Cells laboratory. Dive into the intricate structures of proteins, carbohydrates, and lipids through engaging experiments and hands-on activities. Uncover the secrets of proteins with the Biuret Test, revealing their presence in various solutions. Explore the realm of carbohydrates with the Iodine and Benedict's tests, detecting starch and sugars. Finally, witness the distinctive characteristics of lipids using the Paper Test. This comprehensive lab provides an immersive learning experience, empowering you to unravel the molecular building blocks of life.

How to Find the Experience

Once logged in on the VXRLabs homepage, navigate to the "Subjects" tab, select the "Biology" option from the left-side menu, then select the "General Biology" option, then select the "Chemical Composition of Cells" option.

Next Generation Science Standards (NGSS)

Visit the link below or scan the provided QR code to see specific standards and acknowledgments.



MS-LS1 From Molecules to Organisms: Structures and Processes

<http://www.nextgenscience.org/dci-arrangement/ms-ls1-molecules-organisms-structures-and-processes>





Gameplay Instructions

Experimental Procedure: Test for Proteins

1. The student will label 4 clean test tubes (1 to 4).
2. The student will use a clean graduated transfer pipet to add (drop) 1 ml of the experimental solutions listed in table 4.2 to the test tubes according to their numbers.
3. For example, test tube 1 will have 1 ml of distilled water. Test tube 2 will have 1 ml of albumin solution.
4. The student will add 5 drops of biuret reagent to each tube, swirling to mix.
5. The reaction will be immediate.

Experimental Procedure: Test for Starch

1. The student will label 5 clean test tubes (1 to 5).
2. The student will use a clean graduated transfer pipet to add (drop) 1 ml of the experimental solutions listed in table 4.4 to the test tubes according to their numbers. For example, test tube 1 will have 1 ml of distilled water. Test tube 2 will have 1 ml of glucose solution.
4. The student will add 5 drops of iodine solution to each test tube.
5. The student will note the final color changes.

Experimental Procedure: Test for Sugars

1. The student will prepare a water bath by placing a large beaker of water on a hot plate and adjust the dial on the hot plate so that the water is maintained at a gentle rolling boil
2. The student will label 5 clean test tubes (1 to 5).
3. The student will use a clean graduated transfer pipet to add (drop) 1 ml of the experimental solutions listed in table 4.6 to the test tubes according to their numbers. For example, test tube 1 will have 1 ml of distilled water. Test tube 2 will have 1 ml of glucose solution.
4. The student will add 5 drops of Benedict's reagent to each test tube.
5. The student will place (drag) the tubes into the boiling water bath.
6. The student will see a color change after a few minutes (appr. 3 min). Students will then remove all of the tubes from the water bath.

Experimental Procedure: Paper Test for Fat

1. Using a plastic dropper, the student will place a small drop of distilled water on a square of brown paper. The student will describe the immediate effect.
2. Using a plastic dropper, the student will place a small drop of vegetable oil on a square of the paper. The student will describe the immediate effect.
3. The student will wait 15 minutes for the paper to dry and evaluate which substance penetrates the paper and which is subject to evaporation.