

## Mix it Up 混合在一起



### Mixtures and Solutions

Mixtures and solutions are a common occurrence in our everyday lives. They are the air we breathe, the food and drink we consume, and the fabrics we wear. By studying how we distinguish pure substances from mixtures and solutions, students started to appreciate how matter is organized. With this knowledge, we can manipulate matter to improve our health and quality of life.

### Magic Milk

Several hands on activities were conducted enabling students to discover what molecules look like as well as how and why they stick together or separate. We started with an experiment testing soap molecules, the students used pepper or oil as a substitute for germs, we added soap into the equation and watched how the soap stuck to the germs, showing the importance of using soap to destroy germs and not only water.

Our second activity called magic milk made use of food coloring, milk and soap. Students carefully dropped several colored drops into the milk and then touched the colored drops with a cotton swab dipped in dish-soap, as the soap touched the colored drops an immediate separation of the water and fat content in the milk took place giving the students a visual and hands on demonstration of how these molecules work. For additional creativity the grade two students used paper and dipped it into the mixture to create multi colored cards.

### 混合物及溶液

混合物及溶液在日常生活中隨處可見。它存在於空氣、食物及我們穿的衣服。藉由學習區分混合物及溶液中的物質，學生開始了解物質如何組成。經由這些知識，我們可以運用物質改善健康及生活品質。

### 神奇的牛奶

透過實作，學生發現分子的外觀，以及相互吸附或分離的方式及原因。從測試肥皂分子的實驗開始，學生用胡椒或油來代替細菌，在過程中加入肥皂，觀察肥皂如何吸附在細菌上，藉此說明除了水以外，肥皂能有效地消滅細菌。

第二項實作為神奇的牛奶，利用食用色素、牛奶及肥皂進行實驗。學生小心地滴幾滴食用色素至牛奶中，並將沾有肥皂的棉花棒放進牛奶中。當肥皂碰到食用色素時，會立即分離牛奶中的水分及脂肪，讓學生可以觀察這些分子如何運作。為了更展現創造力，二年級學生將紙放入混合物中製作出漂亮的彩色卡片。

## 1 ASK + IMAGINE 提問 + 創思

We saw why it is so important to use soap for combatting germs. Those molecules are hydrophobic making them ideal for sticking to germs.

我們了解肥皂對抗細菌的重要性，這些分子具有疏水性，因此非常適合附著在細菌上。



## 3 PLAN 計畫



Each group had to come up with a theory for why the soap molecules react with the milk. 各組須想出一個理論說明肥皂分子與牛奶的反應。

## 4 CREATE 創造



Learning about molecules this way makes it much easier and more fun to understand how they work. 通過這種方式學習分子，可以更容易且更有趣地理解其原理。

## 5 IMPROVE 改進



We compared and shared the results of our solutions. 我們比較並分享實驗結果。