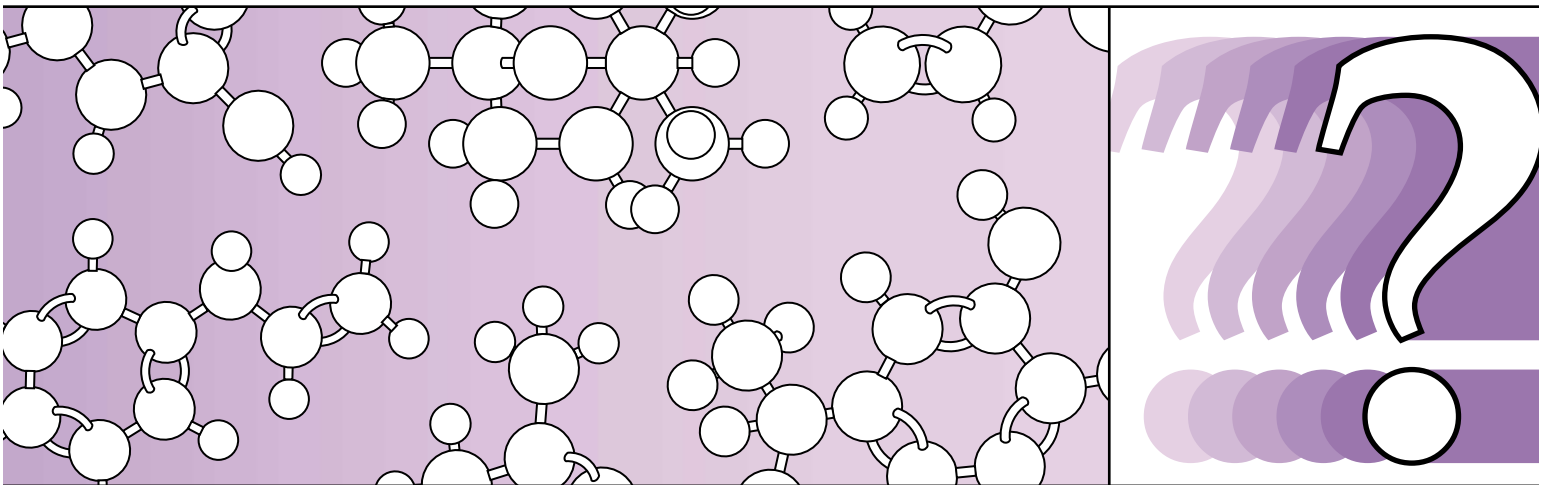


*The Pfizer Foundation Biochemistry*

# Discovery Lab

**What atoms  
are in sour foods?**



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**What is it that makes some foods taste so sour?**

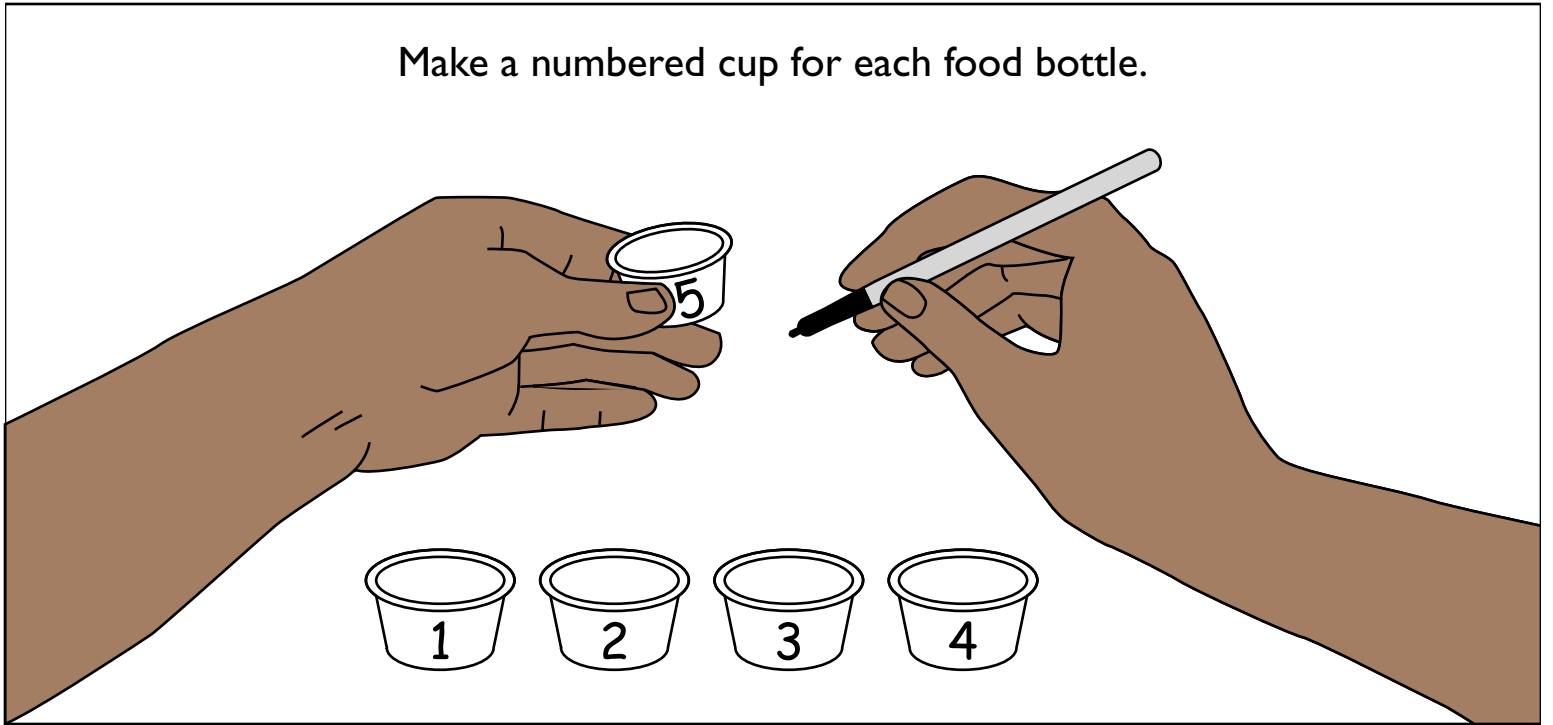
**Foods are sour when they have a high concentration of loose hydrogen atoms.**

Atoms are tiny particles that make up us and everything we see around us. Atoms link together to make molecules.

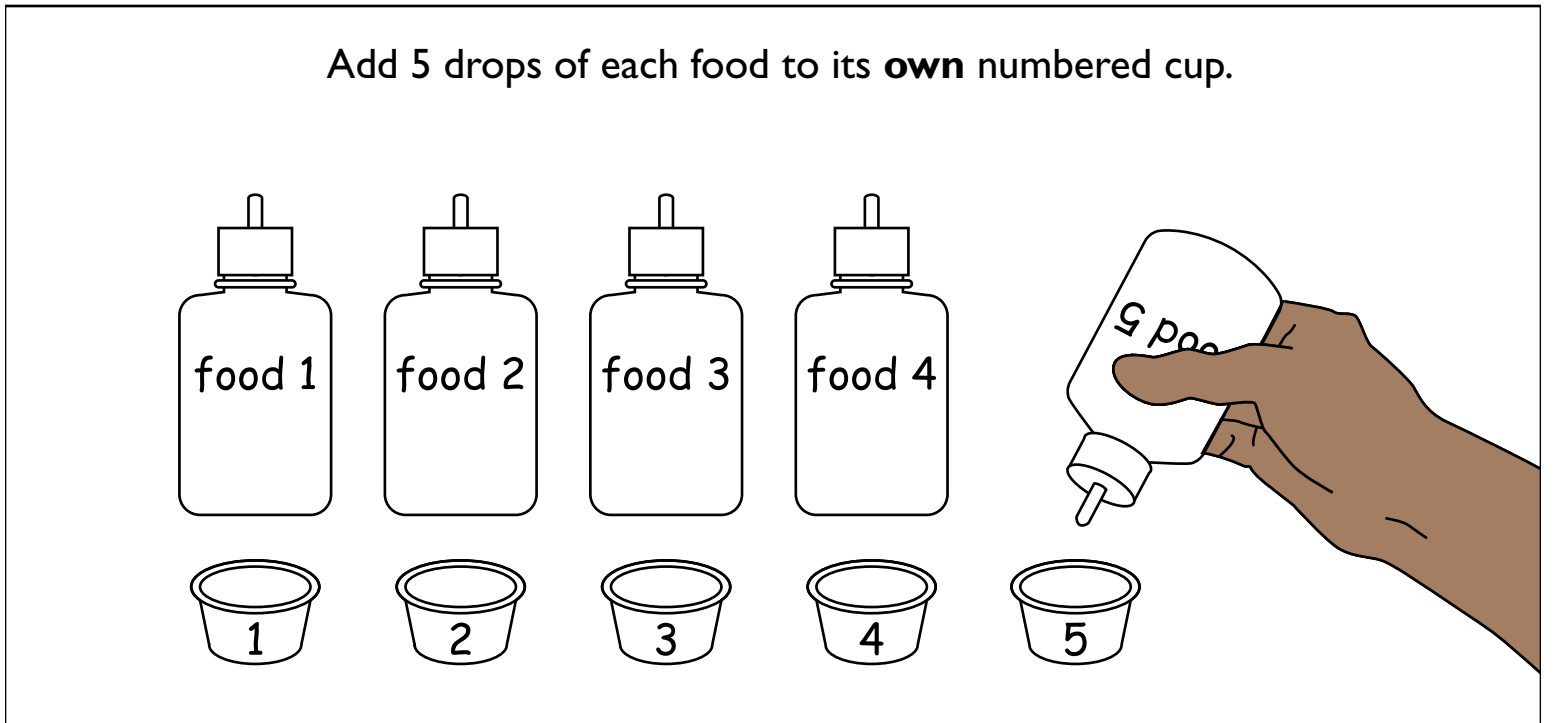
**Do an experiment to predict how sour some foods are without tasting them.**

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Make a numbered cup for each food bottle.



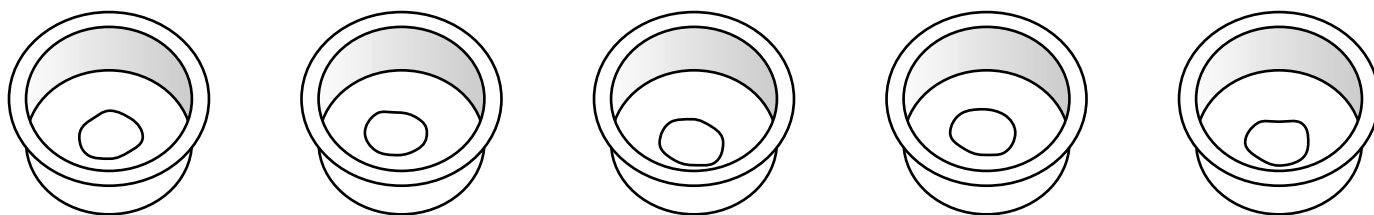
Add 5 drops of each food to its **own** numbered cup.



Add a drop of dye to each cup of food.



The color of the dye shows the concentration of loose hydrogen atoms in the food.

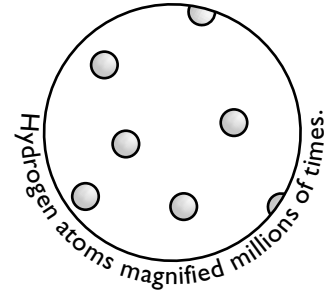
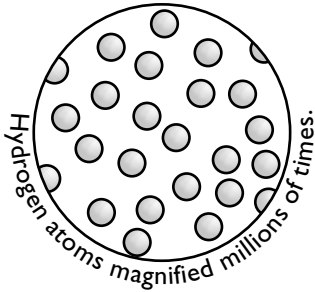


This chart shows you what the dye colors mean:



High concentration of loose hydrogen atoms

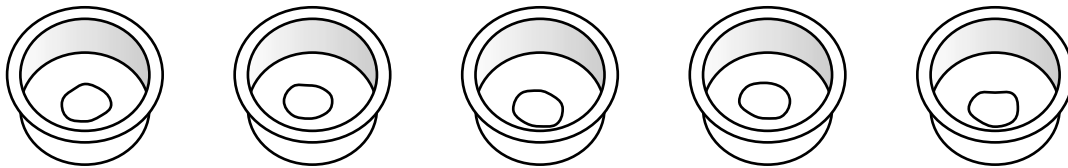
Low concentration of loose hydrogen atoms



Put the cups in order, from high concentration to low concentration of loose hydrogen atoms:

High concentration of loose hydrogen atoms

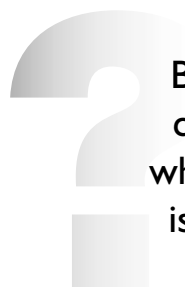
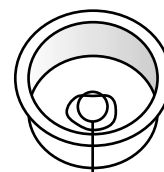
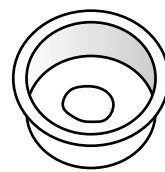
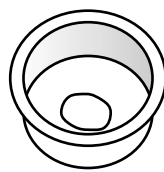
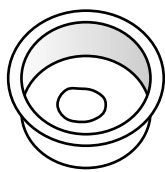
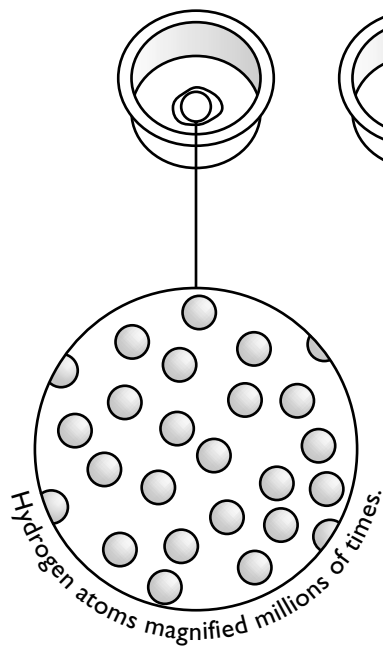
Low concentration of loose hydrogen atoms



Some foods might be the same.

The food with a **high concentration** of loose hydrogen atoms is the **most sour**.

The food with a **low concentration** of loose hydrogen atoms is the **least sour**.



By looking at the color of the dye, which number food is the most sour?



Which number food is the least sour?

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Lift the flap to find out what each of the foods are.



Vinegar



Water



Milk



Lemon  
juice



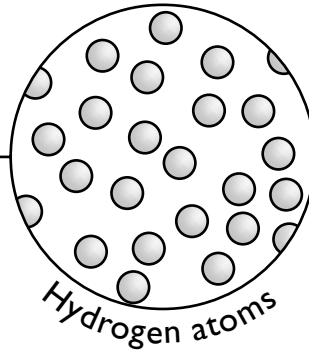
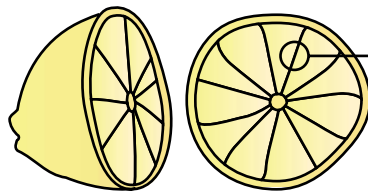
Orange  
juice



Does the sourness of these foods match  
what you predicted using the dye?

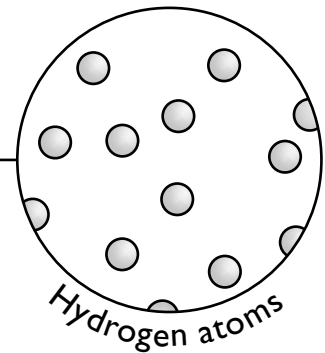
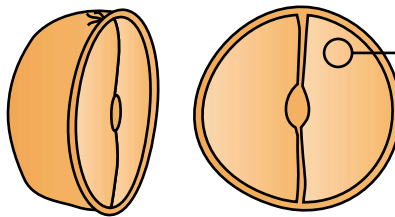
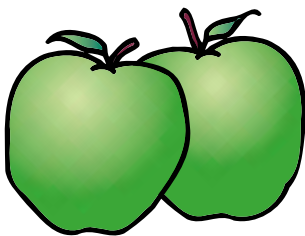
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These foods are all very sour because they have a high concentration of loose hydrogen atoms.

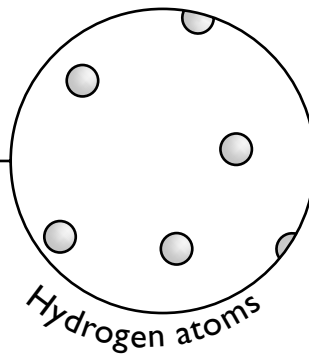
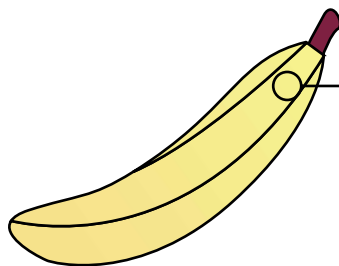


What other sour foods can you think of?

These foods are just a little bit sour because they have an intermediate concentration of loose hydrogen atoms.



These foods are not sour because they have a low concentration of loose hydrogen atoms.



What other foods can you think of that are not sour?



Do you have questions about this activity,  
or about food and molecules?

Maybe you can find the answer by  
experimenting some more.

Ask a staff person if  
you need help.

When you are done,  
please throw the  
cups in the trash.

