

Dear Parents and Caregivers,

Willow Oaks Fifth Graders just finished up a terrific science unit with teachers from the Palo Alto Junior Museum and Zoo. You can help solidify your child's learning, and foster a life-long love of science at the same time. Simply ask your child to talk about it! Use the class descriptions below, as well as our suggested questions and web links to guide your discussions, and have fun learning together!

**Unit Title: Chemistry**

In this chemistry unit, students learned that all matter on earth is made up of molecules which contain different elements in varied combinations. Some common elements include oxygen, carbon, nitrogen, calcium, helium, sodium, silver and gold. Students also learned about the specific elements of water (hydrogen and oxygen) and the special bonds that give water molecules their unique qualities (ex: water has high surface tension).

Next, they learned about the differences between mixtures and solutions, as well as the difference between a chemical reaction and a physical creation.

Finally, students used microscopes to get a closer look at real animal cells, learning about some of the parts and inner workings of cells.

**Questions:**

What common elements can you find in household items? Think back to class and your exploration of water. Can you draw a picture of a water molecule (hint: 1 oxygen atom; 2 hydrogen atoms).

A mixture is something that can be separated into its individual parts through physical means (ex: a mixture of black beans and pinto beans; you can pick out the black beans). A solution is something you can't separate easily (ex: salt and water; you have to boil off the water to get the salt out). In a chemical reaction, two substances combine to make something new (ex: Baking soda + vinegar → carbon dioxide). In a physical reaction, substances change state but remain essentially the same (ex: ice melting into water or water evaporating into a gas). Create a mixture and a solution using what you find around the kitchen. Can you combine two substances to create a chemical reaction?

How do you think the cells of plants and animals differ? Can you think of one way? Hint: a stick of celery is very rigid, but your skin isn't. How might a celery cell wall differ from your skin cell wall?

**Web Links:**

[http://www.chem4kids.com/files/matter\\_solution.html](http://www.chem4kids.com/files/matter_solution.html)

[http://www.chem4kids.com/files/matter\\_mixture.html](http://www.chem4kids.com/files/matter_mixture.html)

[http://www.chem4kids.com/files/react\\_intro.html](http://www.chem4kids.com/files/react_intro.html)

<http://learn.genetics.utah.edu/content/begin/cells/>

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The Palo Alto Junior Museum and Zoo (JMZ), located at 1451 Middlefield Road in Palo Alto, is a small children's museum with educational exhibits and live animals. Daily admission to the Museum is free, and they also offer many science classes for families and schools. Each year, JMZ science teachers teach approximately 180 classes in Willow Oaks Elementary School (provided at no cost). Lessons include close encounters with live animals or authentic artifacts, hands-on exploration of science concepts, and work with real scientific tools and equipment. We encourage you to take advantage of this important learning resource by visiting the JMZ often with your child.

Enjoy!

Sincerely,

Willow Oaks Elementary School  
Fifth Grade Teachers