

### **Catalyst Demonstration – Lighting a Match**

1. Show the students a match. Discuss there will never be a redaction to light the match like it is.
2. Strike the match on the box until it lights. Inform the students that your hand striking the match was the catalyst that made the match light by reducing the activation energy.
  - a. Remember to extinguish fire quickly and discard appropriately.
3. The striking of the match sped up the reaction, mimicking an enzyme.

### **Lock/Key Demonstration**

1. Inform the students that an enzyme acts like a lock with a key. It takes a specific key to open a lock or “react” with the lock.
2. Insert the correct key into the lock and open it.
3. Explain that this was a reaction in which the key was like the enzyme.
4. Then use other keys to try to open the lock. Ask students to take out any keys that they have and see if they will open the lock.
  - a. Be prepared with some other keys in case none of the students carry keys.
5. Ask the students why the other keys did not work.
  - a. Reinforce that only a certain key opens a lock, mimicking the specificity of an enzyme.

### **Enzyme Specificity – Puzzle Piece Activity**

The purpose of this activity is to illustrate that enzymes are very specific in what substrate they will bind to in order to serve as a catalyst for the reaction.

1. Pass out a single puzzle piece to each student.
  - a. E = Enzyme and S = Substrate
  - b. There are 14 pairs of puzzle pieces (28 total pieces). If there will be less students, you may want to put the puzzle together prior to the session to be able to select the appropriate number of pairs of puzzle pieces. Note that each piece only has one other piece that it will match.
2. Have the students decide what their “reaction” will be once they find their partner. This could be a specific dance type, facial expression, etc.
3. Then allow the students to go around the room to find their complementary puzzle piece. Depending on the number of students and the size of the room, this should take around 5-7 minutes.
  - a. Inform the students that “E” can only “react” with “S” and vice versa.
4. When two students find their complementary puzzle pieces, they can do their “reaction”.