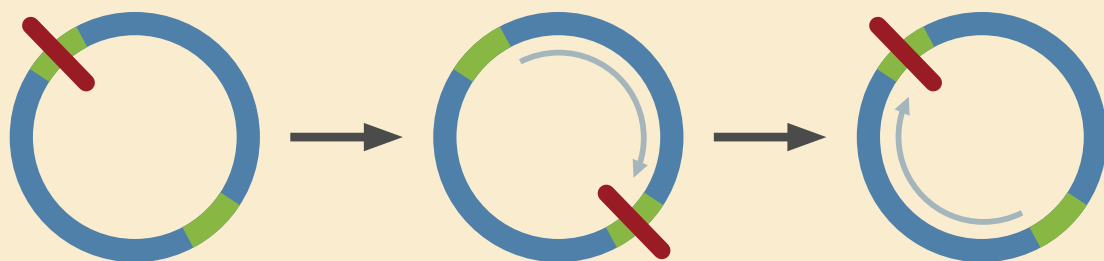


# 2016 NOBEL PRIZE IN CHEMISTRY

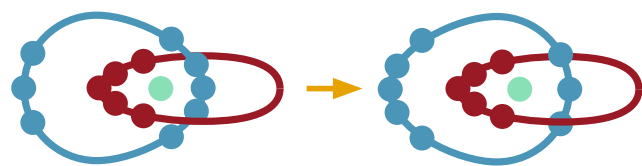


The Nobel Prize in Chemistry 2016 was awarded to **Jean-Pierre Sauvage**, **Sir Fraser Stoddart**, and **Bernard Feringa** for the design and production of molecular machines with controllable movements.



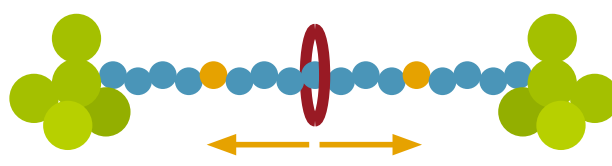
● RING-SHAPED MOLECULE 1 ● RING-SHAPED MOLECULE 2 ● BINDING SITE

This year's chemistry Nobel Prize is awarded for work on molecular machines which are a thousand times thinner than a human hair. The machines are formed from mechanically interlocked ring-shaped molecules which are able to move relative to each other.



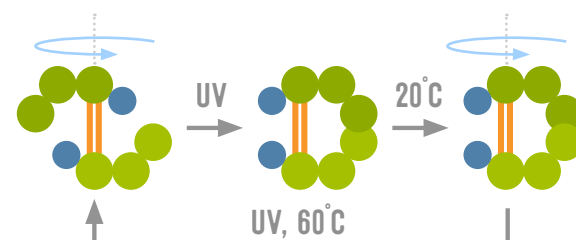
● ORGANIC-BASED COORDINATING RINGS  
● CENTRAL COPPER ION

Jean-Pierre Sauvage created a pair of interlocking rings (called a catenane). One ring could rotate around the other when energy was added.



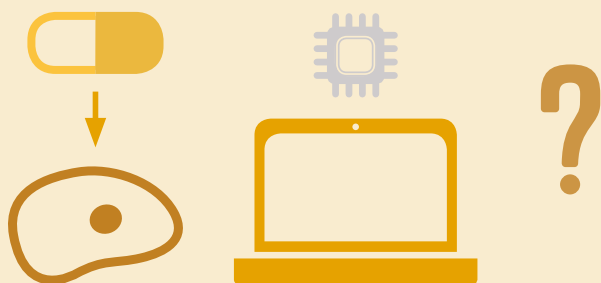
● 'SHUTTLE' ● BULKY GROUPS  
● 'STATIONS' ● REST OF MOLECULE

Fraser Stoddart made a ring-shaped molecule attached to an axle (a rotaxane) which could shuttle up and down. He also helped produce a rotaxane-based computer chip.



|| DOUBLE BOND; ISOMERISATION DRIVES ROTATION

Ben Feringa produced the first molecular motor by constructing a molecule that responded to light and heat and spun in a particular direction.



## WHY DOES THIS RESEARCH MATTER?

Research is investigating using molecular machines to transport and release drugs to specific cells in the body. They could also find future uses in electronic devices. The tasks they can accomplish are constantly expanding, so they may have further as yet unforeseen uses.

Nobel Prize in Chemistry Press release: [http://www.nobelprize.org/nobel\\_prizes/chemistry/laureates/2016/press.html](http://www.nobelprize.org/nobel_prizes/chemistry/laureates/2016/press.html)