
CONDENSATION OF Women in Chemistry

By Mary Wissinger

Illustrated by Danielle Pioli

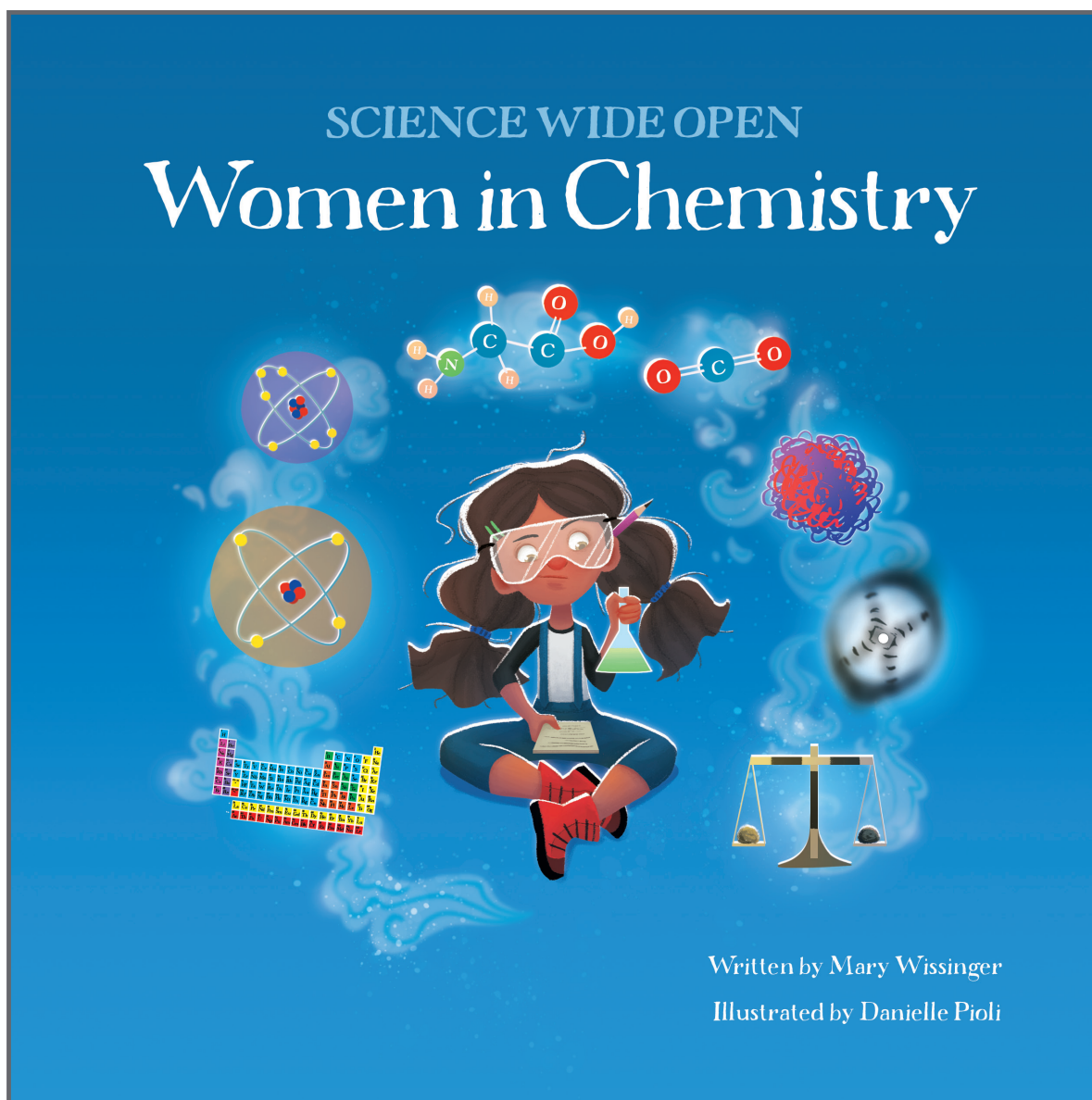
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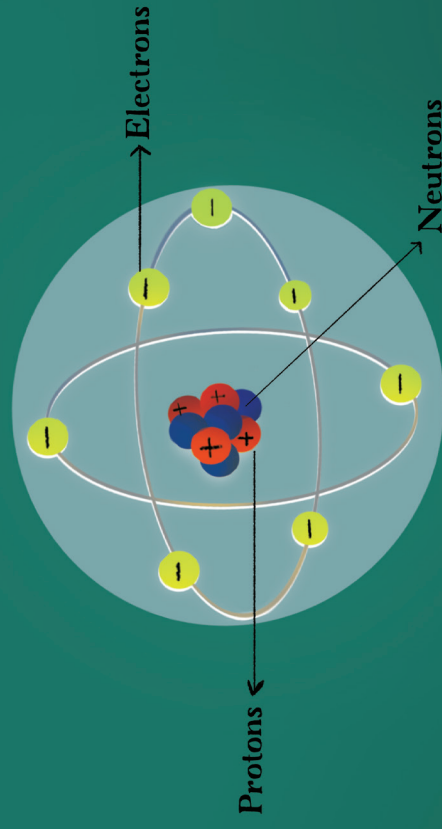


What's chemistry?

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Chemistry is the science of matter and the changes matter goes through. You could also say it's the science of stuff and how it works!

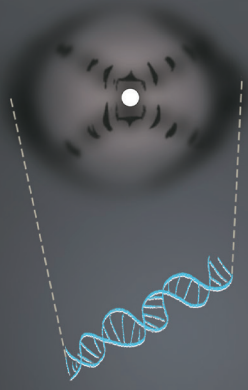
From the air you breathe to the cells in your body, matter and chemistry are everywhere. All the matter in the universe is made up of just three tiny particles: protons, neutrons, and electrons.



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X-Rays



X-Ray Pattern of DNA

DNA is shaped like a twisted ladder called a double helix, but we didn't know what it looked like until Rosalind Franklin. She worked very carefully to take the best pictures of DNA.

Sometimes her pictures took 24 hours before they were ready. Her DNA pictures helped scientists figure out how DNA carries the information that is read by our bodies.



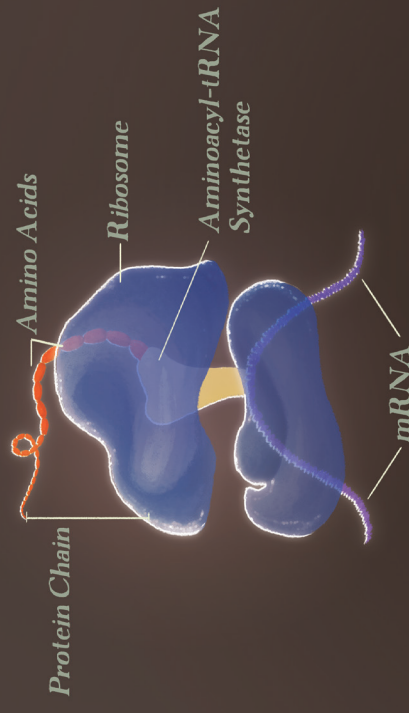
(England, 1920–1958)



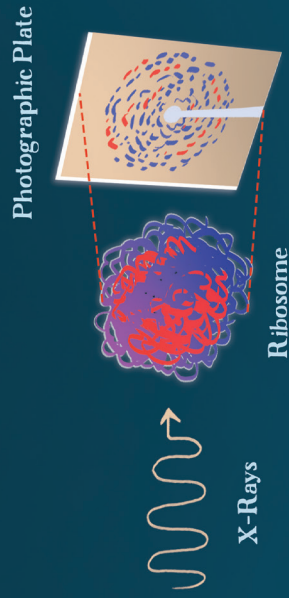
How can my body read DNA?

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Ada Yonath figured out how our bodies read DNA. She discovered the chemistry and shape of the ribosome, a structure inside our cells. It took her 20 years of experiments and research to figure out how ribosomes work.



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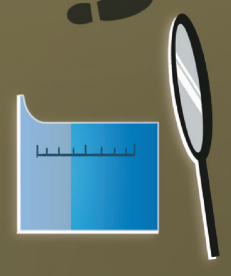
Ada studied special cells and used technology called crystallography. She discovered that our bodies make a copy of our DNA instructions, called mRNA. Then one half of the ribosome reads the mRNA instructions, and the other half follows the instructions to make the proteins that build our bodies.

Ada won a Nobel Prize for her work, because it helps explain how all living things—like you—are built!





Chemists, like all scientists, are curious and get their inspiration from almost anywhere.



Any time they ask a question, it leads them to the next question.



Like me! I'm already a chemist!

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Yes, you are. When you ask a question and look for an answer, you are already a chemist.

And here's the best part:
The whole universe is your experiment!



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Glossary

- ALCHEMIST:** Someone in ancient times who tried to turn ordinary metals into gold or silver or find one cure that would work for all sickness.
- ATOMS:** Atoms are like the building blocks that put together our universe. Different kinds of atoms are made by combining different numbers of protons, neutrons and electrons.
- CELLS:** Small compartments that hold the biological equipment that keeps an organism alive and working. Cells are the basic structural unit for all organisms.
- CHEMICAL REACTION:** A process where the structure of something, like a molecule, gets rearranged.
- CHEMICAL STRUCTURE:** The way the atoms are arranged in a substance.
- CHEMISTRY:** The study of matter and the changes that happen to it.
- DNA (Deoxyribonucleic Acid):** The written plan in the cells of living things (like plants, animals, and people) which tells each cell, and as a consequence, the body, how to grow and function.
- ELECTRONS:** Very teeny particles with a negative charge of electricity. Electrons travel around the nucleus of every atom.
- ELEMENT:** A basic substance made of one type of atom that cannot usually be separated into simpler substances.
- EXPERIMENT:** A test to collect information about the world to see if a hypothesis is correct.
- HYPOTHESIS:** A scientific guess that a scientist makes to explain something they think is true or think will happen.
- MASS:** A measure of how much a thing resists being moved.
- MATTER:** Anything that takes up space and has mass.
- MOLECULE:** A group of atoms that are bonded together.

NEUTRONS: Very teeny particles with no charge of electricity. Neutrons are in the nucleus of every atom except for Hydrogen.

NOBEL PRIZE: An award given for amazing work in chemistry, physics, physiology, medicine, literature, or economics. Being given a Nobel Prize is one of the greatest honors a scientist can get!

PERIODIC TABLE: A place that arranges chemical elements, and is organized by the elements atomic number.

The atomic number comes from how many protons the element has.

PROTEINS: Chain-like molecules that are made up of small parts called amino acids.

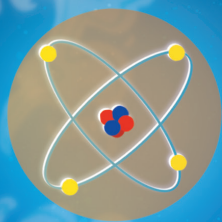
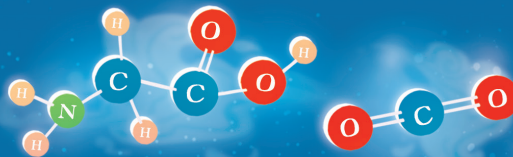
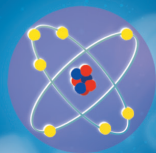
PROTONS: Very teeny particles with a positive charge of electricity. Protons are in the nucleus of every atom.

RIBOSOMES: Sphere-shaped structures inside a cell that read the cell's mRNA and make proteins.

X-RAY: Invisible rays of high energy and short wavelength that can pass through things and make it possible to see inside of them.

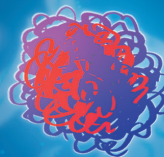
Bibliography

- Hypatia's Heritage: A History of Women in Science from Antiquity through the Nineteenth Century* by Margaret Alic (Beacon Press, 1986).
- Notable Women Scientists* edited by Pamela Proffitt. (Gale Group, 1989).
- Remarkable Minds: 17 More Pioneering Women in Science & Medicine* by Pendred E. Noyce (Tumblehome Learning, Inc., 2015).
- https://www.nobelprize.org/nobel_prizes/chemistry/laureates/2009/yonath-bio.html
- [http://www.npr.org/sections/thetwo-way/2016/01/04/461904077/4-new-elements-are-ad](http://www.npr.org/sections/thetwo-way/2016/01/04/461904077/4-new-elements-are-added-to-the-periodic-table)
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