

BUSINESS INSIDER

12 incredible women you've never heard of who changed science forever

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Sure, most people have heard of Marie Curie and Rosalind Franklin, Jane Goodall and Sally Ride.

But for every female scientist whose work has been recognized and celebrated, there are thousands who have been accidentally or purposefully forgotten.

For a few, that might change, thanks to a beautiful new book, "[Women in Science: 50 Fearless Pioneers Who Changed the World](#)," by artist Rachel Ignatofsky.

While she highlights some of the classic women in science, she's also profiled some less familiar faces — and discoveries.

Here are a dozen of our favorites.

Meghan Bartels wrote an earlier version of this post.



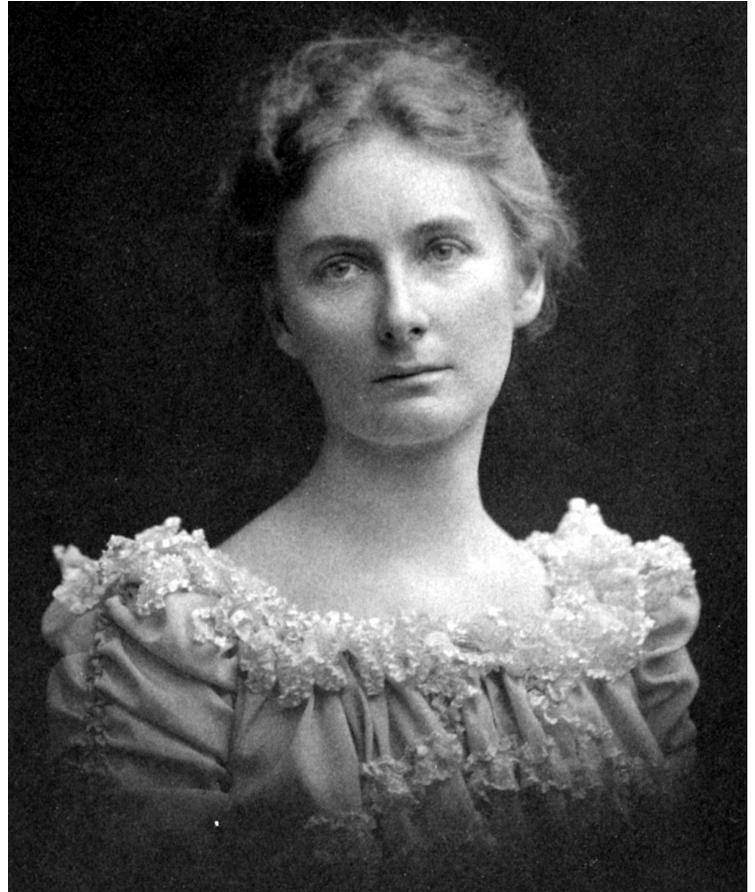
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Florence Bascom: Helped us understand how mountains form

Florence Bascom (1862-1945) discovered her love for geology on a childhood trip with her father and a geologist friend of his.

She worked for the US Geographical Survey, particularly specializing in the [Piedmont Plateau](#) between the Appalachians and the Atlantic coastal plain. She was voted one of the [top 100 geologists](#) in 1906 in an edition of a magazine called, ironically, American Men of Science.

In addition to her research, she also taught several important geologists of the next generation at Bryn Mawr College.



Camera Craft Studios, Minneapolis/Smithsonian Institution/Wikimedia Commons

Marjory Stoneman Douglas: Championed the ecological importance of The Everglades

Marjory Stoneman Douglas (1890-1998) moved to Miami to write for the Herald, where her father worked. She left to work for the Red Cross during World War I, then returned to the Herald before branching out on her own as a writer.

She was able to see the value and importance of the Everglades despite [finding them](#) "too buggy, too wet, too generally inhospitable." She wrote a book called "[The Everglades: Rivers of Grass](#)," which raised awareness about the threats the ecosystem faced.

She successfully led the opposition to an [Army Corps of Engineers plan](#) that would have reduced flooding but destroyed the Everglades. In addition to conservation, she also fought for [women's rights and racial justice](#).



President Clinton talks with Marjory Stoneman Douglas after presenting her with a Medal of Freedom.

Doug Mills/AP

Cecilia Payne-Gaposchkin: Figured out what the Sun was made of

[Celia Payne-Gaposchkin](#) (1900-1979) was the astronomer who discovered that the sun is made of hydrogen and helium.

She went to college in Britain for [botany](#), then attended by chance a lecture given by a prominent physicist, which she found so intriguing she changed fields (the lecturer, [Arthur Eddington](#), became an important mentor for her). She moved across the Atlantic to study at Harvard, where she spent the rest of her career.

Her [dissertation](#) was called "the most brilliant PhD thesis ever written in astronomy." In addition to our sun, she also studied [variable stars](#), taking more than a million photographs of them with her team.



Smithsonian Institution/Wikimedia Commons

Rita Levi-Montalcini: Made a breakthrough in understanding the nervous system

Rita Levi-Montalcini (1909-2012) was the first Nobel Prize winner to reach the [age of 100](#). Born in Italy, she talked her father into letting her study medicine.

During the Jewish persecution and World War II, she had to leave her university and eventually flee to the countryside with her family, but she kept working on [science, dissecting chick embryos](#).

After the war, she moved to the US, where she discovered [nerve growth factor](#), which guides the development of the nervous system. She later became an Italian [senator](#) for life.



Rita Levi-Montalcini celebrating her one hundredth birthday in Rome.

Riccardo De Luca/AP

Chien-Shiung Wu: Helped figure out how to enrich uranium

Chien-Shiung Wu (1912-1997) grew up in China, then moved to the US for her PhD studies.

She was recruited by the Manhattan Project during World War II. During her interview for the top-secret work, she was able to guess what they were researching from an equation left on a blackboard.

She helped figure out how to [enrich uranium](#) to fuel nuclear bombs. She was [snubbed](#) by the Nobel Prize committee for her work [showing](#) that nature isn't always [symmetrical](#). (The Prize was awarded to two men who first floated the idea, even though she was the one who proved it [experimentally](#).)



Smithsonian Institution/Wikimedia Commons

Katherine Johnson: Calculated Apollo 11's flight path to the moon

Katherine Johnson (1918-) did the math that launched the manned Mercury mission into orbit around the Earth and [calculated](#) the flight path for the Apollo 11 mission to land on the moon.

She also helped write the first [textbook](#) about space.

As a child, she loved to count — and from that springboard she graduated college at 18 and spent three decades at NASA.



President Obama presented the Presidential Medal of Freedom to Katherine Johnson.

Evan Vucci/AP

Rosalyn Yalow: Developed a technique that tests for diabetes, birth defects, and more

Rosalyn Yalow (1921-2011) spent most of her life in [New York City](#). She and her lab partner developed a technique for studying [hormones](#) that is still used today, called radioimmunoassay.

They used the process to differentiate between type 1 and type 2 [diabetes](#). It can [also](#) determine whether an unborn child has certain birth defects and to make sure the supplies in blood banks are clean.



Dave Pickoff/AP

Esther Lederberg: Discovered that bacteria mutate randomly

Esther Lederberg (1922-2006) studied bacteria and viruses, helping her work by inventing a technique called [replica plating](#), which made it easy to study certain bacterial colonies [across a set](#) of Petri dishes.

The technique contributed to a Nobel Prize for her [husband](#).

From this work, she confirmed that bacteria mutate randomly, including acquiring [resistance](#) to particular antibiotics before ever having been exposed to that particular chemical.

She also discovered a type of virus called a [lambda phage](#), which lies low in a cell until the cell is going to die from other causes. It's now used as a model for human viruses like herpes and tumor viruses.



Esther M. Zimmer Lederberg/Wikimedia Commons

Annie Easley: Helped write the code behind the Centaur rocket system

Annie Easley (1933-2011) planned to become a nurse, but was inspired to work for the precursor of NASA when she read an article about local twin sisters who worked there as human computers.

She **became** first a mathematician and then a computer programmer, working particularly on the code for the Centaur rocket launcher and navigation system.

She also tutored inner-city **children** (she had previously helped neighbors learn to pass **Jim Crow** voting tests) and worked on energy issues.

The image shows a large, light gray watermark of the words "BUSINESS INSIDER" in a serif font, centered on a light gray background.

NASA Science and Engineering Newsletter/Wikimedia Commons

Patricia Bath: Invented a device that removes cataracts

Patricia Bath (1942-) invented a **device** for removing cataracts that fog people's vision.

She also created the field of **community ophthalmology**, which combines public health outreach with ophthalmology. The strategy reduces rates of **preventable vision loss**, particularly in lower-income neighborhoods.

The organization she founded, the American Institute for the Prevention of Blindness, provides **vitamin A** eye drops to newborns.

The image shows a large, light gray watermark of the words "BUSINESS INSIDER" in a serif font, centered on a light gray background.

A recent science fair presentation about Patricia Bath.

Clotee Allochuku/Flickr

May-Britt Moser: Discovered how our brains make mental maps

May-Britt Moser (1963-) helped discover [grid cells](#), special nerve cells in the brain that create mental maps of places we've been — work that won the Nobel Prize.

As a [psychologist](#) in Norway, she began studying the brains of rats, particularly as they completed mazes. She has also studied how the brain [filters](#) out unnecessary information to focus on particular issues and [what happens](#) when your brain thinks you're somewhere you aren't.

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May-Britt Moser talked with Sweden's King Carl XVI Gustaf at the Nobel banquet in 2014.

TT News Agency, Claudio Bresciani/AP

Francoise Barre-Sinoussi: Helped determine the cause of AIDS

Francoise Barre-Sinoussi (1947-) is a French scientist who helped [discover HIV](#) and determine that the virus causes AIDS.

She had been studying [retroviruses](#) and was asked to join a team looking to determine whether AIDS was caused by one (it is, as she determined in [two weeks](#)).

She then researched how the [immune system](#) responds to HIV and AIDS in hopes of finding a cure. Although she [retired](#) last year, she is still outspoken in encouraging the world to [rally](#) against AIDS and fight the [stigma](#) surrounding the disease.

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Francois Mori/AP

And so many more ...

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Tech Insider learned about all of these women from Rachel Ignatofsky's beautiful book, "[Women in Science](#)," which features full profiles of 50 scientists, plus tidbits on women in science more generally — not to mention gorgeous illustrations.

She also compiled a great [list of resources](#) for learning more about any of these scientists.

The book is [available for pre-order now](#); it will be released on July 26.
