

Women in Chemistry *Pioneers*



Paula Hammond (b. 1963)

Paula Hammond designs polymers for various applications. These include polymer nanoparticles to help cancer drugs reach tumours, and materials for batteries and fuel cells.

Specification references:

A Level Chem A: 4.1.3(j), 6.2.3 **GCSE Chemistry A:** C6.2d&e
A Level Chem B: DF(p), PL **GCSE Chemistry B:** C4.2

Kathleen Lonsdale (1903-1971)

Used X-ray crystallography to show that the structure of the benzene molecule is flat. Lonsdaleite, an allotrope of carbon, is named after her.

Specification references:

A Level Chemistry A: 6.1.1a **GCSE Chemistry A:** C2.3b
A Level Chemistry B: CD(e) **GCSE Chemistry B:** C4.3(3)



Stephanie Kwolek (1923-2014)

Discovered Kevlar, a strong and stiff condensation polymer used in bullet-proof vests. She won numerous awards for her work in polymer chemistry.

Specification references:

A Level Chemistry A: 6.2.3a **GCSE Chemistry A:** C6.2e
A Level Chemistry B: PL(o) **GCSE Chemistry B:** C4.2(3)

Women in Biology *Pioneers*



Flossie Wong-Staal (b. 1947)

Co-credited for the discovery of HIV. Was the first scientist to clone HIV and map its genes. Found that HIV depleted the immune system's T-cells. Has been named the top female scientist of the 1980s.

Specification references:

A Level Biology A: 6.1.3b

A Level Biology B: 3.2.1b

GCSE Biology A: B6.3f

GCSE Biology B: B2.1.4

Lynn Margulis (1938-2011)

Developed the endosymbiotic theory. She determined that mitochondria and chloroplasts were originally bacterial cells that eventually merged with other cells, becoming the eukaryotic cells we know today.

Specification references:

A Level Biology A: 2.1.1g

A Level Biology B: 2.1.1g & h



Mary-Claire King (b. 1946)

Has carried out groundbreaking work in genetics. She discovered the close link between chimpanzees and humans, discovered the breast cancer gene, BRAC1 and uses mitochondrial DNA to help identify missing people.

Specification references:

A Level Biology A:
4.2.2e and 6.1.3a-c

A Level Biology B:
3.1.3d and 5.1.3e

GCSE Biology A:
B5.2b and B6.3x

GCSE Biology B:
B1.2(7) and B1.3(1)

Women in Physics *Pioneers*



Caroline Herschel (1750-1848)

In 1786, Caroline Herschel became the first woman to discover a comet. Caroline was a pioneer in the field of Astronomy and in 1828 she was awarded the Gold Medal of the Royal Astronomical Society.

Specification references:

A Level Physics A: 5.5

A Level Physics B: 5.1.3

GCSE Physics A: P8.3

GCSE Physics B: P6.5

Chien-Shiung Wu (1912-1997)

Best known for the ground-breaking Wu experiment in 1957, which showed that interactions involving the weak nuclear force violate the conservation of parity, previously a well-established principle of Physics.

Specification references:

A Level Physics A: 6.4.2

A Level Physics B: 6.2

GCSE Physics A: P6

GCSE Physics B: P5



Katherine Johnson (1918-2020)

Katherine Johnson was an American space scientist and mathematician whose calculations of orbital mechanics were vital to the success of the Apollo moon landings. She was awarded the Presidential Medal of Freedom.

Specification references:

A Level Physics A: P5.4

A Level Physics B: P5.1.2

GCSE Physics A: P8.3

GCSE Physics B: P6.5