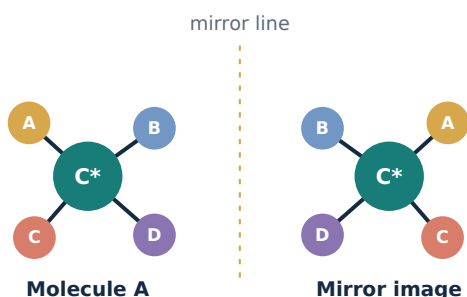


When chemistry chooses a side

The Chemistry Nobel 2026 and the puzzle of molecular handedness

01 | THE PUZZLE



Chirality is molecular “handedness”: a molecule and its mirror image cannot be superimposed. The pair are called enantiomers.

Life is strongly selective: proteins use almost exclusively one amino-acid form. How this chemical one-sidedness, or homochirality, could emerge was a long-standing puzzle.

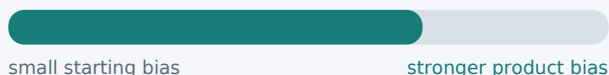
Same atoms. Different 3-D arrangement. Different interactions with living systems.

02 | THE SCIENTIFIC BREAKTHROUGH

KAGAN
1986

Non-linear effects

A small imbalance in a chiral catalyst can lead to a larger imbalance between the mirror-image products. The reaction amplifies a slight molecular preference.


SOAI
1995 - 2003

Asymmetric autocatalysis

The chiral product helps catalyse its own formation. In 2003, Soai demonstrated a reaction that produced only one of the two mirror forms, showing how a tiny initial bias can be amplified.

product promotes more of itself **x2**

03 | WHY IT MATTERS

MEDICINES

Enantiomers can interact differently with the body. Asymmetric synthesis helps make the desired molecular form for drug development.

CHEMICAL DESIGN

A foundation for controlling stereochemistry in organic reactions and making useful molecules more selectively.

ORIGINS OF LIFE

Offers a chemical route by which one handed form can dominate. It informs the homochirality puzzle; it does not by itself explain the origin of life.

MAINS CONNECT | GS 3

A clear example of how fundamental organic chemistry can support pharmaceutical innovation - while also informing research on the chemical origins of biological asymmetry.