# Cell study reveals key mechanism linked to healthy development

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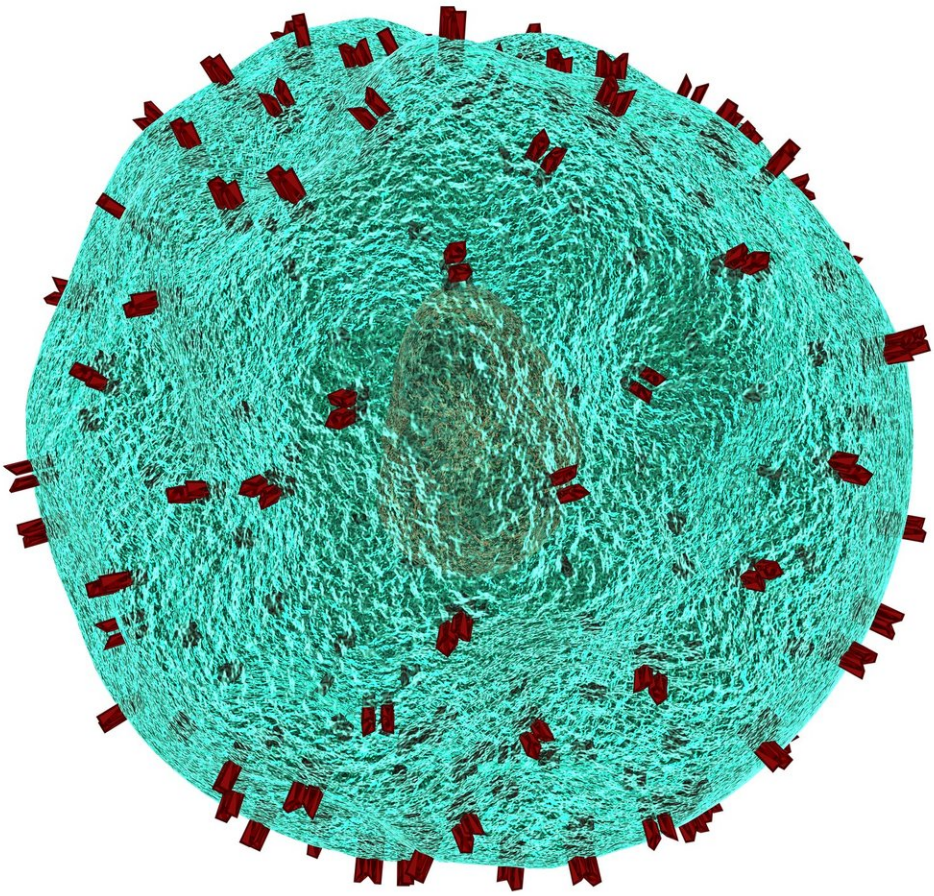

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Scientists have shed light on how healthy cells develop by identifying the role of key molecules involved.

The components, known as R-loops, are formed during cell development and have been shown to play an important role in the process. The latest finding overturns previous thinking that R-loops, formed from the genetic material that makes up DNA, were harmful to cells.

Researchers found that R-loops work together with a group of cell proteins, known as Polycomb, to control genes that are important for development in humans and other mammals.

These genes regulate the fate and function of each cell in the body, for example helping to control whether they become neurons or muscle cells .

Findings from the study by the University of Edinburgh answer fundamental questions about cell biology. They could also inform research into health conditions that can occur when these processes misfire, and point towards new avenues of research towards drug treatments.

Further research could clarify the role of R-loops in diseases in which they are known to be associated. These include neurogenerative disorders such as Amyotrophic Lateral Sclerosis (ALS) and the developmental condition Fragile X.

Future studies may include examining R-loops in developing brain cells, with a view to informing the design of drugs to treat these neurological

conditions. The findings also have important implications for some cancers, which are associated with faulty Polycomb proteins or the over-production of R-loops.

The study, published in *Molecular Cell*, was carried out in collaboration between the Max Delbruck Centre for Molecular Medicine in Berlin and the University of Edinburgh, supported by Wellcome and the European Research Council.

Dr. Konstantina Skourti-Stathaki, of the University of Edinburgh's School of Biological Sciences, who led the study, said: "This new insight answers fundamental questions, opening new avenues for future research and possible routes towards drug treatments."

Provided by University of Edinburgh