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Reliable Culture of Human Embryonic Stem Cells

Human embryonic stem cells have enormous potential for use in pharmaceutical development and therapeutics; however, to realize this potential there is a requirement for simple and reproducible cell culture methods that provide adequate numbers of cells of suitable quality.

A team of researchers at the University of Glasgow and Heriot-Watt University, Edinburgh, have discovered a new way of blocking the spontaneous differentiation of stem cells by using the compound erythro-9-(2-hydroxy-3-nonyl)adenine (EHNA). As explained by Peter Burton and colleagues in their paper published in the ChemBio Knowledge Environment of the Biochemical Journal, this means that human embryonic stem cells can be maintained in an undifferentiated state whilst remaining capable of differentiating to all cell types in the body, thus realizing their huge potential as research tools and for cell therapies.

Importantly, the EHNA treatment did not 'lock' the stem cells in an undifferentiated state, as the EHNA was removed; the cells were capable of multi-lineage differentiation.

The researchers note that EHNA is a robust, stable compound, readily prepared from commercially available starting materials at low cost in just two synthetic steps.

Bart Vanhaesebroeck, Deputy Chair for the BJ ChemBio Knowledge Environment, said: "These findings have immense potential implications for bringing stem cell therapies closer to the clinic."