**Scientists pinpoint ancient body clock**

**Word Count = 366 (round to 370)**

**Sentence Count = 20 (including title)**

An internal 24-hour clock that affects all forms of life has been identified by University scientists.

The research provides important insight into health-related problems linked to individuals with disrupted clocks - such as pilots and shift workers.

The findings, published in Nature, also indicate that the 24-hour circadian clock found in human cells dates back millions of years to early life on Earth.

**Daily rhythms**

More work is needed to determine how and why these clocks developed in people – and most likely all other living things on earth – and what role they play in controlling our bodies.

Circadian clocks control many of our physiological functions, including our sleep cycles, hormone function and physical strength.

Such clocks also control seasonal changes seen in nature, such as animal breeding patterns and plant growth.

**Gene activity**

Scientists had thought that the circadian clock was driven by gene activity, but their studies showed that both algae and human red blood cells kept time without it.

One study, by scientists at the Universities of Edinburgh and Cambridge, and the Observatoire Oceanologique in Banyuls, France, identified a 24-hour cycle in marine algae that operated in the absence of DNA.

When the algae were kept in darkness, their DNA was no longer active, but the algae kept their circadian clocks ticking without active genes.

Their discovery indicates that internal body clocks have always been important, even for ancient forms of life.

**Protein discovery**

A further study from the University of Cambridge identified 24-hour rhythms in red blood cells.

This is significant because red blood cells do not have DNA.

The scientists discovered a 24-hour cycle in proteins called peroxiredoxins in algae and blood.

The proteins are found in virtually all known organisms.

Funding for the studies was provided by the Wellcome Trust, Biotechnology and Biological Sciences Research Council, the Engineering and Physical Sciences Research Council, the Medical Research Council, the French Agence Nationale de la Recherche, and the National Institute of Health Research.

This groundbreaking research shows that body clocks are ancient mechanisms that have stayed with us through a billion years of evolution. They must be far more important and sophisticated than we previously realised.

Professor Andrew Millar

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