Researchers Find “Internal Clock” Within Live Human Cells

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Alexandra Zidovska, PhD (**Damon Runyon Fellow ‘10-‘12)** of New York University, New York, has discovered the “internal clock” of live human cells using state-of-the-art fluorescence microscopy. Previously, the only way to tell the precise point of a cell in its life cycle was by studying dead cells. Alexandra’s lab has found that the nuclear envelope, which separates the nucleus with the DNA from the rest of the cell, has a previously undetected type of motion: it fluctuates in shape every few seconds. As the cell ages, these fluctuations become measurably less and less dramatic. Moreover, this motion marks the first physical feature that systematically changes with the cell cycle. “Therefore, this process can serve as an internal clock of the cell, telling you at what stage in the cell cycle the cell is,” explained Alexandra. Understanding how the behavior of the nuclear envelope changes over time could have important implications for research and treatment of diseases such as cancer, which is characterized by cells with longer live spans and uncontrolled cell divisions. This study was published in the Proceedings of the National Academy of Sciences (PNAS).

Read more about this research here.

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