Researchers have broken the code for cell communication
12 February 2021, by Ulrika Ernström

Gothenburg.

She is responsible for the study now published in the scientific journal PNAS in which the researchers established a method for studying cellular communication. In the study, they successfully mapped the mechanism behind cellular communication in the metabolic process, using small culture chambers that allow the control of the environment around the cells.

The researchers chose to study yeast cells, since they are similar to human cells, and their focus is on glycolytic oscillations—a series of chemical reactions during metabolism where the concentration of substances can pulse or oscillate. The study showed how cells that initially oscillated independent of each other shifted to being more synchronized, creating partially synchronized populations of cells.

"One of the unique things with this study is that we have been able to study individual cells instead of simply entire cell populations. This has allowed us to really be able to see how the cells transition from their individual behavior to coordinating with their neighbors. We have been able to map their behavior both temporally and spatially, that is to say, when something occurs and in which cell," says Beck Adiels.

Opens up opportunities for understanding type 2 diabetes

According to Beck Adiels, this knowledge can be applied in many other biological systems and more complex cells where coordinated cell behavior plays an important role. This type of behavior is also found in cells such as heart muscle cells and in pancreatic cells, which can be an important piece of the puzzle in diabetes research.

"The study can contribute to understanding how pancreatic cells are regulated and how they secrete
insulin, which can help us understand the underlying mechanism behind type 2 diabetes. Eventually, this could contribute to developing new medicines for treating the disease."

The study is a collaboration between eight researchers at Swedish and international universities, and Caroline Beck Adiels emphasizes that this interdisciplinary collaboration has been fundamental in studying the complex behavior of cells from multiple perspectives.

"I am very proud of this work, which had not been possible to complete if we had not collaborated across disciplines," she says.


Provided by University of Gothenburg
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