

Cell Labelling via Photobleaching: A precious ally for scientific research

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(*University of Montreal*) A multidisciplinary team of researchers gives birth to a unique method that enables instant, specific labeling of individual cells, Cell Labelling via Photobleaching (CLaP). This method will become a precious ally in a wide range of scientific research, with particular applications for genomics.

Major work led by Santiago Costantino (researcher, Hôpital de Maisonneuve-Rosemont and associate professor, Université de Montréal), Dr. Claudia Kleinman, investigator at the Lady Davis Institute at the Jewish General Hospital and Assistant Professor at McGill University, and a multidisciplinary team of collaborators, gives birth to a unique method that enables instant, specific labeling of individual [cells](#), Cell Labelling via Photobleaching (CLaP). This method will become a precious ally in a wide range of scientific research, with particular applications for genomics. The results of this work are published in the latest issue of *Nature Communications*.

"We use a laser as a paint brush to tag cells one by one", says Dr. Santiago Costantino. "As opposed to previous technologies for which one needs to either know molecular details of specific cells or label large numbers of cells in a non-specific way, our technology permits painting cells based simply on observation. We can paint, for example, exclusively the big, the fast or the elongated cells. Next, we use the latest technology to investigate at the molecular level what was special about these cells that we have chosen. Our technology allows to retrieve few special cells within millions of [normal cells](#)".

This technique will be instrumental in pioneering next-generation sequencing applications for single-cell genomics. It has the advantages of versatility, efficiency, and non-invasiveness, as well as being simple, inexpensive, and accessible to any researcher with a standard confocal microscope. It can be automated to achieve high-throughput. It does not involve any cell damaging intervention, thus preserving the integrity of the cell for more accurate analysis.

"Single-cell genomics is a powerful new generation of technologies that could transform our understanding of diseases, like cancer, where unique cells, hidden within millions, play a major role," said Dr. Kleinman.

"This method will allow us to select those specific cells, enabling a wide range of experiments not previously possible. It will help us understanding cell-to-cell variation and studying those specific cells responsible for disease progression. "

"Our technology appears in a moment where genetic studies of [single cells](#) are flourishing, and scientists are discovering that cells that were supposed to be identical, display striking differences at the genomic level. We have developed a tool that enables us, for the first time, to correlate what we observe on the microscope with detailed molecular signatures of [individual cells](#)", adds Dr. Costantino.

More information: Loïc Binan et al, Live single-cell laser tag, *Nature Communications* (2016). [DOI: 10.1038/ncomms11636](https://doi.org/10.1038/ncomms11636)

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