

Biophotonic Sensing Cells (BICELLS) for label-free biosensing

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Label-free immunoassay sector is a ferment of activity, experiencing rapid growth as new technologies come forward and achieve acceptance. The landscape is changing in a “bottom up” approach, as individual companies promote individual technologies and find a market for them. Therefore, each of the companies operating in the label-free immunoassay sector offers a technology that is in some way unique and proprietary. However, no many technologies based on Label-free technology are currently in the market for PoC and High Throughput Screening (HTS), where mature labeled technologies have taken the market.

Biophotonic Sensing Cells (BICELLS) defined as Bio-Sensitive cells that can be integrated in wells and interrogated vertically by enhanced optical techniques is currently an interesting approach for its capability of multiplexing many sensing sites in a single well, and therefore multiples diagnostics can be implemented simultaneously. Several BICELLS type have been proposed and published such as those based in network of nanopillars, in which each nanopillar is acting as a single nano-sensor, and the contribution of all of them provides with an optical signal that can be readout by a PoC platform. BICELLS technology is an interesting technology to face the unmet need for reliable diagnostic tools that ensure sensitive, rapid, affordable and simple analysis. In this paper, we made a review of the different BICELLS type for label-free biosensing.

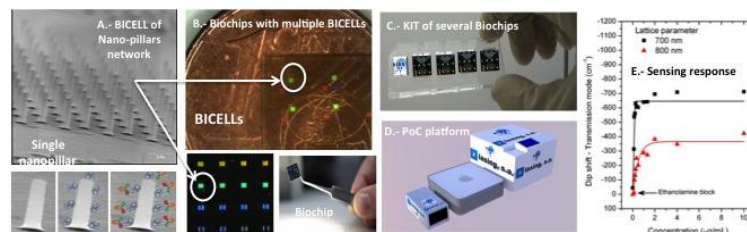


Figure 1.: A) BICELLS based on a network of nano-sensors, B) Several BICELLS integrated on a single biochip, C) An example of BICELLS implementation on a disposable diagnostic KIT. D) One example of a Prototype PoC platform and E) Sensing response for two type of BICELLS.

[1] F.J. Sanza, M. Holgado, et al, Bio-Photonic Sensing Cells over transparent substrates for anti-gestrinone antibodies biosensing, Biosensors and Bioelectronics 26 (2011) 4842–4847.

[2] M. Holgado, et al, Label-free biosensing by means of periodic lattices of high aspect ratio SU8 nano-pillars, Biosensors and Bioelectronics 25 (2010) 2553–2558.

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