Electrochemical determination of serotonin exocytosis in human platelets with BDD-on-quartz multielectrode array biosensors

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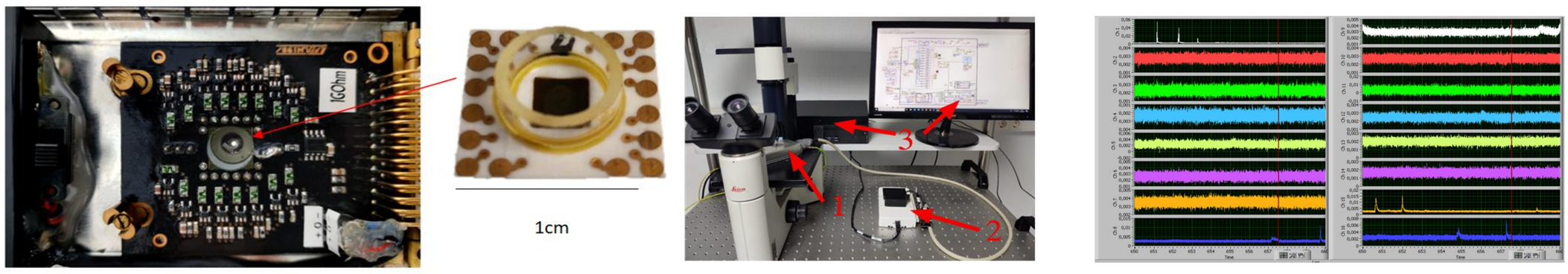
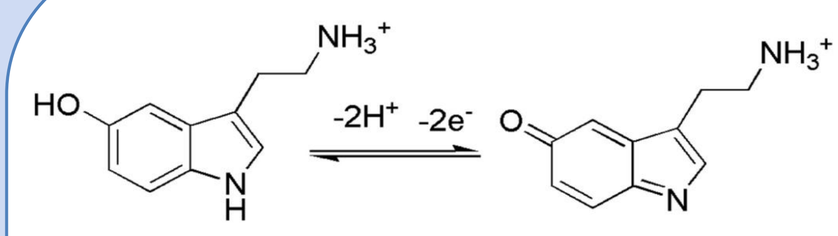
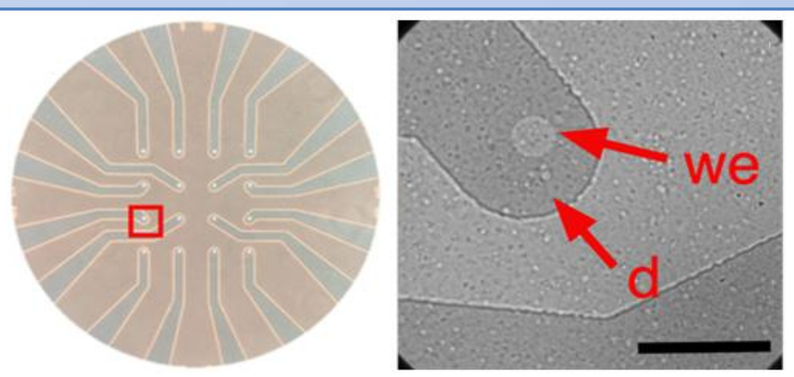


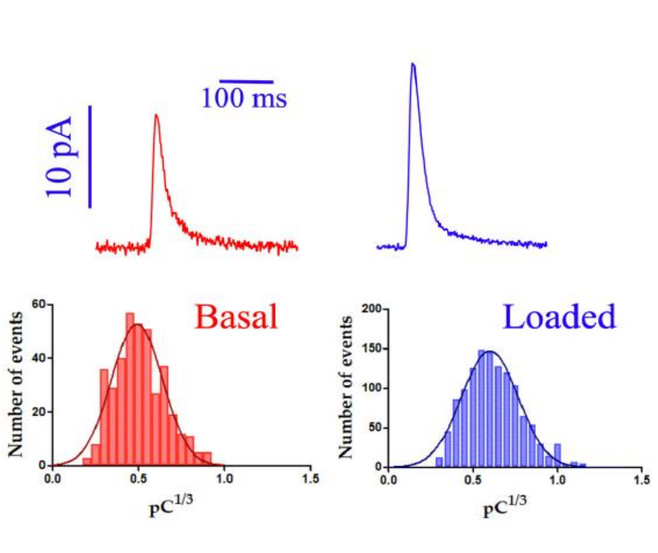
Multielectrode array (MEA) system for the recording of amperometric signals from human platelets in suspension. Left panel shows the electronic circuits and general MEA wafer. Center shows the general configuration (1. MEA into the Faraday´s cage, 2. ADDA board and 3. the computer). The right panel shows the signal acquisition and recording by 16 channel MEA system. Each spike corresponds to single exocytotic events observed on 6,9 and 10 channels. González-Brito et al. *Biosensors* 2023.

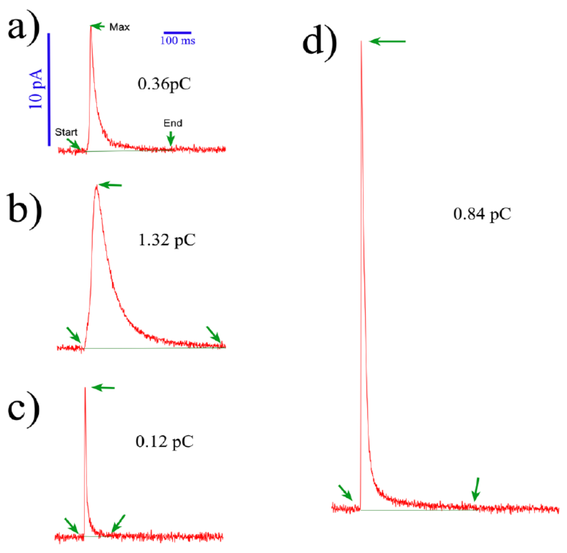


Electro-oxidation of serotonin. The electrode tips detects the electrical current generated by the electrons released during the oxidation of serotonin molecules. (Electrode potential +800 mV)



General view of the inside of the MEA wafer. Left image: disposition of 16 microelectrodes. Right: amplification of the previous picture showing one connector (**d**) and the active 20 µm diameter surface (working electrode, **we**). González-Brito et al. *Biosensors* 2023.





Left. Typical recordings obtained by averaging hundreds of spikes from 10 volunteers: under basal (**red**) and serotonin-loaded platelets (blue). **Right.** Examples of different types of peaks detected (**a**, **b**, **c** and **d**). González-Brito et al. *Biosensors* 2024.

Conclusion: we demonstrate the effectiveness of BDD-MEA as devices for the amperometrical studies of serotonin exocytosis from human platelets.

Supported by MICIIN. Grants # PID2020-116589GB 100 to RB.