

P031 Quartz crystal microbalance studies of olfactory receptors grafted on biotinylated surfaces

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With the aim of producing an odorant-sensing biosensor, the olfactory receptor (OR) OR1740 has been immobilized on gold electrodes of quartz crystals (QC). All steps in the immobilization protocol were followed using a quartz crystal microbalance with dissipation measurements (QCM-D). OR originate from the I subfamily of G protein coupled receptors that bind odorant molecules. The G proteins used in this work remain in their native environment as the membrane-fraction utilized (nanosome) avoids altering the protein activity. The OR1740 included a cmyc tag (cmyc-OR1740), to make it a direct target for the anti cmyc monoclonal antibody, therefore generating a specific recognition and grafting for this OR.

Gold QC were functionalized with biotin, streptavidin and finally with the biotinylated monoclonal antibody anti cmyc in order to graft the membrane fraction that contains the OR receptor. The biotinylated surface was composed of a mixed co-adsorption of mercaptohexadecanoic acid (MHDA) and biotinyl-PE.

We tested the specific recognition reaction between cmyc-OR1740 and antibody anti cmyc. The QCM experiments give valuable information of the grafting procedure and provide evidence of the high acoustic energy dissipation caused by nanosome adhesion.