

## De-orphanization of *Rhodnius prolixus* Odorant Receptor

Oliveira, D.S.<sup>1</sup>; Xu, P.<sup>2</sup>; Moreira, M.F.<sup>1</sup>; Leal, W.S.<sup>2</sup>; Melo, A.C.A.<sup>1</sup>

<sup>1</sup> Departamento de Bioquímica, IQ, UFRJ, RJ, Brazil; <sup>2</sup> University of California, USA

In insect the sensory modality responsible to detect chemical molecules present in the environment is called olfaction. Odorant receptors (ORs) are heteromers comprised of highly variable odorant-binding subunits associated with one conserved co-receptor. The binding of odor to the specific ORs initiate the cascade of depolarization to permit the neuronal signal transmission causing a behavior that could be attractive or repulsive (depending on the odor molecule). Previously, we identified in non-annotated *Rhodnius*'s genome around 47 putative RproORs candidates. In this study the main purpose was to de-orphanize 7 RproORs using a panel with 100 chemical ligands as possible attractive or repulsive molecules to *R. prolixus*. Full-length of 7 RproORs including co-receptor ORCO (RproOrco) were cloned in pGEMT by standard procedures, then they were subcloned into pGEMHE and their sequences were confirmed by DNA sequencing. In vitro transcription of cRNAs (RproORs and RproOrco) was performed by using mMACHINE T7 kit (Ambion) according to the manufacturer's protocol. cRNA were microinjected into *Xenopus laevis* oocytes on stage V or VI (EcoCyte Bioscience). Chemical-induced currents were recorded with the two-electrode voltage-clamp technique at a holding potential of -80mV. Signals were amplified with an OC-725C amplifier (Warner Instruments, Hamden, CT), low-pass filtered at 50 Hz and digitized at 1 kHz. Data acquisition and analysis were carried out with Digidata 1440A and software pCLAMP 10 (Molecular Devices, LLC, Sunnyvale, CA). Of the six ORs tested only RproOR7 showed dose-dependent electrophysiological responses to four ligands, called #20, #85, #168 and #71, all of them related with pheromone alarm molecules in other species. These data showed for the first time a chemical ligand for *R. prolixus* odorant receptor, and opened an important new insight to the knowledge of triatomine chemical ecology.

Word keys: Odorant receptor, *Rhodnius*, de-orphanization.

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