Abstract:
ChemCom progresses towards its objective of deorphanizing the whole repertoire of human olfactory receptors (ORs). Relying on (i) its proprietary technology, (ii) libraries of thousands of odorant compounds and (iii) an efficient screening system, ChemCom is currently identifying and characterizing new modulating molecules (enhancers or blockers) and novel odorant compounds for the whole range of human ORs. The profiling of expression OR gene in the whole olfactory mucosa and the analysis of its distribution in the human population recently achieved at ChemCom, provides a unique opportunity to select among 273 frequently expressed ORs in view of a systematic deorphanization. At ChemCom, more than 100 ORs have been robustly and specifically deorphanized. The number of odorant molecules quoted as agonists for these ORs largely exceeds 1,000, with an average of 19 agonists per OR and a maximum of 216 agonists for a single OR. By contrast, one molecule activates 2 different ORs in average and a number of 13 ORs activated by the same molecule has been observed at the upper limit. So far, only 5% of the ORs were found to respond to more than 80 agonists possessing different chemical and organoleptic properties and are thus considered as broadly tuned. The other 95% of ORs responded to 10 or less ORs. When the number of agonists exceeds 80, ORs are considered as broadly tuned when responding to more than 80 agonists having different chemical and organoleptic properties and ORs are considered as narrowly tuned when responding to less than 6 agonists from the same chemical and organoleptic properties.

References: