第325回 大阪大学神経科学懇話会

日時：平成**26**年**6**月**3**日（火）午後**5**時～午後**6**時

場所：医学部 臨床研究棟　7階セミナー室

演題：***The smell of death and its receptor***

演者：**Dr. Sigrun Korsching**

Professor, Institute for Genetics,
University of Cologne,
Cologne, Germany

要旨：

Carrion smell is strongly repugnant to humans and triggers distinct innate behaviors in many other species. This smell is mainly carried by two small aliphatic diamines, putrescine and cadaverine, which in other species may also serve as feeding attractants, oviposition attractants, or social cues. Behavioral responses to diamines have not been investigated in zebrafish, a powerful model system for studying vertebrate olfaction. Furthermore, olfactory receptors that detect cadaverine and putrescine had not been identified in any species so far. We show robust olfactory-mediated avoidance behavior of zebrafish to cadaverine and related diamines, and concomitant activation of sparse olfactory sensory neurons by these diamines. The large majority of neurons activated by low concentrations of cadaverine expresses a particular olfactory receptor, trace amine-associated receptor 13c (TAAR13c). TAAR13c is a member of a large olfactory receptor gene family with extreme evolutionary dynamics. Structure-activity analysis indicates TAAR13c to be a general diamine sensor, with pronounced selectivity for odd chains of medium length. This receptor can also be activated by decaying fish extracts, a physiologically relevant source of diamines. The identification of a sensitive zebrafish olfactory receptor for these diamines provides a molecular basis for studying neural circuits connecting sensation, perception, and innate behavior.

Reference: *Proc Natl Acad Sci U S A*. 2013;110(48):19579-84

連絡先：大阪大学 医学系研究科 解剖学講座（神経機能形態学） 佐藤 真（内線3220）