

INTRODUCTION

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1st International Workshop on Odor Spaces

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The sense of smell plays an important role in everyday life, for example in food, beverages, perfume and hygiene. For many animals the sense of smell is their primary sense to experience their world. But still, we have no clear understanding of how odors are perceived. Moreover, while we readily understand how to describe visual stimuli with light wavelengths and contrast, or sounds with frequency and amplitude, we lack understanding of the fundamental features of odors. In other words, we don't understand Odor Space.

The notion "Odor Space" describes different aspects of the sense of smell. There is chemical space, in which odorants (chemicals that evoke an odor) are arranged along their physico-chemical properties. The encoding of odors into neuronal responses defines the sensory space. The perceptual organization and meaning of odors is the basis for perception space. Finally, odors are embedded in a physical space that governs how odorants move from their sources to our noses.

Understanding how these aspects of Odor Space relate to each other is crucial to advance our knowledge on olfaction, which is essential for research and development in the food and perfume industry. Odor space knowledge is also the key to developing artificial noses and prosthetics. Unraveling the meaning of odor space requires integrating many different disciplines all part of a rapidly growing research community, including chemistry, molecular genetics, neuroscience, psychology, physics, engineering and computer science.

The aim of the 1st International Workshop on Odor-spaces was to bring together leading scientists and young researchers to jointly tackle the huge tasks to create a unifying perspective on Odor Space. We mixed data presentations by young researchers with big-picture accounts by senior experts in the field. A large part of the symposium was devoted to discussion to develop new and meaningful insights into the chemical sense.

The meeting was a great success thanks to the generous funding and outstanding contributions of all participants, and thanks to the excellent local organization by Volkswagen Foundation.

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