

PRESS RELEASE

Sean Raspet

Receptor-Binding Variations

March 9 - April 22, 2018

The exhibition consists of ten scent molecule formulations that have each been designed by Raspet to target particular human olfactory (smell) receptors¹. The formulations are liquids that are diffused into an aerosol form via electronic diffusers.

Olfactory receptors (ORs) are chemical receptors in the body—proteins embedded in cellular membranes—that respond to small molecules and by which our sense of smell operates. They form the basis of humans’ interface with the materiality of their surroundings.

While the human eye has three types of color “cone” receptor—each sensitive to a particular wavelength of light—the human nose has approximately 400 types of olfactory receptor, each of which is activated by a particular range of molecular structures. The relationship of molecule to receptor has been described as a “lock and key” mechanism and has more recently been updated to a “hand and glove” process, where both the molecule and receptor change position in relation to the other in a complex interplay. A molecule with the right features fits within and binds to a particular type of receptor, both change shape (conformation) and the receptor is switched to an active state, causing further signaling and biological effects in the cell and elsewhere in the organism.

Designing molecules or mixtures to target particular receptors in the body likewise forms most of the basis for the contemporary pharmaceutical industry and the field of medicine (along with their illicit counterparts). The fragrance industry—which shares many of the methods, materials, and technologies of the pharmaceutical industry—also develops its own molecules that are patented and periodically released to the market (after thorough safety testing and regulatory approval).

These molecules, when under patent, are referred to as “captive molecules”. Generally, they are molecules that are not found in any form in the natural world and can only be produced through specific chemical processes, yet they have often been designed to smell more ‘natural-seeming’ than plant extracts and other “natural” materials. All of the molecules used in the formulations have been developed by the fragrance industry, most were captive molecules at one time, and many still remain under patent. None of them are known to occur in nature.

These and other scent molecules form a ubiquitous part of our manufactured environment and everyday experience, as they are embedded into products ranging from fine fragrance, toothpaste, skin care, and shampoo, to tide pods, linens and cleaning solutions. They form a thin aesthetic layer within functional products—a residue of the associative aspirations and experiential preferences of the products’ consumers as they are interpreted by the manufacturers and their fragrance supplier partners.

By targeting specific olfactory receptors in the body, the exhibition presents a range of “primary scents” along the lines of basic or primary colors—the basic perceptual units of olfactory experience. At the same time, it presents a cross-section or typology of a range of specialized molecules developed by the flavor and fragrance industry (in which Raspet has also worked professionally), and in turn, the patterns of human olfactory receptors that they activate.

Recent research has found that olfactory receptors exist throughout the body, not only in the nose. They are found in skin, muscle, kidney, lung, heart, liver, brain, digestive tract, sperm, and blood cells, where they are believed to be important in

¹ Detailed information on the olfactory receptors and the molecular structures used in the formulations is available in the Technical Specifications document accompanying the exhibition.

mediating a range of cellular and metabolic functions². Compared to the senses of vision and hearing, very little scientific research has been done on the human olfactory system. However, the genes that code for ORs form the largest gene family in the human genome³—there are more genes for olfactory receptors than for anything else in the human genome—and it is arguably the most complex sense.

For Raspet the work consists specifically of the activation of targeted olfactory receptors—a changing of the protein receptors' shape, charge and activity state, with downstream effects for cell-signaling and metabolism. It is a work that consists of a targeted biological effect in the individual who comes into contact with it⁴.

Presented concurrently with *Receptor-Binding Variations*, a separate series of work by Raspet consists of a range of products (skin lotion, laundry detergent, shampoo, etc.) that Raspet has scented using two molecules—patchoulol and ambroxide—that have been produced by genetically engineered yeast. The fragrance company Firmenich has developed the materials by transplanting the relevant gene sequences from the plants that typically produce them—patchouli and sage⁵—into yeast, which can produce the target molecules faster and at a far greater efficiency. This results in a product that is far more environmentally efficient than natural extracts of these plants would be.

The products will be available for demo and pre-order during the exhibition and will be priced similarly to comparable small brands.

Raspet's work is currently on view at The Artist's Institute in New York. For the second part of the current season at The Artist's Institute, opening in April, Raspet has created a series of new molecules, produced in collaboration with chemists at Hunter College. These molecules, which have not previously been known to exist, will also produce new scents that have not yet been experienced.

² There is evidence that they occur in every organ of the body

³ Each type of OR in the human body requires a specific gene that codes for its protein.

⁴ The particular OR activations and the structures of the component molecules in the formulations are detailed in the "Technical Specifications" document accompanying the exhibition.

⁵ In the case of ambroxide, the molecule produced by sage requires an additional chemical step to convert it to the finished product.