

Assay System for Olfactory Receptors

At the back of the nose, there are approximately 400 types of odor-sensing sensors called “olfactory receptors”. They capture a wide range of odor molecules and send signals to the brain, where they are perceived as smells and fragrances. This technology enables comprehensive analysis of olfactory receptor responses to odorants by expressing olfactory receptors on the surface of cultured cells and creating a system in which they respond to odor molecules.

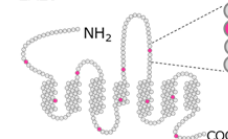


<Unique Points>

Olfactory receptors are proteins made up of chains of amino acids. By identifying regions that are prone to instability and replacing them with alternative sequences, we enabled the expression of nearly all olfactory receptors on the surface of cultured cells, making them amenable to analysis.

Olfactory receptors are proteins made up of chains of amino acids.

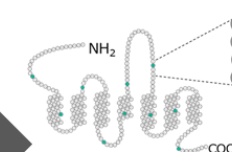
Human olfactory receptors
2A25



Amino acid **H**
that destabilizes
the protein



Replace
amino
acids



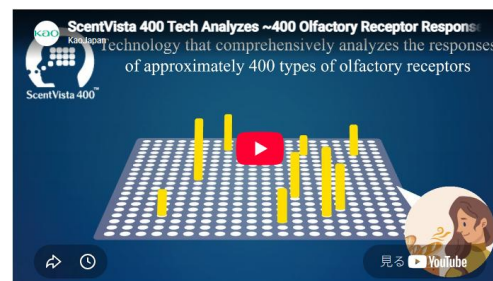
Amino acid **R**
that stabilizes
the protein

On the surface of cultured cells,
**olfactory receptors do not function properly,
making analysis impossible.**

On the surface of cultured cells,
**olfactory receptors do function properly,
making analysis possible.**

We established ScentVista 400, an assay system that enables comprehensive measurement of the responses of approximately 400 types of olfactory receptors.

ScentVista 400 Tech Analyzes ~400 Olfactory Receptor Responses



<https://www.youtube.com/watch?v=QHi3FQruNKU>

Although they are derived from different raw materials, rose oil and geranium oil are perceived as having very similar scents—and we found that their olfactory receptor response patterns are also similar.

Olfactory receptor response patterns



Rose oil
(rose scent)



Geranium oil
(rose-like scent)



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<Key Benefits>

- There is potential to understand how humans perceive odors through olfactory receptor response patterns.
- Because odors can be comprehensively analyzed and visualized, the quality of various odors can be evaluated objectively.
- By understanding the relationship between fragrances and olfactory receptors, this technology may provide a foundation for creating new fragrances.

<Link to Other Contents>

- Research & Development News Release
- Discovery of olfactory receptors that comprehensively recognize “musky” odors —Enabling highly accurate prediction of musk fragrance materials from chemical structure— (Japanese only)
<https://www.kao.com/jp/newsroom/news/release/2023/20230913-001/>
- Establishment of Technology That Analyzes the Responses of Approximately 400 Olfactory Receptors
<https://www.kao.com/jp/newsroom/news/release/2025/20250924-001/>

<Concerned Research Areas>

- Fundamental Research:
- Sensory Science
<https://www.kao.com/global/en/innovation/research-development/fundamental/sensory-science/>
- Biological Science
<https://www.kao.com/global/en/innovation/research-development/fundamental/biological-science/>