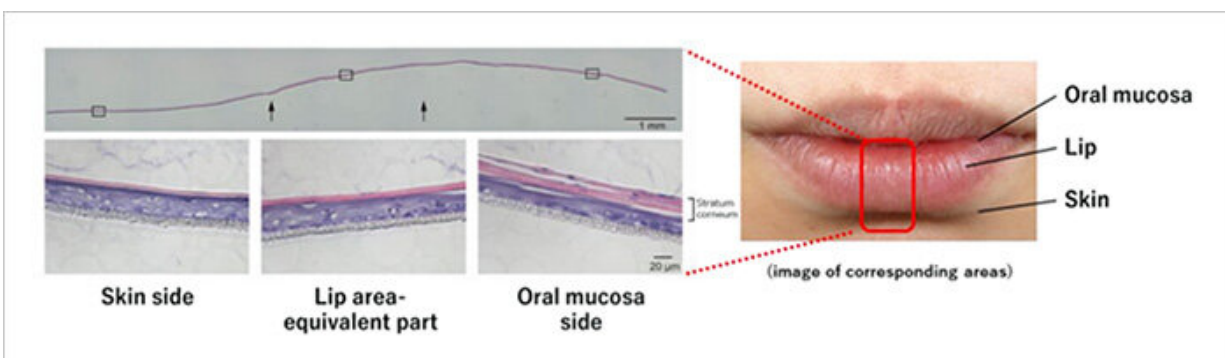


Researchers develop a three-dimensional epithelial model that reproduces the human lip area

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Tissue staining of the constructed lip area model revealed that the cells have structures and features similar to actual skin, lip areas, and oral mucosa, respectively. Credit: Niigata University

KOSÉ Corporation has developed, in collaborative research with Professor Kenji Izumi and his colleagues at Niigata University Graduate School of Medical and Dental Sciences (Faculty of Dentistry), a three-dimensional epithelial model that reproduces the human lip area from the oral mucosa to the lips and surrounding skin, using cell culture. The results of this research have been published online in the journal *Histochemistry and Cell Biology*.

The [lips](#) are one of the most important elements that determine the

impressions of the face, and they are also an area where many people suffer from problems, such as chapped lips in winter. The lip area is the transition area between the facial [skin](#) and the [oral mucosa](#), and has a unique structure and properties that differ from both of them, such as the stratum corneum being thinner and more delicate than in skin.

However, until now, there has been no evaluation system using lip area models, and it has been necessary to use skin and oral mucosa in vitro models to evaluate the usefulness and safety of new ingredients. Therefore, the development of lip area models that reproduce its unique structure, and their use for functional analysis of the lip area and evaluation of formulations and ingredients, is a useful tool to promote better formulation development, says Prof. Izumi.

The research group developed a lip area [model](#) with the aim of enabling it to be used in cosmetics research. They used only cells derived from the epidermis and oral mucosal epithelium to develop a three-dimensional model with characteristics similar to those of the human lip area.

The immunohistochemical findings demonstrated that the lip area model developed in this research has a similar structure and differentiation mode to that of actual human lip area tissue. Prof. Izumi says it is expected to be used for evaluation of the effects of cosmetic ingredients on the lip area and other purposes.

The lip area model developed in this research will be used for basic research on the lips, which has only been possible until now with alternative methods using skin and oral mucosa, and for future development of lip care products and ingredients. Prof. Izumi states that they will continue their research and development to enable them to provide evidence-based solutions to customers' lip area problems, such as clarifying the mechanisms of chapped lips and developing useful

ingredients.

More information: Eri Kobayashi et al, Development of a lip vermilion epithelium reconstruction model using keratinocytes from skin and oral mucosa, *Histochemistry and Cell Biology* (2023). [DOI: 10.1007/s00418-023-02206-4](https://doi.org/10.1007/s00418-023-02206-4)

Provided by Niigata University

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