


March 2024

## Epithelial and Mesenchymal Olfactory Stem Cells Gathered with Minimally-Invasive Micro-brush

Tyler Petersen  
Wayne State University, gf9023@wayne.edu

Follow this and additional works at: [https://digitalcommons.wayne.edu/som\\_srs](https://digitalcommons.wayne.edu/som_srs)

 Part of the [Biological Phenomena, Cell Phenomena, and Immunity Commons](#), [Medical Biotechnology Commons](#), [Neurology Commons](#), [Neurosciences Commons](#), [Other Medical Sciences Commons](#), and the [Other Medical Specialties Commons](#)

---

### Recommended Citation

Petersen, Tyler, "Epithelial and Mesenchymal Olfactory Stem Cells Gathered with Minimally-Invasive Micro-brush" (2024). *Medical Student Research Symposium*. 299.  
[https://digitalcommons.wayne.edu/som\\_srs/299](https://digitalcommons.wayne.edu/som_srs/299)

This Research Abstract is brought to you for free and open access by the School of Medicine at DigitalCommons@WayneState. It has been accepted for inclusion in Medical Student Research Symposium by an authorized administrator of DigitalCommons@WayneState.

## **Epithelial and Mesenchymal Olfactory Stem Cells Gathered with Minimally-Invasive Micro-brush**

Spinal cord injury (SCI) causes devastating lifestyle and financial consequences for the patient. Treatment strategies emphasize neuroprotection, but not regeneration. In this regard, stem cells are an innovative field of study that has the potential to regenerate neural tissue, thereby increasing a person's ability to regain function. The purpose of this project is two-fold: to attain olfactory stem cells located in the nasal canal in a minimally-invasive way and to gather neural cells from the epithelium and mesenchymal cells in the lamina propria. Cells were gathered with sterile nasal micro-brushes, stored, and grown in flasks. After cells reached confluency, they underwent immunofluorescence using antibodies specific for location and characteristics. Additionally, samples were sorted magnetically to confirm epithelial and mesenchymal cells. A cell count was taken before and after sorting. Immunofluorescence showed the presence of cells that expressed cell markers tested. There was consistent overlap between cell markers and antibodies. Cell count for magnetic sorting yielded total count of  $2.45 \times 10^6$  cells with viability of 93.9%. Magnetic sorting yielded percentage of cells expressing CD90 of 57.1% and cells expressing CD54 of 24.5%. This experiment shows the presence of both epithelial and mesenchymal stem cells gathered via sterile micro-brush nasal swabbing. This represents a minimally-invasive way to gather neural and mesenchymal stem cells. We show that expanding nasal cell samples in culture resulted in both types of cells. Future research should include application into spinal cord injured populations.