

## Center for Stem Cell Biology and Regenerative Medicine

# Division of Somatic Stem Cell Research

## 体性幹細胞研究分野

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*Somatic stem cells, which are derived from mesoderm, include mesenchymal stromal cells (MSCs), blood cells, and other mesenchymal tissues. MSCs exist in the interstitium of systemic organs; they have self-renewal ability, migrate to the sites of inflammation and tissue damage, and exert anti-inflammatory effects and tissue-repair ability. Among various somatic stem cells, we focused on umbilical cord blood (CB) and umbilical cord-derived MSCs (UC-MSCs) and we explored new immune and regenerative gene/cell therapies using CB and UC-MSCs. Another mission is to manage the IMSUT-HLC cell processing facility (IMSUT-HLC-CPF) for translational research. To achieve the high-quality processing and tests for UC-MSCs therapy, IMSUT-HLC-CPF obtained manufacturing license as the first national University in 2023.*

### Cord blood and umbilical cord-derived cells for immune-cell therapy and regenerative medicine

**Takahashi A, Hori A, Miharu Y, Nagaya N, Ogami K, Nagamura-Inoue T**

We explored new immune and regenerative gene/cell therapies using umbilical cord blood (CB) and umbilical cord-derived MSCs (UC-MSCs) with high

quality and safety standards. For the high quality and safety standards

In addition, it is our mission to keep the IMSUT-HLC cell processing facility clean and functional to enable high-quality manufacturing for translational gene and cell therapy. To achieve this mission IMSUT-HLC-CPF obtained manufacturing license for UC-MSCs therapy as the first national University in 2023.

### Publications

- 1) Tsuji S, Mukai T, Tsuchiya H, Iwatani C, Nakamura A, Nagamura-Inoue T, Murakami T., Impact of administering umbilical cord-derived mesenchymal stem cells to cynomolgus monkeys with endometriosis, *Reprod Med Biol.* 2023 Sep 8;22(1):e12540. doi: 10.1002/rmb2.12540. eCollection 2023 Jan-Dec.
- 2) Tsuji M, Mukai T, Sato Y, Azuma Y, Yamamoto S, Cayetanot F, Bodineau L, Onoda A, Nagamura-Inoue T, Coq JO. Umbilical cord-derived mesenchymal stromal cell therapy to prevent the development of neurodevelopmental disorders related to low birth weight. *Sci Rep.* 2023 Mar 7;13(1):3841. doi: 10.1038/s41598-023-30817-3. PMID: 36882440; PMCID: PMC9992354.
- 3) Nagamura-Inoue T, Nagamura F., Umbilical cord blood and cord tissue banking as somatic stem cell resources to support medical cell modalities, *Inflamm Regen.* 2023 Dec 5;43(1):59. doi: 10.1186/s41232-023-00311-4.