



1st Multicellular Autonomy seminar

Stem cell competition: the rules that shape multicellular dynamics

December 10th (Fri), 2021 | 9:00 AM – 10:30 AM (Japan Time)

Online Zoom seminar



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Pluripotent stem cells (PSCs) have the potential to serve as an unlimited substrate for off-the-shelf cell therapies, owing to their vast ability to multiply and differentiate into all cell types of the body. But PSCs live in multicellular societies and their decisions (whether to divide or differentiate) are shaped by interactions with each other. While seemingly peaceful, PSC culture is in fact riddled with riots – cells turn on their neighbours to fight to the death. In fact, recent studies by us and others have revealed the surprising fact that these aggressive cell interactions shape the quality of the overall cell population. While current bioprocesses for deriving high-quality cell products are limited in reproducibility and efficiency, cell-cell interactions are a key missing ingredient that needs to be engineered. To this end, we are developing synthetic biology tools to track and control the contributions of individual cells and their progeny (a so-called “clone”) in stem cell populations. In doing so, we seek to uncover (reverse engineer) and program (forward engineer) the genetic rules of PSC conflict to answer fundamental questions, while giving rise to a novel class of engineered cell therapies for regenerative medicine applications.

- 1) Shakiba N, et. al., *Science* **364** (6438), eaan0925 (2019)
- 2) Maheden K, Bashth OS, Shakiba N. *Curr Opin Genet Dev.* **70** (2021)

Registration (free, limited to the first 300 attendees), due date 12/9

<https://forms.gle/PpTPdEaiNcLptDHR7>



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「競合的コミュニケーションから迫る多細胞生命システムの自律性」

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