



# 部門公開セミナー

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新学術領域研究「配偶子産生制御」

## Defining the strategies of stem cell self-renewal

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In adult, tissues are maintained and repaired by stem cells, which divide and differentiate to generate more specialized progeny. The mechanisms that control the balance between stem cell proliferation and differentiation promise fundamental insights into the organization of tissues, and the factors leading to their dysregulation in disease.

However, stem cells are difficult to distinguish from their more differentiated progeny, and resolving these mechanisms has proved challenging. From the quantitative analysis of static lineage tracing assays, based on the study of transgenic mouse models, we show that stem cells follow conserved patterns of stochastic fate across different tissues and organisms. Further, by combining in vivo live-imaging with static marker based assays, we show that the long-term maintenance of both the mouse germ line and intestinal epithelium involve the reversible transfer of stem cells between distinct states. By showing that stem cell function is shared among a dynamically interconverting heterogeneous pool, these studies offer a new perspective on the maintenance of adult tissues.

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