生命科学セミナー

Remodelling of the maternal intestine during reproduction in mammals
生殖期における成体の腸管リモデリング

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The organs of female animals can be dramatically enlarged and metabolically remodelled by reproduction. The cellular changes and genetic programmes that initiate and sustain these transformations remain largely uncharacterised. It is also unclear whether the mechanisms that drive reproductive growth are shared between organs, or with other environmental triggers of adult organ growth. We have tackled these questions in mouse mothers, whose intestines provide a striking and genetically tractable example of reproductive organ resizing. We find that intestinal remodelling during reproduction is anticipatory of reproductive needs and distinct from diet-induced intestinal resizing. It is sustained by both an increase in intestinal progenitor proliferation and accelerated differentiation of digestive enterocytes. We uncover an enterocyte-based mechanism of intestinal growth, whereby the transporter is upregulated in newly generated enterocytes during pregnancy and lactation. The transporter is required to sustain the reproductive metabolism, migration, differentiation, and survival of these enterocytes. Our findings shed molecular and mechanistic light on a physiologically relevant yet historically overlooked paradigm of adult organ remodelling. They also reveal unanticipated specificity in the genetic mechanisms of physiological adult growth, raising the possibility that organ- and state-specific growth programmes could be leveraged to prevent maladaptive consequences of such growth.

（発表スライドは英語表記、発表は日本語で行われます）

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