

# BDR SEMINAR (Kobe & online hybrid)

## Yutaka Matsubayashi

Bournemouth University, UK

**Tuesday, April 11, 2023**

14:00-15:00

1F Auditorium, DB Building C, Kobe / Broadcast online via Zoom

Zoom meeting URL will be announced on the event day by e-mail.

※Non-BDR members: Please register from the following link.

<https://krs1.riken.jp/m/bdrseminarregistration> (Registration deadline: April 7)

## Investigating the dynamics of the basement membrane by synergising genetics, live-imaging, and mathematical modelling.

### Summary

The basement membrane (BM) is a thin layer of extracellular matrix that is critical for tissue development and function. The BM consists of hundreds of evolutionarily conserved components such as laminin, collagen IV, and perlecan. To construct a functional BM, its components must be expressed at proper amount and timing, appropriately turned over, and delivered throughout the body. However, the mechanisms that regulate these processes have not been fully understood. We have been addressing this question exploiting our ability to live image, mathematically model, and genetically dissect *de novo* BM formation during *Drosophila* embryogenesis (PMID: 29129537, 32585131).

In this seminar, I will discuss how BM components are regulating each other's expression to ensure appropriate production. In the developing fly embryo, the level of perlecan decreases if collagen IV is removed. Our mathematical model suggests that this is because of not only enhanced degradation but also reduced production of perlecan. Preliminary results further suggest that collagen IV deposited by macrophages triggers perlecan expression by muscles in a manner dependent on muscle integrin. In addition, a small-scale mutant screen revealed that the transcription factor C/EBP (Slbo) regulates perlecan expression. I will discuss the roles of this transcription factor in the integrin-dependent perlecan expression. These results will be the first step to uncover a comprehensive inter-regulation network of matrix components that ensures proper BM formation.



Host: Hironobu Fujiwara (Laboratory for Tissue Microenvironment) & Eisuke Nishida (Laboratory for Molecular Biology of Aging)

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