国立大学法人京都工芸繊維大学応用生物学系・
バイオメディカル教育研究センター　共催

第41回 KITライフサイエンスセミナー

Extraordinary Mechanical Properties of Composite Silk Through Heritable Transgenic Silkworm Expressing Recombinant Major Ampullate Spidroin

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日時　2022年12月7日（水） 12時10分−13時20分

会場　京都工芸繊維大学　応用生物学セミナー室（2号館441室）

対象　学生・教職員・一般の方

Spider dragline silk is a remarkable material that shows excellent mechanical properties, diverse applications, biocompatibility and biodegradability. Transgenic silkworm technology was used to obtain different types of chimeric silkworm/spider (termed composite) silk fiber including different lengths of recombinant Major ampullate Spidroin1/2 (reMaSp1/2) from the black widow spider, *Latrodectus hesperus*. We aimed to explore the relationship between the overall mechanical properties of composite silk fiber and the reMaSp1/2 chain length. The results indicated that there were significant linear relationships between the mechanical properties and the re-MaSp1 chain length, and the nature of various repetitive motifs in the primary structure played an important role in imparting excellent mechanical properties. We proposed the hypothesis that a single type of repetitive motif and sufficiently long chain were determined to be indispensable factors for the excellent mechanical properties of the silk fiber.

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