

Polymer nanomicelles for crossing blood-brain-barrier

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Drug delivery into the brain via the systemic route requires passage across the blood-brain barrier (BBB), which constitutes a great challenge. Here, we report block copolymer micelles decorated with glucose to crossing BBB by recognizing glucose-transporter 1 (GLUT1) overexpressing on brain endothelial cells. Significant accumulation of glucose-conjugated micelles occurred through elevating blood glucose level subsequent to the proper fasting time, synchronizing with glucose-triggered recycling of GLUT1.¹ Versatile therapeutic compounds for the treatment of neurodegenerative diseases, including Alzheimer's disease, can be delivered into brain parenchyma by glucose-conjugated micelles combined with this approach of glycemic control.

1. Y. Anraku, H. Kuwahara, Y. Fukusato, A. Mizoguchi, T. Ishii, K. Nitta, Y. Matsumoto, K. Toh, K. Miyata, S. Uchida, K. Nishina, K. Osada, K. Itaka, N. Nishiyama, H. Mizusawa, T. Yamasoba, T. Yokota, K. Kataoka, [Glycaemic control boosts glucosylated nanocarrier crossing the BBB into the brain](#). *Nature Commun.* **8** 1001 (2017)

Curriculum Vitae

Prof. Kazunori Kataoka is the Director General of the Innovation Center of NanoMedicine (iCONM), and a Professor at the Institute for Future Initiatives, University of Tokyo, Japan. His current major research interests include supramolecular materials for nanobiotechnology, focusing on drug and gene delivery systems. Prof. Kataoka has published over 500 peer-reviewed papers (h-index 139), and has received numerous scientific awards, including the Award of the Society of Polymer Science, Japan (2000), the Clemson Award from the Society for Biomaterials, USA (2005), the Founder's Award from the Controlled Release Society (2008), the NIMS Award (2009), the Commendation for Science and Technology by the Minister of MEXT, Japan (2010), the Humboldt Research Award from the Alexander von Humboldt Foundation (2012), the Leo Esaki Prize (2012), and the Princess Takamatsu Cancer Research Fund Prize (2017).