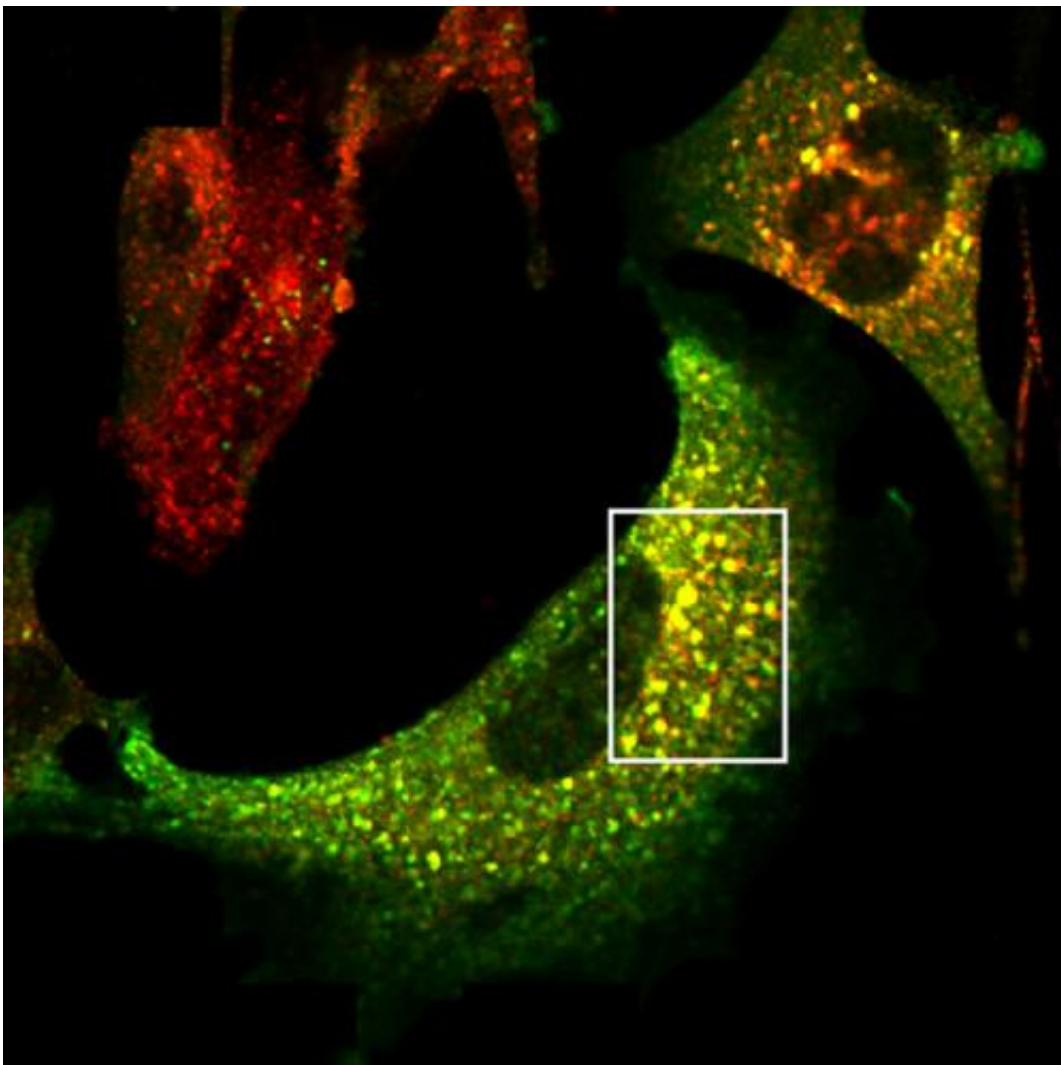


Unexpected player in regulation of blood cholesterol levels

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Researchers reveal an unexpected role for the protein KIF13B in helping cells internalize a receptor (LRP1) that helps regulate blood cholesterol levels. Here, LRP1 (red) is internalized into endosomes within the cell by a scaffolding complex that includes KIF13B (green). Credit: Kanai et al., 2014

Kinesins are motor proteins that "walk" along microtubules and transport various cargoes throughout the cell. A study in *The Journal of Cell Biology* uncovers an unexpected role for one kinesin in the pathway that regulates cholesterol levels in the blood.

Researchers from The University of Tokyo in Japan studied mice lacking KIF13B, one of 45 kinesins in the human genome. KIF13B is particularly abundant in the liver, and KIF13B mutant mice were found to have elevated levels of cholesterol in their blood.

The researchers discovered that KIF13B concentrates within [liver cells](#) at the spot where material such as LDL—the "bad" form of cholesterol—is taken up from the bloodstream. LDL enters the cell through endocytosis, a process in which cells absorb molecules by engulfing them. Endocytosis can be mediated in the [cell membrane](#) by small clathrin-coated vesicles or by small pits called caveolae. The cell membrane receptor LRP1 binds and engulfs LDL through both of these pathways.

The researchers discovered that LRP1 and KIF13B appeared together at the cell membrane and that KIF13B promoted the endocytosis of LRP1 by recruiting the receptor, along with LDL, into caveolae.

"Clathrin-mediated endocytosis has been studied intensively," says senior author Nobutaka Hirokawa. "But this is the first study to identify a mechanism for caveolin-mediated internalization."

Surprisingly, KIF13B's motor functions were not employed in this process. Rather, the kinesin was found to work as a scaffold at the cell membrane to help link LRP1 to caveolae.

"This scaffolding function is very unexpected for a motor protein," says

Hirokawa. "But, after LRP1 is internalized, KIF13B could work as a motor to transport endosomes through the cytoplasm."

More information: Kanai, Y., et al. 2014. J. Cell Biol. [DOI: 10.1083/jcb.201309066](https://doi.org/10.1083/jcb.201309066)

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