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Article of Significant Interest in This Issue

Aster Proteins Regulate Accessible Plasma Membrane Cholesterol

Aster proteins are a family of sterol transporters that mediate nonvesicular movement of cholesterol from the plasma membrane (PM) to the endoplasmic reticulum (ER) in mammalian cells. When the amount of cholesterol in the PM exceeds a threshold level, excess cholesterol in the "accessible pool" moves to the ER. Prior studies have shown that the pool of accessible cholesterol in the PM can be detected by the binding of modified versions of bacterial cytolysins such as anthrolysin O (ALO). Ferrari et al. (e00255-20) assessed the effect of loss of Aster expression on accessible cholesterol using nanoscale secondary ion mass spectrometry with a ^{15}N-labeled ALO domain 4 probe. Cells lacking Aster had expanded accessible cholesterol, reduced cholesterol transport to the ER, and consequently increased SREBP2 target gene expression. These studies define roles for the Aster nonvesicular transporters in the control of PM cholesterol availability and the activity of the SREBP pathway.

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