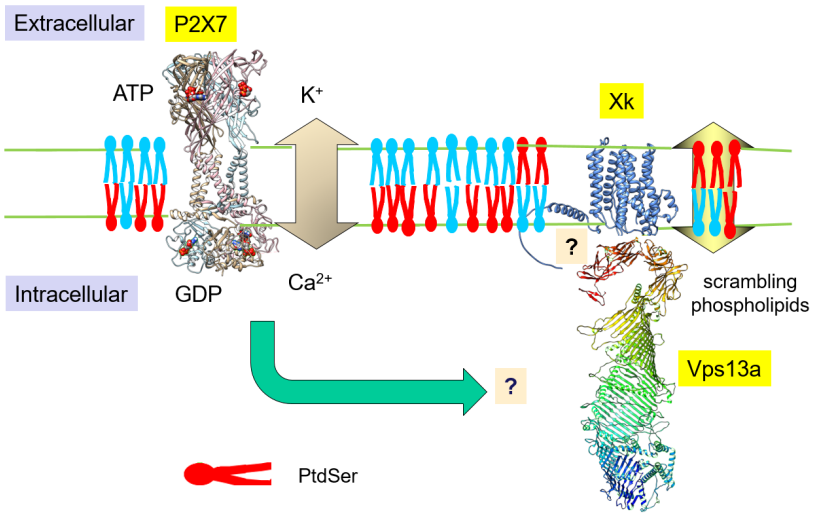
Requirement of Xk and Vps13a for the P2X7-mediated phospholipid scrambling and cell lysis in mouse T cells

The extracellular concentration of adenosine triphosphate (ATP) reaches several hundred micromoles in the inflamed tissues or tumor environment. A high concentration of ATP activates P2X7, a purinergic receptor, and induces the formation of a nonselective cation channel, accompanied by reversible phosphatidylserine (PtdSer) exposure, leading to cell lysis.

The research group of Shigekazu Nagata (Biochemistry & Immunology, IFReC) found that Xk and Vps13a complexed at plasma membranes are indispensable for ATP-induced PtdSer exposure and cell lysis.

Patients with McLeod syndrome and chorea-acanthocytosis are known to carry the mutation in XK and VPS13A genes, respectively, suggesting that a defect of XK-VPS13A–mediated phospholipid scrambling is responsible for neuroacanthocytosis, a progressive movement disorder, and cognitive and behavior changes.



Journal: *Proceedings of the National Academy of Sciences of the United States of America*

Title: Requirement of Xk and Vps13a for the P2X7-mediated phospholipid scrambling and cell lysis in mouse T cells.

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DOI: 10.1073/pnas.2119286119