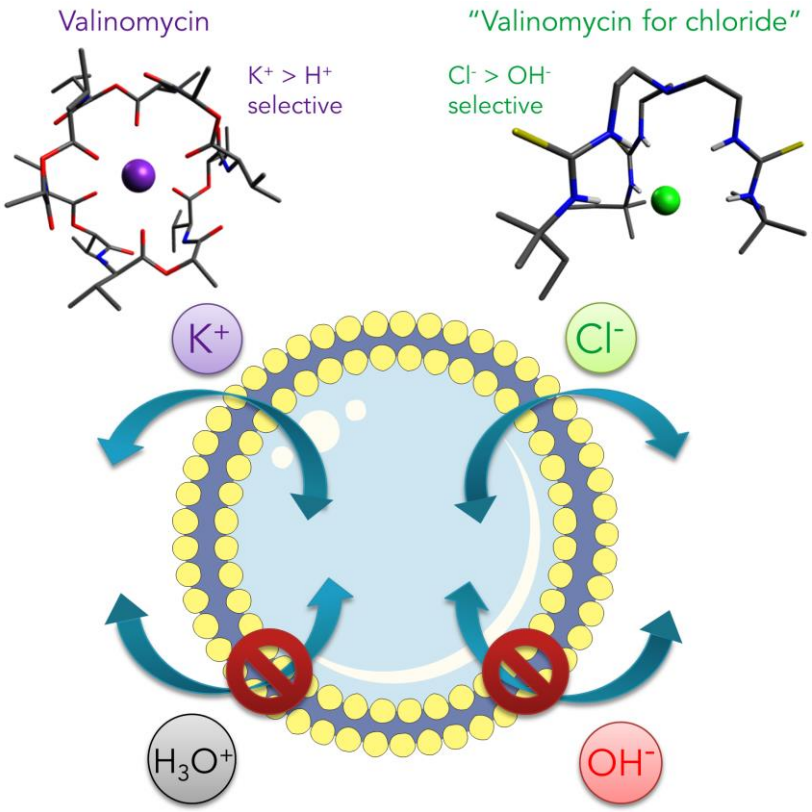
Nonprotonophoric electrogenic anion transporters

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Synthetic transmembrane anion transporters (anionophores) have potential as tools for biomedical research and as therapeutic agents for diseases associated with anion channel dysfunction. However the issue of potential H^+ or OH^- transport by anionophores has received little attention and a proven Cl^--selective anionophore against H^+ or OH^- transport is currently unavailable. Depending on anionophore acidity, many anionophores facilitate electrogenic H^+ or OH^- transport, potentially leading to toxicity. Nevertheless, using several liposome membrane-based assays, we have identified two new small molecules that promote Cl^- transport without dissipating transmembrane pH gradient, essentially mimicking the electrogenic cationophore valinomycin. The Cl^- > H^+/OH^- selectivity of anionophores shows a consistent positive correlation with the degree of Cl^- encapsulation and a negative correlation with the acidity of hydrogen bond donors. Our study demonstrates for the first time that the valinomycin equivalent counterpart for Cl^--selective transport is achievable.[1]



1. X. Wu, L.W. Judd, E.N.W. Howe, A.M. Withecombe, V. Soto-Cerrato, H. Li, N. Busschaert, H. Valkenier, R. Pérez-Tomás, D.N. Sheppard, Y.-B. Jiang, A.P. Davis and P.A. Gale, *Chem*, 2016, 1, 127-146.