# The 202nd MANA Seminar

## NEW ANION RECEPTORS AND TRANSPORTERS

Chair: Dr. Katsuhiko Ariga (MANA PI)


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Diseases or “channelopathies”, such as cystic fibrosis, caused by mis-regulation of anion transport across cell membranes have led a number of research groups including our own to develop synthetic compounds to mediate anion transport across lipid bilayer membranes. By studying structurally simple systems and varying their properties to change the degree of preorganisation, affinity for anions or lipophilicity we have begun to rationalize why particular anion transport mechanisms (co-transport or antiport processes) occur in particular cases. For example we have studied the chloride transport properties of isophthalamide and pyridine-2,6-dicarboxamide based receptors with pendant methylimidazole groups that were designed to co-transport H+ and Cl- We observed that more pre-organised pyridine-based receptor was the more efficient transporter - a finding replicated with a series of isophthalamides in which one contained hydroxyl groups designed to preorganise the receptor. This latter class of compound, together with the natural product prodigiosin can transport bicarbonate (as part of a chloride/bicarbonate antiport process) across lipid bilayer membranes. Most recently we have studied the transport properties of simple thioureas and shown that these compounds are highly potent chloride/bicarbonate antiport agents that function at low concentrations whilst urea analogues are inactive. The higher log Ps and lower polar surface areas of the thiourea compounds as compared to their urea analogues may provide a clue to the high potency of these compounds and perhaps some criteria upon which to base the design of future small molecule transporters.


**Venue:** Seminar Room #431, MANA Bldg.

**Date:** April 8th (Friday) **Time:** 15:30-16:15

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