

CENTRE FOR PAIN RESEARCH

PROFESSOR ROB CAPON

Professor Capon is an organic chemist and internationally renowned multi-disciplinary expert in marine and microbial biodiscovery. He has a reputation for discovering biologically active natural products that span all biosynthetic classes, many of which feature rare and unprecedented molecular scaffolds and functional groups, and display valuable biological properties. Supported by an extensive network of research collaborators across academia and industry, in Australia and overseas, Professor Capon has a reputation for delivering high quality research across basic and applied science. A dominant theme of this research is the discovery and use of natural products to inspire the development of next generation biomolecular tools, pharmaceuticals and agrochemicals, with a particular focus on infectious diseases, cancer and pain.

RESEARCH APPROACHES

Professor Capon employs a sophisticated suite of research methodology spanning organic, analytical, synthetic, medicinal and natural products chemistry, as well as microbiology, pharmacology and biochemistry. Current research approaches to pain research include:

- controlling chronic inflammatory pain through potent and selective modulators of glycine gated chloride channel receptors (GlyR)
- controlling chronic pain through non-opioid analgesics that are potent and selective modulators of opioid receptors.



KEY PUBLICATIONS

Professor Capon is a lead researcher in a team that discovered a first-in-class analgesic that acts as an exceptionally potent (pM) and highly selective potentiator of an ion channel in the CNS, although this research remains commercial in confidence. Selected publications illustrative of his broader drug discovery credentials are provided below:

Salim AA, Xiao X, Cho K-J, Piggott AM, Lacey E, Hancock JF, **Capon RJ** (2014) Rare Streptomyces sp. polyketides as modulators of K-Ras localisation. *Organic and Biomolecular Chemistry* **12**(27): 4872-4878.

Raju R, Khalil ZG, Piggott AM, Blumenthal A, Gardiner DL, Skinner-Adams TS, **Capon RJ** (2014) Mollemycin A: an antimalarial and antibacterial glyco-hexadepsipeptide-polyketide from an Australian marine-derived Streptomyces sp. *Organic Letters* **16**(6): 1716-1719.

Huang X-C, Xiao X, Zhang Y, Talele TT, Salim A, Chen Z-S, Capon RJ (2014) Lamellarin O, a pyrrole alkaloid from an Australian marine sponge, *lanthella* sp., reverses BCRP mediated drug resistance in cancer cells. *Marine Drugs* **12**: 3818-3837.

Balansa W, Islam R, Fontaine F, Piggott AM, Zhang H, Xiao X, Webb TI, Gilbert DF, Lynch JW, **Capon RJ** (2013) Sesterterpene glycinyl-lactams: a new class of glycine receptor modulator from Australian marine sponges of the genus *Psammocinia*. *Organic and Biomolecular Chemistry* **11**(28): 4695-4701.

Wang Q, Song F, Xiao X, Huang P, Li L, Monte A, Abdel-Mageed WM, Wang J, Guo H, He W, Xie F, Dai H, Liu M, Chen C, Xu H, Liu M, Piggott AM, Liu X, **Capon RJ**, Zhang L (2013) Abyssomicins from the South China Sea deep-sea sediment *Verrucospora* sp.: natural thioether michael addition adducts as antitubercular prodrugs. *Angewandte Chemie International Edition* **52**(4): 1231-1234.

Balansa W, Islam R, Fontaine F, Piggott AM, Zhang H, Webb TI, Gilbert DF, Lynch JW, **Capon RJ** (2010) Ircinialactams: Subunit-selective glycine receptor modulators from Australian sponges of the family Irciniidae. *Bioorganic and Medicinal Chemistry* **18**: 2912-2919.

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