Many guanidine-containing natural products have been isolated from nature, in particular from marine sources. Among them, tetrodotoxin (TTX) and saxitoxin (STX) are the most famous as a toxic principle of puffer fish intoxication and a paralytic selfish toxin, respectively. Both natural toxins exert their potent toxicities through specific blockage of sodium ion influx through voltage-gated sodium channel proteins on neuronal cell membrane. Due to the unique biological properties, these compounds have been employed as important biochemical tools in neurophysiological experimentation.

Our research group has devoted to investigate efficient and flexible synthetic methodologies of these guanidine-containing natural toxins in order to develop new sodium channel blockers on the basis of natural products. Chiriquitoxin (CHTX, 1) isolated from a dart frog living in Costa Rica is the most structurally complex analog of tetrodotoxin. This natural toxin was synthesized from a newly designed intermediate for the synthesis of diverse tetrodotoxin derivatives. Decarbamoyl-\(\alpha\)-saxitoxinol (2) isolated from cyanobacterium, Lyngbya wolfei, is a naturally occurring analog of saxitoxin. We have developed a bromocation-triggered cascade cyclization of guanidino-acetylene compound to construct the cyclic guanidine framework of saxitoxin. The cascade cyclization enables us to synthesize crambeasin B carboxylic acid 3, an other guanidine-containing natural product isolated from the Mediterranean sponge Crambe crambe.

**CBC SEMINAR ANNOUNCEMENT**

**Professor Toshio Nishikawa**
Nagoya University

**Total Synthesis of Guanidine-Containing Natural Products**

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**Date:** 10th September 2013 (Tuesday)
**Time:** 2:30pm – 4:00pm
**Venue:** NTU SPMS CBC Building Level 2, Conference Room
**Host:** Professor Loh Teck Peng