Synthetic Studies of Marine Polyamine

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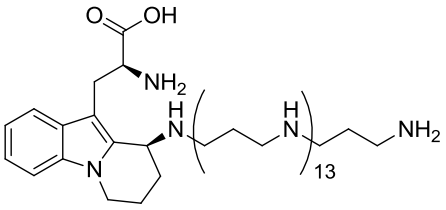
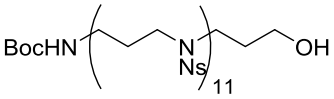
Protoaculeine B (pACU-B) is a marine natural product isolated from marine sponge *Axynissa aculeata* collected at Iriomote, Okinawa, by Sakai et al.[1] pACU-B is composed of piperidine, polyamine, and tryptophan moieties. pACU-B has been expected as neuroactive, because natural polyamines such as JSTX and PhTX are the antagonist for ionotropic glutamate receptors. We have been studying synthetic route for pACU-B that would be amenable to analog synthesis, and construction of heterotricyclic core has been already completed. In this study, we first succeeded in a synthesis of protected 12-mer of 1,3-propanediamine, **1**, by employing the Ns strategy developed by Fukuyama and Kan.[2]

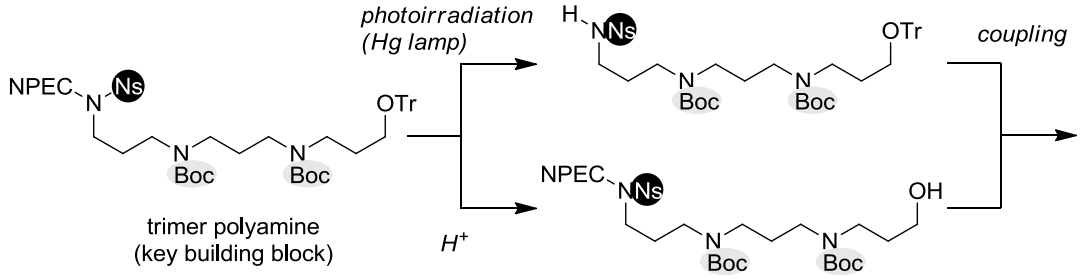


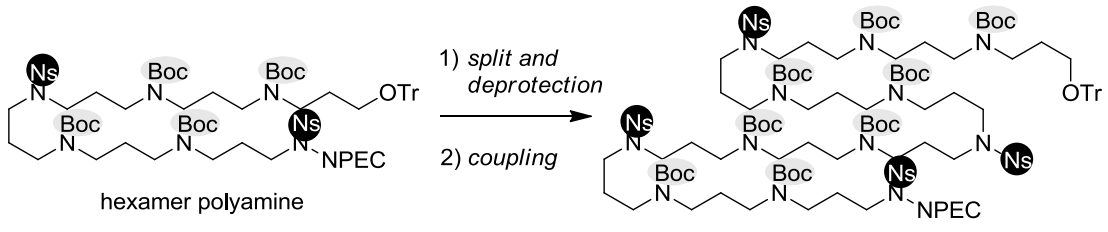
protoaculeine B (pACU-B)



12-mer polyamine **1** in the 1st generation synthesis

We further developed a new synthetic strategy using photodegradative NPEC protecting group to solve a solubility problem encountered in the Ns strategy-based 1st generation synthesis. We succeeded in a synthesis of differently protected 12-mer of 1,3-propanediamine, **2**, by employing the new strategy.





12-mer polyamine **2** (the 2nd generation synthesis)

1) S. Matsunaga, R. Kishi, K. Otsuka, M. J. Fujita, M. Oikawa, R. Sakai, *Org. Lett*. **2014**, 16, 3090–3093. 2) T. Kan, T. Fukuyama, *Chem. Commun.* **2004**, 353–359.