

Jiangpeng Liu
Liu Research Group
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Introduction:

Cyclobutastellettolide B was originally isolated from a *Stelletta* sp. sponge (3.0 mg/1.3 kg) by Stonik et al. in 2019.

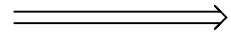
It could significantly increase the reactive oxygen species level in murine peritoneal macrophages and be a potential lead for the development of immunomodulatory agents.

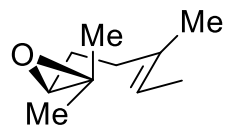
It has an unusual 6/6/4-fused tricyclic core with six stereocenters.

Among them, three are contiguous quaternary stereocenters.

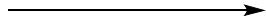
The first enantioselective total synthesis of (+)-cyclobutastellettolide B in 13 steps with a total yield of 31.5%.

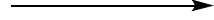
Retro-synthetic route

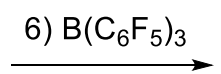




4)





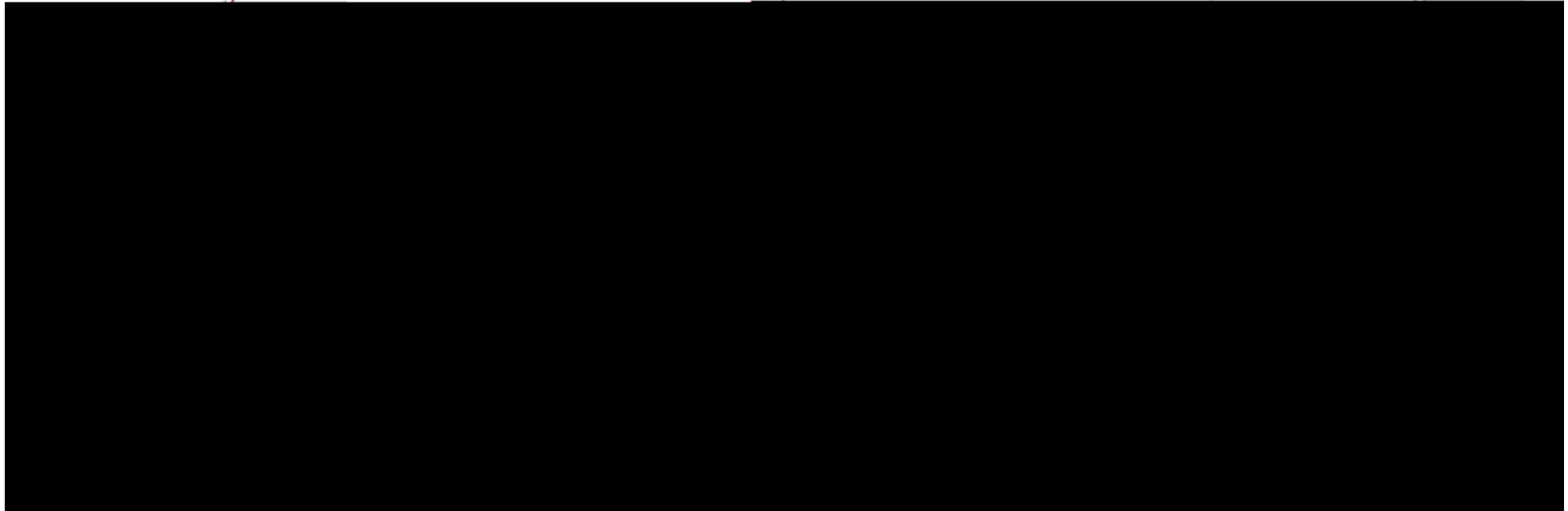


Lewis acid









Thanks for your attention

versus $AlBr_3$ in the cyclization... In order to know about the source of the bromine atom (CH_2Br vs CH_2Br), experiments were performed with different solvents, as shown in these... with $AlBr_3$ as promoter and dichloromethane or iodomethane as solvents. As a result of these experiments, we obtained the corresponding bromide or iodide derivatives. This supports the formation of the corresponding bromide or iodide that the halogen always comes from the solvent.

The diagram illustrates the cyclization of a substituted indole derivative (1-(2-(2,2-dimethyl-1,3-dioxol-5-yl)ethyl)pyrrole) in the presence of $AlBr_3$ and various solvents. The reactions are as follows:

- In CH_2Br_2 , the product is a bromide derivative.
- In CH_2I_2 , the product is an iodide derivative.
- In CH_2Cl_2 , the product is a chloride derivative.

The diagram also shows the chemical structures of the starting material and the resulting bromide, iodide, and chloride derivatives.