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Promoting fermentation in organic synthesis: semi-synthesis of roquefortine C derivatives

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An extensively documented biological technique, fermentation allows for large quantities of structurally complex natural products to be obtained for synthetic use with minimal time, expense, and environmental impact. Roquefortine C, a prenylatedindoline alkaloid, is a mycotoxin produced by a number of species of *Penicillium* and has been observed to induce a variety of cytotoxic responses. Numerous studies point to a biosynthetic pathway containing the biologically-active related compounds glandicoline B, meleagrin, oxaline as well as other metabolites such as roquefortine F and roquefortine L whose biological activity remains unknown. The unique triazaspiro skeleton as well as the lack of synthetic routes makes compounds such as glandicoline B, meleagrin, and oxaline attractive synthetic targets. A large-scale fermentation procedure was developed to produce gram quantities of roquefortine C and a number of derivatives, whose biological testing is currently underway, have been synthesized. Efficient routes to these compounds will allow for the continued exploration of the biological activity of these metabolites and derivatization to access other more potent therapeutic agents.

Biography

Claire Gober received her bachelor's degree in Chemistry and Chemical Biology from Cornell University in 2012. She is currently a PhD candidate at the University of Pennsylvania studying under Madeleine Joullié and is also a research fellow on the NIH Chemistry-Biology Interface Training Grant.

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