

# Total synthesis of anti-cancer marine product achieved

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The concerted efforts of researchers from both PolyU and Peking University's Shenzhen Graduate School have led to the first total synthesis of a natural marine product as a promising anti-cancer agent.

Under the leadership of Dr Ye Tao, Associate Professor of PolyU's Department of Applied Biology and Chemical Technology, the concerted efforts of researchers from both PolyU and Peking University's Shenzhen Graduate School have led to the first total synthesis of a natural marine product with anti-cancer properties: grassypeptolide. This breakthrough paves the way for the further development of anti-cancer drugs from grassypeptolide – a compound isolated from marine bacteria – which has emerged as a promising anti-cancer agent.

It is difficult to obtain grassypeptolide from natural sources, but the research team made its construction possible through a 17-step total chemical synthesis process. The team faced significant challenges in forming the 31-member ring of grassypeptolide and then introducing the two smaller thiazoline heterocycles – five-member rings containing sulphur and nitrogen – into that ring. The researchers constructed the 31-member macrocycle via a precursor with more favourable cyclization kinetics, and then introduced the thiazoline heterocycles at a later stage of synthesis to prevent them from undergoing side reactions.

The novel breakthrough has been reported in the authoritative [Chemical Communications](#) (Issue 40, Volume 46, 2010) and has been highlighted

by Nature China.

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