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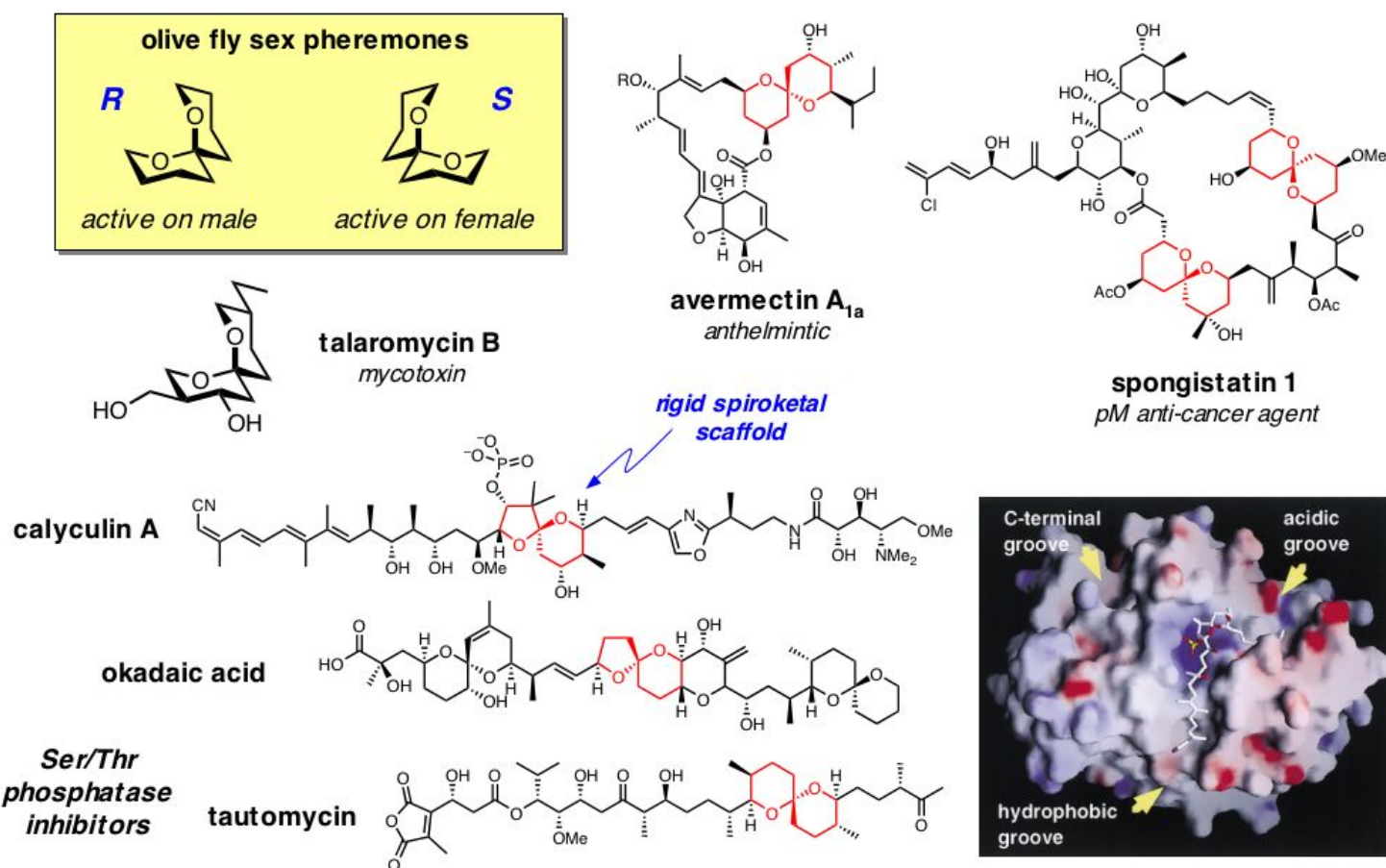
Stereoselective Diversity-Oriented Synthesis of Spiroketal

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Spiroketalization in Biologically Active Natural Products

Spiroketalization introduces structural rigidity and stereochemical diversity



• Kita, A.; Matsunaga, S.; Takai, A.; Kataiwa, H.; Wakimoto, T.; Fusetani, N.; Isobe, M.; Miki, K. *Structure* **2002**, 10, 715–724.

11

[Spiroketal Motifs in Biologically Active Natural Products](#)

Spiroketals are privileged substructures found in numerous natural products. Even relatively simple spiroketals exhibit a range of

biological activities. In more complex structures, spiroketals often serve as rigid scaffolds to present sidechains along well-defined three-dimensional vectors. Thus, spiroketals are attractive targets for diversity-oriented synthesis. In particular, they allow extensive use of stereochemical diversity to enhance three-dimensional structural diversity.

Target-oriented synthesis of spiroketal-containing natural products has commonly relied upon thermodynamically-controlled spiroketalization reactions. However, in such reactions, the stereochemical outcome at the anomeric carbon is influenced by multiple, sometimes competing factors that govern product stability. Thus, to synthesize systematically stereodiversified spiroketal libraries, new kinetically-controlled spiroketal-forming reactions are required.

We have developed a new synthetic route to spiroketals that provides stereocontrolled access to either of the two anomeric stereoisomers. Our approach also uses four adjacent stereogenic centers to present functional groups and sidechains along diverse three-dimensional vectors. This project has also provided us with many exciting opportunities to develop new synthetic methodologies. Our current efforts involve applications of these methods to the diversity-oriented synthesis of spiroketal libraries and to the total synthesis of spiroketal natural products.

Publications

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Sharma, I.; Wurst, J. M.; Tan, D. S.* *Org. Lett.* 2014, *16*, 2474–2477.
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[[Abstract](#) | [PubMed](#) | [PMC](#)]
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[[Abstract](#) | [PubMed](#) | [PMC](#)]
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15. An acid-stable *tert*-butyldiarylsilyl (TBDAS) linker for solid-phase organic synthesis.

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12. Synthesis of C1-alkyl and C1-acylglycals from glycals using a *B*-alkyl Suzuki–Miyaura cross coupling approach.

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[[Abstract](#)]

News Articles

02/02/2006

Chemistry: Order of the rings

Nature

One of the great challenges in organic chemistry is developing novel ways to synthesize complex structures. The best reactions work for a range of chemical substrates, and give high yields. By these criteria, a reaction, discovered by Derek Tan of the Memorial Sloan-Kettering Cancer Center in New York and his co-workers is near ideal. [[Full text](#)]

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