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Editorial

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Terpenoid- and Shikimate-Derived Natural Product Total Synthesis

Some of the most important research advances of the modern synthetic era have been driven by the organic chemistry community's strong desire to synthesize complex terpenoid- or shikimate-derived natural products and, for this very reason, many in the field consider this to be a highly topical and worthwhile research endeavor. Such activity not only stimulates the development of important new reactions, it also powerfully tests the arsenal of existing synthetic methods against some of Nature's most synthetically demanding targets. It reveals whether these reaction protocols are genuinely reliable and useful, or whether they are deficient. It thus provides an important way of appraising the true synthetic worth of many published reaction procedures and, because of this, I expect such research effort will continue long into the future. The fact that numerous biologically active terpenoid- and shikimate-derived biomolecules may, over time, help define the cellular dysfunctionality that is responsible for the onset and progression of many human, animal, and plant diseases further guarantees that this type of research will remain at the very forefront of science, since a significant number of these natural products (and their modified probes) will only be accessible via total synthesis over the coming years. It will thus be appreciated that the total synthesis of complex terpenoid- and shikimate-derived natural products is a valuable research pursuit that continues to help chemistry, biology, and medicine collectively advance and flourish.

Consequently, I felt it almost instinctive that I put together an *OL*, *JOC*, and *JACS* Virtual Issue on "*Terpenoid- and Shikimate-Derived Natural Product Total Synthesis*", after I received an invitation from the *OL* Editor-in-Chief, to guest edit a themed Virtual Issue that would highlight outstanding papers from all three journals, published over the period July 2011 to May 2013. The collection of papers that I have assembled does, I believe, fulfill the editorial mandate I was given, of making excellence, diversity, and novelty of work paramount in the Virtual Issue created.

With regards to chemistry content, the present *OL*, *JOC*, and *JACS* Virtual Issue not only shows off some of the more noteworthy new reaction technologies that have been published for the synthesis of complex, highly functionalized, carbocycles over the past two years, it also brings into view much recently developed functional group interconversion chemistry. It highlights emerging new reaction technologies that could, in future decades, form the absolute bedrock of our discipline. Some of this Issue's papers also showcase truly remarkable reaction cascades for the assembly of complex molecules—sequences that, many would argue, possibly exceed Nature in terms of their overall synthetic elegance and efficiency. Several of the papers selected detail syntheses that provide unique structural proofs of the natural products that have been prepared; molecules that have resisted unambiguous structural identification by other means ever since they were first discovered. A number of the syntheses also describe elegant new routes to structures of potential chemobiological or medicinal importance and, as such, they could open up novel lines of future biological or pharmacological investigation.

With this as brief introduction, I hope that you enjoy reading the 26 papers that have been brought together in this special joint Virtual Issue of *Organic Letters*, *Journal of Organic Chemistry*, and *Journal of the American Chemical Society*, and I strongly urge you to consult the more detailed Editorial that has been prepared for *Organic Letters*. It discusses the high points of each synthesis, provides an analysis of some of the more interesting aspects of reaction mechanism, and comments on the overall merits of the different papers themselves. In closing, may I wish you an enjoyable read.

Karl J. Hale, Associate Editor, *Organic Letters*

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Notes

Views expressed in this editorial are those of the author and not necessarily the views of the ACS.

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