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Introduction: Synthesis of Biofunctional Molecules

This issue of *Chemical Reviews* provides a broad overview of current research on biofunctional molecules—both natural products, and "unnatural" but often closely related substances that have been tailored or designed for specific target properties. Of course, natural product chemistry grew up on the study of molecules with biological interest, like morphine, cocaine, and strychnine. However, molecules without known biological activity, like diterpenoids and complicated triterpenoids, were also the subject of academic investigation.

The revolution in the determination of molecular structure, which took place in the 1950s came from the application of X-ray crystallography and of NMR spectroscopy. From then on it was clear that, apart from taxonomical studies, the most interesting molecules to investigate would be those that showed biological effects of potential practical importance. However, natural products that were readily available would also be of interest if they could be converted easily into biologically useful compounds of greater value.

This issue of *Chemical Reviews* contains a variety of articles concerned with the synthesis of biologically relevant molecules. There are articles from six different countries. This illustrates well the international character of modern natural products research.

Articles in this issue emphasize natural product synthesis using the abundance of the chiral pool. Generations of steroid chemists have made good use of this approach. Marine natural products are well represented in accordance with their biological activity and the intense effort devoted to their isolation and structure determination in recent years. Peptides and complex nucleoside antibiotics feature as expected from their pharmaceutical importance. Enzymes find mention as reagents, but their use in most natural product synthesis remains specialized. This is not so in carbohydrate synthesis. An article on self-assembly of organic molecules will pique curiosity. Methods in total synthesis always remain of importance provided that the yields obtained are highly stereospecific and nearly quantitative.

It is to be hoped that this issue of *Chemical Reviews* will be very popular with synthetic chemists. Single copies of this issue will also be available.

The articles in this issue of *Chemical Reviews* illustrate the continued broadening in the scope of synthetic chemistry. Not only are the targets always expanding, the problems they create stimulate the invention of new processes. The remarkable progress made in the last two decades in the stereoselective synthesis is an extraordinary demonstration of the solution provided for these problems. In many reactions, the selectivity attained is in the order of enzymatic processes.

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