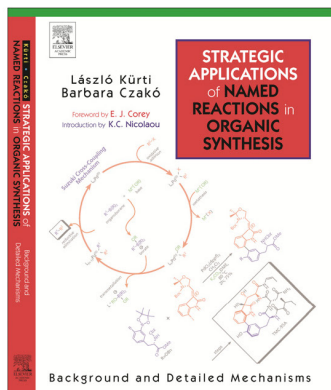


**Strategic Applications of Named Reactions in Organic Synthesis** (Elsevier, 2005)

During my doctorate studies at the University of Pennsylvania, in addition to my research and teaching activities, I, in collaboration with Barbara Czakó, envisioned, designed and wrote a unique reference book on the use of named reactions in organic synthesis. This project started as a simple collection of 50 named reactions in 2002, while taking the graduate level synthetic course taught by Professor Amos B. Smith.

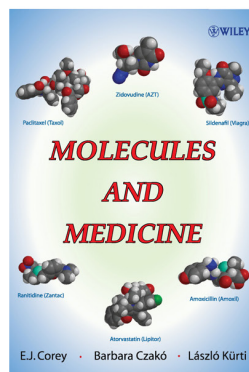
After consulting with faculty members, especially with Professor Madeleine M. Joullie, we were encouraged to expand this collection and to contact a number of publishers to see if they were interested. We reasoned that today's organic chemist is faced with the challenge of navigating his or her way through the vast body of literature generated daily. Papers and review articles are full of scientific jargon involving the description of methods, reactions and processes defined by the names of the inventors or by a well-accepted phrase. The use of so-called "named reactions" plays an important role in organic chemistry. Recognizing these named reactions and understanding their scientific content is essential for graduate students and practicing organic chemists. In March 2005, at the National ACS Meeting in San Diego, Elsevier published our manuscript with the title *Strategic Applications of Named Reactions in Organic Synthesis*.

The book describes and illustrates 250 of the most important reactions in organic synthesis. In a few of the book's many reviews, the *Journal of Chemical Education* called it "outstanding in every way"; *Choice* wrote that the "book greatly advances the description of both the art and science of chemical synthesis"; and *Angewandte Chemie* stated, "This work sets new standards no other book covers the subject of named reactions in such an up-to-date and comprehensive way."

Professor E.J. Corey, who is now my postdoctoral advisor, in the foreword to the book wrote: "This book is destined to become unusually useful, valuable, and influential for advanced students and researchers in the field. It breaks new ground in many ways and sets an admirable standard for the next generation of texts and reference works. Its virtues are so numerous there is a problem in deciding where to begin."

Our book was the first and is still the only advanced level text/reference book in organic chemistry to use four colors in its schematic depictions of reactions. It is now used all over the world, including in Europe, China, Japan, India, and Australia. It has been adopted for advanced-level graduate courses at many leading U.S. universities, including Harvard, MIT, Princeton, University of California–Berkeley, Scripps Research Institute, and University of Pennsylvania. Working chemists find it a valuable tool that they frequently consult.

Within two years of its publication, *Strategic Applications of Named Reactions in Organic Synthesis* became a market leader among advanced organic chemistry texts. Translations in Japanese and Chinese have already appeared, and German- and Polish-language editions are in preparation. The book has received two internationally recognized awards. *Choice*, the magazine of the Association of College and Research Libraries, designated it as an "Outstanding Academic Title," based on its excellence in scholarship and presentation. This designation is reserved for only 10 percent of the over 7000 academic titles the association reviews each year. The Professional and Scholarly Division of the American Association of Publishers gave the book its "Award for Excellence in Professional and Scholarly Publishing" in the entire field of chemistry in February 2006.

**Molecules and Medicine** (Wiley, 2007)

During my postdoctoral studies at Harvard University, I collaborated with Professor E.J. Corey and with Barbara Czakó to write a book which is intended for a broad readership, from college undergraduates to professionals and researchers in the life sciences and medicine. In addition, we also hoped to reach out to the educated lay person with an interest in health and medicine. In less than 8 months after its inception in late 2006, the manuscript was finished in a printer ready format by and published with the title *Molecules and Medicine* by John Wiley and Sons. I was

responsible for the creation of 70 percent of the artwork, 100 percent of the layout, and about a third of the text.

An effort has been made to integrate chemistry, biology, drug discovery and medicine in a way that is clear and self-explanatory. Heavy use has been made of chemical structures, since they provide a fundamental key to the language of life and the human activities that flow from it. Our age has seen the rapid evolution of molecular medicine as a critical part of the broader fields of health care and the biochemical basis of human disease. The understanding of human illness at the molecular level has brought and will bring great benefit to mankind.

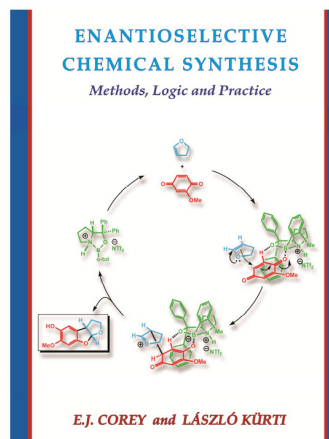
There is a price to be paid in any attempt to understand molecular medicine, because that comprehension is greatly aided by the ability to decipher chemical structures which many have regarded as too onerous a challenge. One purpose of this book is to demonstrate that an adequate understanding of chemical structures is within the reach of most educated people, and well worth the effort. The first two parts of this book aim to provide the insights and background required to appreciate the architecture of therapeutic molecules and their target proteins, as they parade through the subsequent pages of this book.

*Molecules and Medicine* delves into the discovery, application and mode of action of more than one hundred of the most significant molecules now in use in modern medicine. Much background information, both chemical and biomedical, is provided. The therapeutic agents in this book are arranged in sections according to the type of medical condition they treat.

There are also numerous sections in the book that provide biomedical background. For instance, there are two-page to eight-page summaries of topics such as inflammation, metabolic syndrome, immunology, drug resistance, cancer and neuro-transmission. These are placed at strategic locations throughout the book.

Professor Samuel J. Danishefsky, Director of the Laboratory for Bioorganic Chemistry at Memorial Sloan-Kettering Cancer Center, wrote a review of *Molecules and Medicine* for *Chemical and Engineering News*. He praised the book's "conciseness of language, strictly maintained focus, and clear adherence to priorities." Professor Danishefsky concluded in his review, "I predict that *Molecules and Medicine* will be kept close at hand by all students and even many physicians and other health management personnel... It's a book that will inspire the field. In that sense, it not only reports on a scientific subject but also creates new dimensions. Bravo to authors Corey, Czakó, and Kürti."

In February 2008, the Professional and Scholarly Division of the American Association of Publishers designated *Molecules and Medicine* "Best of Physical Sciences and Mathematics". In the view of the judges, the book's outstanding achievement is in "bringing together the extraordinarily diverse elements of molecular medicine into an interactively manageable form; in the quality of its four color production of molecular images; and the assuredness of its prose."

**Enantioselective Chemical Synthesis: Methods, Logic and Practice** (Direct Book Publishing, 2010)

During the final year of my postdoctoral studies at Harvard University, I collaborated with Professor E.J. Corey to write a book in which we would make accessible to researchers and students of synthetic chemistry the vast and still-expanding field of enantioselective synthesis in the hope that this fascinating area of chemistry can more readily be mastered. The prodigious growth of knowledge in the chemical sciences of the 20th century continues in the 21st.

Accretive and gradual, more like a growing ocean wave than a consequence of dramatic or revolutionary changes, the advance is particularly significant in synthetic chemistry because of its centrality and value to society. For more than a century the rate of progress in synthetic chemistry has been such that every 15 years, or so, problems could be solved that were too difficult for scientists in the preceding period. The subject matter of this book provides abundant evidence of the increasing power of chemistry in recent years. It is a remarkable story considering that even in the mid-20th century the ability to control the absolute stereochemical course of chemical reactions seemed beyond reach. Chemists have been keenly aware for more than 100 years of the awesome catalytic power of nature's catalysts, the enzymes, to produce complex organic molecules with complete stereocontrol, including absolute configuration. Yet, it is only now that centamolecular catalysts (molecular weights in the hundreds) are being created by chemists that begin to rival the much larger and more complex enzymes of biochemistry.

In **Part I** of this book we have tried to present clearly, comprehensively and concisely the most useful enantioselective processes available to synthetic chemists. **Part II** provides an extensive discussion of the most logical ways to apply these new enantioselective methods to the planning of syntheses of stereochemically complex molecules. This hitherto neglected area is essential for the advancement of enantioselective synthesis to a more rational and powerful level. Finally, **Part III** describes in detail many reaction sequences which have been used successfully for the construction of a wide variety of complex target molecules.

The color coding of schemes and figures that has been so popular with the readers of "Strategic Applications of Named Reactions in Organic Synthesis", is also used in this book. The substrates, the reactants and reagents in Part I and Part II of this book are shown in three different colors: blue, red and magenta. The ligand or catalyst (or chiral controller) is always shown in green. The newly formed bonds are shown in black and the coloring of the product reflects the origin of the subunits that have been incorporated as a result of the transformation. In Part III of the book a slightly different coloring had to be employed: in all of the multi-step reaction sequences the color red is used to indicate the newly formed bonds.

"Enantioselective Chemical Synthesis" has been well-received by the community. A number of quotes from recent book reviews are listed below.

Professor Hans-Gunther Schmalz wrote in his review of the book (*Angew. Chem. Int. Ed.* **2011**, *50*, 2887–2888): "The compilation reflects the present state of the art in the area of asymmetric organic and metallo-organic catalysis in an impressive and convincing manner... The crystal-clear descriptions of the syntheses and the genius displayed in the manner of achieving them, as well as their orderly classification, make this part a real

treasure-trove of stimulating ideas, and they offer ideal case-studies for advanced lectures and seminars in organic synthesis...It is beyond question that this comprehensive, stimulating, and highly up-to-date book is worth the price and will get a wide distribution. It deserves its place on the bookshelves of all who are interested in synthesis. It will surely be a long time before this book, as part of the scientific legacy of a great pioneer of chemical synthesis, begins to gather dust in our libraries."

Professor Edwin Vedejs summarized his impressions in early 2011 (*J. Am. Chem. Soc.* **2011**, *133*, 3686–3686): "Part I will be an outstanding resource for nonspecialists seeking to match strategic bond assembly with chiral target structures or absolute configurations of catalysts with the configuration of products. This book will save countless hours of searching on the part of interested readers by making the most important enantioselective reactions easily accessible. The graphical presentation and organization within each scheme of Part I are so well done that after a few minutes with the book the reader knows where to find every part of every diagram. Reactants are color coded, as are the reagents and the chiral ligands or their complexes, and the colors are used consistently throughout...The schemes are exemplary for informative content, completeness, and visual impact. There is none of the dreaded letter coding of synthetic steps and crowding of reagents into singly spaced captions... The references include the title as well as full bibliographic details, and the authors have taken care to include extensive recent reviews and modern examples. The result is a level of ease for visually retrieving information that will make this book the key resource in a crowded field of books, reviews, and monographs. The book will provide faster access to much of the literature on tools of enantioselective synthesis than does any electronic resource. If you teach, study for an advanced degree in organic chemistry, write proposals or manuscripts about chiral substances, or plan enantioselective syntheses in an industrial setting, buy this book by Corey and Kürti. You and your co-workers will use it."

Professor Richmond Sarpong had the following observations in *Chemical and Engineering News* in January 2011: "The book aims to house in one place a panoramic view of all aspects of enantioselective chemistry. This is a tall order, given the rapidity with which this area of organic chemistry continues to change. Nevertheless, if there is an individual whom I would entrust to guide us on this evolutionary journey of stereoselective synthesis to where it is in the modern day and provide a logic for how best to maneuver through a synthesis along these lines, it would be Corey...Overall, the book is a joy to read-educational and inspiring. It makes abundantly clear that with the right methods, logic, and lots of practice, an efficient synthesis of any organic molecule that nature has produced is possible."

The field of enantioselective chemical synthesis has advanced at an extraordinary pace in the 20<sup>th</sup> century, and is now one of the most dynamic areas of chemical research. "Enantioselective Chemical Synthesis: Methods, Logic and Practice" provides in a single volume an up-to-date and panoramic view of all aspects of enantioselective chemistry. The reader who masters the information and ideas contained on its pages will be superbly positioned as a teacher or researcher in this exciting field of chemistry.