

Molecules That Changed The World¹

This course will expound on our learned knowledge of some of Nature's most intriguing molecules and the ability of Man to discover, synthesize, modify and use them to our advantage in what was not formerly envisioned. Through the development of the theme, it is hoped that one will also discover just how profound the impact of chemistry is in our lives. The course will also explore some of the most exciting frontiers in modern science and medicine, and the opportunities they present to young students for future careers. Illustrated in a colorful style, this series of lectures will aim to provide insights about the role of chemistry in society in general and how chemical synthesis, the art and science of constructing natural and designed molecules, in particular, shaped and continues to shape our world. Indeed, the lectures will touch upon fascinating tales about molecules and their presence in, among many items, foods, perfumes, dyes, high tech materials, textiles, vitamins, nutritional supplements, pesticides, insecticides, and above all, medicines. The history of total synthesis, the flagship of chemical synthesis, as unraveled within the scope of this course will hopefully serve to underscore how admirably chemical synthesis enabled and facilitated world-shaping innovations since its inception in 1828 by Friedrich Wöhler.

K.C. NICOLAOU, PH.D.

Department of Chemistry and The Skaggs Institute for Chemical Biology

The Scripps Research Institute
10550 N. Torrey Pines Road
La Jolla, CA 92037

and

The Department of Chemistry and Biochemistry

University of California, San Diego
9500 Gilman Drive
La Jolla, CA 92093

kcn@scripps.edu

¹ Molecules That Changed The World, by K.C. Nicolaou and T. Montagnon, Wiley-VCH, 2008.

The molecules to be discussed include the following:

Urea & Acetic Acid

Glucose

Aspirin[®]

Camphor

Tropinone

Haemin

Morphine

Steroids & The Pill

Strychnine

Penicillin

Longifolene

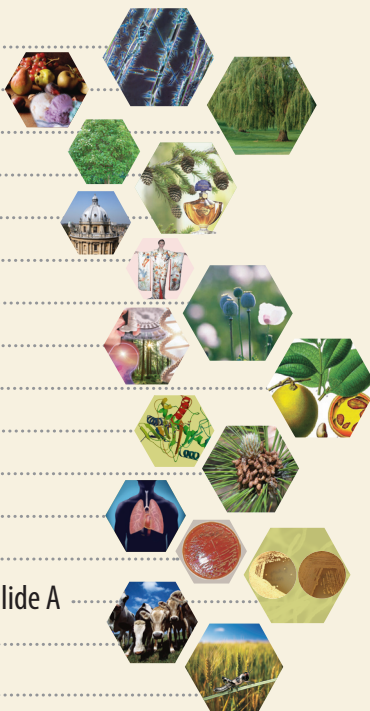
Prostaglandins

Vitamin B₁₂

Erythronolide B and Erythronolide A

Monensin

Avermectin



Amphotericin B

Ginkgolide

Cyclosporin, FK506 & Rapamycin

Calicheamicin γ_1^I

Palytoxin

Taxol[®]

Mevacor[®], Zaragozic Acids & The CP Molecules

Brevetoxin B

Ecteinascidin 743

Epothilones

Resiniferatoxin

Vancomycin

Quinine

Thiostrepton

Small Molecule Drugs

Biologics

