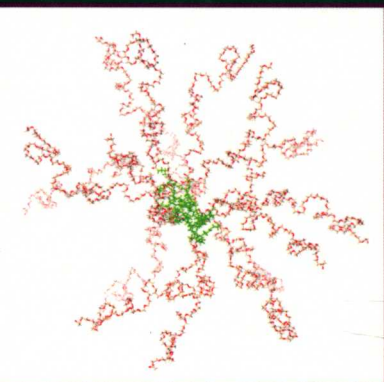


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Bioresorbable Polymers for Biomedical Applications

From Fundamentals to
Translational Medicine

Edited by Giuseppe Perale
and Jöns Hilborn

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*To my daughters Matilde and Eleonora, who make
everything worthwhile.*

Giuseppe Perale

*To my wife, Gunilla, who has
put up with me for reasons not always obvious.*

Jöns Hilborn

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Foreword

A. Koubatis

Altran AG, Zürich, Switzerland

1. A quick glance at history

The use of naturally derived pharmaceutical products was recorded on Sumerian clay tablets as early as 3000 BCE.¹ Since ancient times, mixtures of plant, animal, and mineral ingredients have been used for pain relief and the alleviation or treatment of various medical conditions. Some of these were mixed water, beer, wine, or milk and taken internally, others were applied on wound dressings as salves to prevent infection. For centuries, the role of apothecaries was to extract, prepare, and dispense naturally occurring medicinal products on a small scale for local distribution. These were the roots of modern formulation science, too. The modern pharmaceutical industry indeed has its origins in the chemical industry in the second half of the 19th century. With the rapid expansion of scientific knowledge in the domain of chemistry in the 1800s, there were numerous attempts to synthesize naturally occurring substances in the laboratory, including medicinal compounds.

Similarly, the medical technology (medtech) industry has roots in ancient Egyptian times, from which comes robust evidence of, for example, the use of invasive surgical procedures, prostheses, and many “modern-like” devices such as sutures and bone grafts (Nature 462, November 26, 2009, doi:10.1038/nature08601). This archeological evidence was taken into serious consideration at the end of the 19th century and sparked a technological revolution that is still robustly running (Senn N., Am J Med Sci 98, 219, 1889).

The 19th century saw the massive growth of the dye industries, led by the first chemical dye factory in Britain. Between 1859 and 1865 a number of synthetic dye manufacturers were established in Switzerland, France, and Germany, including some that would eventually become leaders in the chemical, pharmaceutical, and medical industries: CIBA (1859), Bayer (1863), Geigy (1864), Hoechst (1863), BASF (1865), and others.² The step from synthetic dyes to synthesized drugs quickly walked, thanks also to joint efforts with universities. One name stands over all: aspirin. In 1897 Bayer investigated a less irritating substitute for salicylic acid and produced acetylsalicylic acid, which, in 1899, was placed on the market under the name Aspirin, which became the most successful drug in history.

¹ <http://scholarworks.gvsu.edu/cgi/viewcontent.cgi?article=1056&context=gvjh>.

² <http://www.spiked-online.com/newsite/article/a-colourful-history-of-progress/16212#.VompcPkrLmE>.