

Corporate Responsibility

Biochemical Pathways

Overview

As a leading healthcare company and the largest biotech company in the world, Roche is uniquely placed at the frontier of scientific research and discovery. We believe that it is important to use this position to support scientists, teachers and students so that they have access to important scientific information, which will help their research and education. One such resource is the Roche Biochemical Pathways, two integrated schematic diagrams, which provide a graphical representation of the most important biochemical pathways in living organisms.

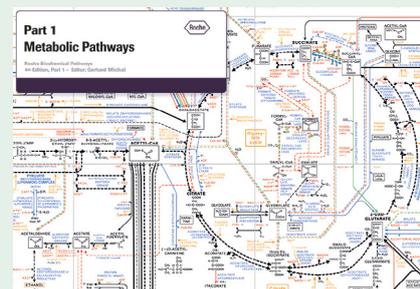
About Biochemical Pathways

The *Biochemical Pathways* wall chart was originally developed by Dr. Gerhard Michal to show different biochemical processes occurring in living organisms. This came about as Dr. Michal and his colleagues needed to be able to separate out essential information about the mechanisms in a given cell and use it to draw important conclusions for their work.

Biochemical Pathways provide an overview of the biochemistry of unicellular organisms, fungi, higher plants and animals and represent the chemical reactions of cells in various species and organs. A standard set of conventions is used in all illustrations, so that readers can easily gather information and compare the key elements of different biochemical pathways. Dr. Michal first compiled the Pathways Chart in 1965 and has been fine-tuning it ever since.

Today, and with the collaboration of Roche, the two enormous posters can be found hanging in just about every research institute from Argentina to New Zealand. Since its inception, the wall charts have given students and scientists from around the world a glimpse into the intricate world of biochemistry.

The two charts, Part I - *Metabolic Pathways* and Part II - *Cellular and Molecular Processes*, are highly detailed. The first, part I, is a classic pathways overview, while the second, part II, is a detailed presentation of the higher-molecular processes within the cell. They allow students and biochemists to study these complex processes via a clear, visual diagram. Considering the fact that our knowledge of biochemistry doubles every five years, the development of *Biochemical Pathways* is truly never ending.



Key facts and figures

- The pathways were first published in 1965 as wall charts
- More than 700,000 hard copies of the wall chart have been distributed to medical and life-science researchers and students around the world
- In 1999, a book with the detailed pathways, "Biochemical Pathways: An Atlas of Biochemistry and Molecular Biology" was published by Dr. Gerhard Michal.
- A revised edition of the book was published in 2012 by Dr. Gerhard Michal and Prof. Dr. Dietmar Schomburg at John Wiley & Sons, New York
- In 2014 the electronic version of Biochemical Pathways were made available

“I have always been fascinated by enzymes and biochemical pathways. At the start of my career I was interested in research that would allow us to develop diagnostic tools. The need for an overview of the scientific knowledge of the time led to the development of the first Biochemical Pathways. Our knowledge over the last 50 years has grown exponentially and I hope that Biochemical Pathways will continue to expand with our ever increasing knowledge.”

Dr. Gerhard Michal

Bringing *Biochemical Pathways* to the digital age

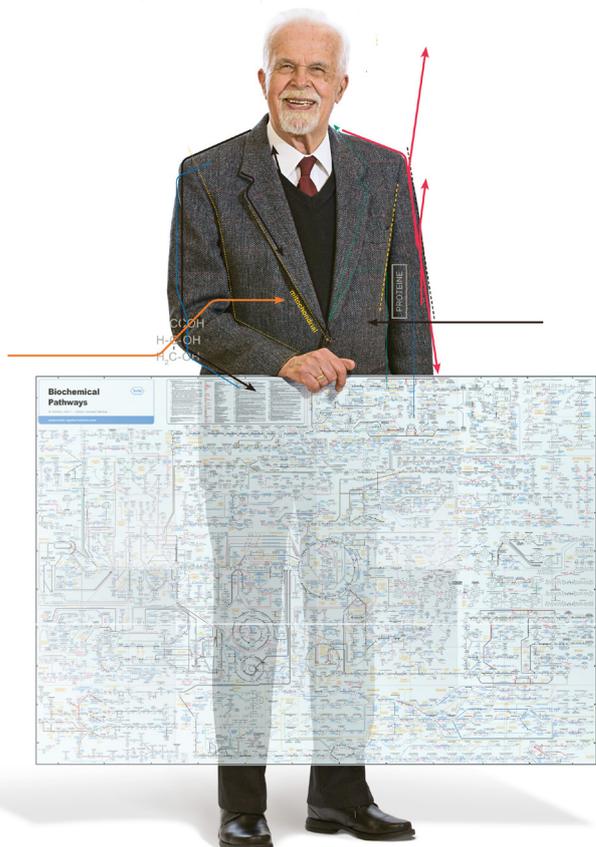
Following the outstanding success of the two posters for over four decades, Roche has created an electronic version of *Biochemical Pathways*. This is now freely available to biochemists, graduate and undergraduate students, teachers and pupils.

The electronic *Biochemical Pathways* allows the user to search the wall charts with keywords, set focus effects, activate filtering functions and zooming in on the details and elements of interest. Through a simple navigational tool, the digital version has greatly simplified the user experience and ease of navigation.

Summary

Roche is committed to supporting the sharing of knowledge across the scientific community. Resources such as *Biochemical Pathways* provide science students and teachers alike with high quality educational materials to support their interest in the fascinating world of life science.

Roche hopes that the scientists of today and tomorrow will continue the work pioneered by Dr. Michal and extend this journey to further our understanding of biochemical processes.



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