

# Proteomics Encyclopedia Article

## Proteomics

The following sections of this BookRags Literature Study Guide is offprint from Gale's For Students Series: Presenting Analysis, Context, and Criticism on Commonly Studied Works: Introduction, Author Biography, Plot Summary, Characters, Themes, Style, Historical Context, Critical Overview, Criticism and Critical Essays, Media Adaptations, Topics for Further Study, Compare & Contrast, What Do I Read Next?, For Further Study, and Sources.

(c)1998-2002; (c)2002 by Gale. Gale is an imprint of The Gale Group, Inc., a division of Thomson Learning, Inc. Gale and Design and Thomson Learning are trademarks used herein under license.

The following sections, if they exist, are offprint from Beacham's Encyclopedia of Popular Fiction: "Social Concerns", "Thematic Overview", "Techniques", "Literary Precedents", "Key Questions", "Related Titles", "Adaptations", "Related Web Sites". (c)1994-2005, by Walton Beacham.

The following sections, if they exist, are offprint from Beacham's Guide to Literature for Young Adults: "About the Author", "Overview", "Setting", "Literary Qualities", "Social Sensitivity", "Topics for Discussion", "Ideas for Reports and Papers". (c)1994-2005, by Walton Beacham.

All other sections in this Literature Study Guide are owned and copyrighted by BookRags, Inc.

# Contents

<a href="#">Proteomics Encyclopedia Article.....</a>	<a href="#">1</a>
<a href="#">Contents.....</a>	<a href="#">2</a>
<a href="#">Proteomics.....</a>	<a href="#">3</a>

# Proteomics

Proteomics is the cataloging and analysis of proteins in the human body. With the decoding of **DNA** in the **genome**, the next logical step is finding the structure and function of proteins that are coded by DNA. Explaining proteins is much more complex.

In 1980, ten years before the inception of the **Human Genome Project**, Congress debated a Human Protein Index, reasoning that it would make sense to classify proteins which direct all biological functions and change during disease. The project was abandoned when considerations about the genome began to emerge.

In 1995, Australian post-doctoral researcher Marc Wilkins coined the term proteome. At that time few researchers envisioned a project of protein discovery similar to the effort of the human genome project. Unique tools have enabled scientists to probe the secrets of protein. Using **x-ray crystallography** and nuclear magnetic resonance (NMR), researchers have revealed structures of many proteins. For example, in 1998, Roderick MacKinnon at Rockefeller University obtained an image of a potassium channel, a concept important to neuroscience. To understand how proteins function, scientists must probe the entire area of the protein.

In late 2000, the National Institute of General Medical Sciences (NIGMS) invested 20 million dollars to detail 10,000 proteins in a ten-year span. Although these are few compared to the total estimated number of 50,000 to 2 million proteins, the number will probably cover most of the structures relevant to biology and medicine.

X-ray **crystallography** pictures of protein reveal folds and kinks; different colors represent different functions. In these grooves and folds, certain molecules fit like a key to a lock.

Specific proteins may have similar functions in worms, insects, or man, and the structural characteristics are shown in the genes that encode them. The science of naming the shapes of proteins is called structural proteomics. Scientists estimate there are about 1000 shapes such as barrel shapes, doughnuts, spheres, or molecular zippers.

Using crystallized protein scatter x rays, scientists study the folds and kinks looking for their functions. The research is called **functional genomics**. Robots and powerful x-ray generators have increased the pace of discoveries. Like the genome project, private and government programs are working to decode the proteome.