



## Glowing Genes: A Revolution In Biotechnology

*By Marc Zimmer*

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### **Glowing Genes: A Revolution In Biotechnology** By Marc Zimmer

Marc Zimmer has written the first popular science book on an amazing new area of biotechnology that will help fight cancer, create new products, improve agriculture, and combat terrorism. For more than one hundred and sixty million years, green fluorescent protein has existed in one species of jellyfish. In 1994 it was cloned, giving rise to a host of useful and potentially revolutionary applications in biotechnology. Today researchers are using this ancient glowing protein to pursue exciting new discoveries, from tracking the process of bacterial infection to detecting chemical and biological agents planted by terrorists.

A recognized expert in this field, Zimmer begins with an overview of the many uses of these glowing genes to kill and image cancer cells, monitor bacterial infections, and light up in the presence of pollution. He then discusses the biological reasons that glowing proteins first evolved in jellyfish and fireflies, and looks at the history of bioluminescence and the dedicated scientists who devoted their careers to explaining this phenomenon. The story of how "glowing genes" were located, cloned, and then mass-produced is in itself a fascinating tale.

Zimmer next turns to the serious, and not-so-serious, uses of fluorescent proteins. In agriculture it may soon be possible to produce crops that signal dryness by glowing. In industry a red fluorescent protein originally found in corals may find a use in sheep as a substitute for environmentally harmful wool dyes.

Furthermore, the glowing gene revolution has led to significantly more humane treatment of laboratory animals. No longer must animal lives be sacrificed to understand disease processes; now researchers can observe the spread of cancer and infections by treating animals with green fluorescent genes and similar proteins.

In the fight against terrorism a glowing gene has been created that lights up in the presence of anthrax spores, chemical warfare agents, and landmines. And in a completely different arena, we have already seen the emergence of "transgenic art" in Alba, the fluorescent bunny rabbit.

Glowing Genes is a highly informative, fascinating, and entertaining read about a burgeoning area of biotechnology that promises soon to revolutionize our world.

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## **Glowing Genes: A Revolution In Biotechnology** By Marc Zimmer Bibliography

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## **Editorial Review**

From Publishers Weekly

Green fluorescent pigment (GFP), made naturally by jellyfish, has recently sparked a biological revolution. "GFP is a fantastically useful protein" because it can monitor and track other proteins "inside a living organism, without disrupting any molecular processes." As Connecticut College chemist Zimmer shows, scientists have cloned the gene for GFP and attached it to other genes in a wide array of organisms, from rabbits to monkeys and fish. When these other genes are turned on, GFP is produced and individual cells begin to glow. The diagnostic uses for this technique are critically important and varied. GFP may help with the early diagnosis of cancer, with tracking the spread of pathogenic bacteria and may provide a relatively quick and easy assay for anthrax, among other exciting uses. Additionally, GFP has already helped scientists better understand developmental processes in organisms, which may lead to cures for such diseases as Alzheimer's and Parkinson's. While Zimmer is moderately successful in presenting the excitement associated with these breakthroughs, his clumsy prose often gets in the way of his message. His transitions between topics are so obtuse that much of his text reads like a series of extended digressions. Zimmer is at his best when explaining basic biology and chemistry; as his subject gets more complex, his explanations become more difficult to follow.

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From [Booklist](#)

It is the topic of numerous technical papers, reports chemistry professor Zimmer, but it rarely surfaces in the mass media unless the biotechnologists whip up something astonishingly weird. It is green fluorescent protein (GFP), by which fireflies and jellyfish illuminate themselves, and for which the cloners have found numerous potential applications. One of GFP's infrequent references in the news concerned Alba the fluorescent rabbit, displayed as an exhibit of "transgenic art." Drawing attention to this arena of genetic engineering, Zimmer describes what can be done with GFP, whether benevolent (testing the efficacy of disinfectants, replacing radioactive tests as detectors of cancer), frivolous (creating fluorescent pets), or alarming (cloning people in unnatural colors). Acknowledging the dual-edged bioethical ramifications of GFP, Zimmer does not elaborate on them but remains informatively focused on lab research. He also profiles the principal scientists who isolated GFP, found its causative gene, and determined its molecular shape. A timely alert on a fast-changing biotechnology. *Gilbert Taylor*  
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From the Inside Flap

GLOWING GENES is the first popular science book on an amazing new area of biotechnology that will help us understand cancer, create new products, improve agriculture, and combat terrorism. For more than 160 million years, green fluorescent protein has existed in one species of jellyfish. In 1994 it was cloned, giving rise to a host of useful and potentially revolutionary applications in biotechnology. Today, researchers are using this ancient glowing protein to pursue exciting new discoveries, from tracking the process of bacterial infection to detecting chemical and biological agents planted by terrorists.

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agriculture it may soon be possible to produce crops that signal dryness by glowing. In industry a red fluorescent protein originally found in corals may be used to create sheep with red wool, eliminating the need for environmentally harmful dyes. Furthermore, the glowing-gene revolution has led to significantly more humane treatment of laboratory animals. No longer must animal lives be sacrificed to understand disease processes; now researchers can observe the spread of cancer and infections in live animals with green fluorescent genes and similar proteins.

In the fight against terrorism, genetically modified organisms containing glowing genes have been created that light up in the presence of anthrax spores, chemical warfare agents, and landmines. And in a completely different arena, we have already seen the emergence of "transgenic art" in Alba, the fluorescent rabbit.

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## **Users Review**

### **From reader reviews:**

#### **Arnold Williams:**

Have you spare time for any day? What do you do when you have much more or little spare time? That's why, you can choose the suitable activity for spend your time. Any person spent their own spare time to take a wander, shopping, or went to often the Mall. How about open or perhaps read a book titled *Glowing Genes: A Revolution In Biotechnology*? Maybe it is to become best activity for you. You understand beside you can spend your time along with your favorite's book, you can better than before. Do you agree with it has the opinion or you have various other opinion?

#### **Calvin Lee:**

Precisely why? Because this *Glowing Genes: A Revolution In Biotechnology* is an unordinary book that the inside of the publication waiting for you to snap that but latter it will surprise you with the secret this inside. Reading this book next to it was fantastic author who also write the book in such incredible way makes the content on the inside easier to understand, entertaining technique but still convey the meaning entirely. So , it is good for you for not hesitating having this nowadays or you going to regret it. This excellent book will give you a lot of positive aspects than the other book include such as help improving your ability and your critical thinking method. So , still want to hold off having that book? If I were being you I will go to the guide store hurriedly.

#### **Linda Meier:**

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