

# Essay on evolution of molecular biology

[Religion](#), [Bible](#)



What does the saying “biologically impossible” mean in the modern world of biotechnology? According to Ian Wilmut who wrote the essay *Biotech History: Dolly the Sheep* “. . . with Dolly that expression (biologically impossible) lost all meaning . . . she revealed, rather than defied those laws. In the twenty first century and beyond, human ambition will be bound only by biology and society’s sense of right and wrong” (Renneberg 252). Science is impacting society more than at any other time in human history. Every part of our lives is impacted by science, especially by biotechnology. There is a very big difference between biotechnology and how the chemical process of creating plastics affected our culture, for example. The development of plastics has changed our culture in superficial ways. The impact was on our culture of buying and our lifestyles. The impact of biotechnology has a much deeper affect on culture because the developments, such as the cloning of Dolly, have dramatically shifted what we know about how our world works.

Bussard (2005) wrote about “the scientific revolution” that occurs because “the introduction of a new technical tool commonly opens new avenues of knowledge” (693). Previous knowledge is expanded and new knowledge keeps growing but there are obstacles to overcome. An example is “Prusiner’s theory that proteins are the only pathogen to cause a disease in sheep, cows and humans. The disease is best known as mad cow disease. The discovery that proteins joined viruses and bacteria as infectious organisms put a shock into the biomedical research community. A new branch of research began. The new branch started with “prions as pathogens” and then developed into studying “prions as genetic elements” (Bussard 693).

New discoveries seem to follow the same general path and it is never easy. Years and years of study and research go into new biotechnology studies. Many people do not believe anything scientists are trying to do will ever work so there is not very much support from society. At first people are shocked when the research shows results as in the case of cloning Dolly. Even researchers may not believe their ears they are so surprised, as in the case as proteins and pathogens. Eventually though society absorbs the new knowledge and new ethical challenges are debated. Finally the world is so used to the new development, like cloning, that there does not seem to be a time before cloning.

Kellenberger explains the “ evolution of molecular biology” and how it is not a research area only for biologists. The field is inter and multi-disciplinary. Without input and collaboration from other types of scientists it would be impossible to understand the complexity of biology at the molecular level. Genetics is the best example. The need for collaborations from different specialties is an underlying theme in the textbook. In 1944 the physicist Erwin Schrödinger wrote a book called “ What is Life?” (Rennenberg 67). It was in this book that he argued that “ life could be thought of in terms of storing and passing on biological information” (Rennenberg 67). So it was a physicist that first published the foundational theory for the gene. Two themes in both the book and the article by Kellenberger were (a) the need for inter-disiplinary research and (b) the complexity of microbiology. Kellenbeger gives the example of how casual chains were the old way of thing about molecular biology but the contemporary, more knowledgeable way is to talk about the probabilities of “ near casualties” (Kellenberger 2).

The beginning point was to understand how cause and effect worked in macro molecules but now it is understood as important in electronics, computer science, and philosophy. The evolution of microbiology cannot be understood without taking into account both science and society due to the complex systems involved.

## **Works Cited**

Bussard, Alain E. "A scientific revolution? European Molecular Biology Organization (EMBO), 6(8): 2005: 692-694.

Kellenberger, Eduard. "The Evolution of Molecular Biology" European Molecular Biology Organization (EMBO) 5(6): 2004: 546-549.

Renneberg, Reinhard. *Biotechnology for Beginners*. Arnold L. Demain (Ed.), Berlin: Springer-Verlag, 2008. Print.