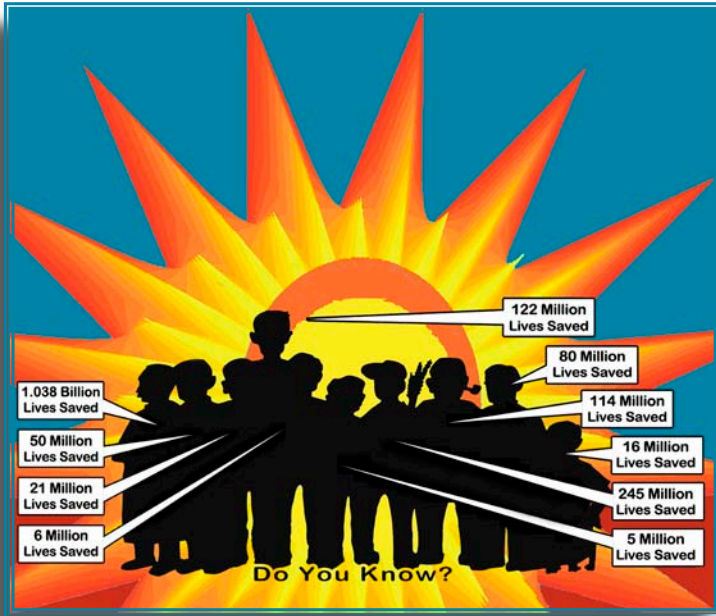


Do You Have An Attitude of Gratitude?



NAME THAT SCIENTIST!

From the Top 10 List of Medical Lifesavers
Inside this Issue

Scientists with Unusual Jobs
Who was a ship's surgeon, working his way to university?

Who was both a forest fire fighter and a missionary?

Strange but True
Who had a dog that interfered with his science?

It's Never too Early and Never too Late
Which scientist went to college at the age of 16 and medical school at 20?

Whose scientific peak occurred after the age of 50?

Scientists are Human, Too
Who went on a month long drunk in the middle of his revolutionary discovery?

Lifesaving Scientists Have Had More Impact upon Humanity Than Any Other Group of Scientists!



By Billy Woodward, author of *Scientists Greater Than Einstein: The Biggest Lifesavers of the Twentieth Century*

The title, *Scientists Greater Than Einstein*, is not hyperbole. It notes the lack of fame society grants lifesaving scientists, and seeks to awaken society to the

realization that lifesaving science is important. In fact, lifesaving scientists have had more impact upon society than any other group of scientists. As evidence I cite:

1) It is well known that from 1900 to 2000, life expectancy rose from 45 to 77 years. The book covers many of the advances that made this possible. What is much less known is that between 1950 and 1994, the life expectancy of the average American 45-year-old increased by 4.5 years. That is a pretty personal impact on you, me, and all members of society.

2) Smallpox killed more people in the 20th century (300 million) than all the wars combined (188 million, including genocides and famines caused by war). The eradication of smallpox (chapter 3) was one of the greatest feats in history and set the stage for economic globalization.

3) Economic research sponsored by the Lasker Foundation, outlined in the book: *Measuring the Gains from Medical Research: An Economic Approach*, states:

"Improvements to life expectancy alone added about \$2.6 trillion per year to national wealth between 1970 and 1998. By comparison, average GDP over this period was about \$5.5 trillion."

~ Kevin M. Murphy & Robert H. Topel, University of Chicago

As hard as it is to believe, the recent great economic advances are not predominantly the result of the computer revolution or the advent of the Internet. They are from enhanced health.

Science is based on evidence. Shouldn't Science Heroes Be as Well?!

Does Recognizing Lifesaving Scientists Matter?

Gratitude does matter to a society. Recognizing scientists as heroes awakens the public to the importance of lifesaving science, which impacts government health research funding. And funding for lifesaving science absolutely affects, literally, who lives and who dies. Over 500,000 Americans die each year due to disease before the age of 65.

To lower that number, the lifesaving sciences must be promoted.



A child with smallpox who probably did not survive. The more pustules, the more deadly.

To Conclude My Argument I Offer Two Visualizations

1) View the photograph of the child and ask yourself, 'What do lifesaving scientists mean to society?' They mean no child will ever again look or feel like this.
2) Go to our website: ScienceHeroes.com. On the front page is an odometer-like counter, constantly counting the number of lives scientists are saving. Below it, click the fastest button. It will start spinning away, demonstrating how big a number 2 billion is. Each digit you see blurring by is

an individual human being, each a real piece of evidence proving the value of lifesaving scientists to society.

As a society, if someone saves our lives, shouldn't we at least bother to learn their name?

Disagree? Counter arguments are welcome - Send them to Billy@ScienceHeroes.com

Next issue: *Are Lifesaving Scientists Largely Unrecognized by the Public and Science Media - Compared to Say, Physicists?*

MVP Top 10
Medical Lifesavers

- Karl Landsteiner** - 1.038 billion
Discovered blood groups, allowing transfusions
- Edward Jenner** - 122 million
Smallpox vaccination
- Bill Foege** - 122 million
6% vaccination strategy eradicated smallpox
- John Enders** - 114 million
Measles vaccine
- Howard Florey** - 80 million
Penicillin, the drug
- Gaston Ramon** - 58.5 million
Diphtheria and tetanus vaccines
- David Nalin** - 51.3 million
Oral rehydration therapy
- Paul Ehrlich** - 42 million
Diphtheria and tetanus antitoxin
- Frederick Banting** - 16 million
Insulin for diabetes

Karl Landsteiner - The Star of the Book (1868-1943) Over 1 Billion, 38 Million Lives Saved

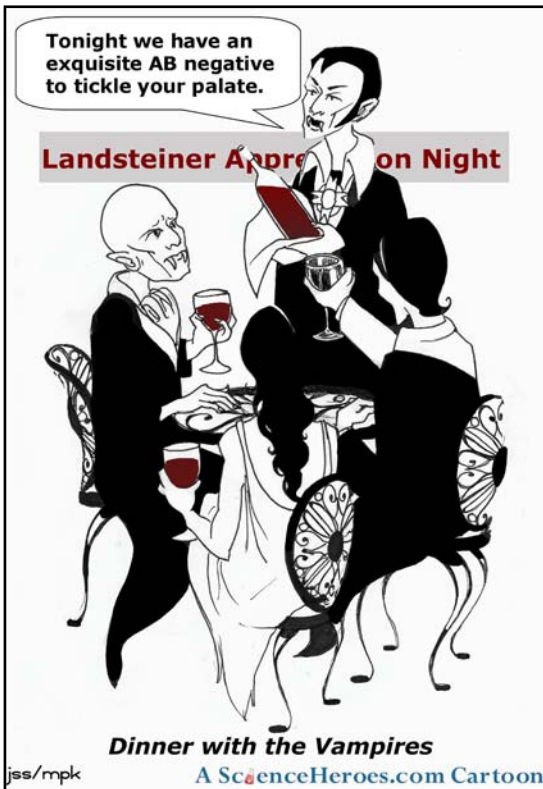
Initially, it was difficult to find any information on Karl Landsteiner. I diligently searched the University of Kentucky Library and the internet, but could turn up only a few of his academic papers and short remembrances of his colleagues. There was virtually nothing available about his personal life.

Finally, combing through footnotes, I found a reference to a biography. Odd, I thought, that I had not found it through the normal searches. A library copy was available six hundred miles away, so I tried Abe's books. As if divinely bestowed, there was one copy available for \$50. I pounced on it. It turned out not to be a biography in the conventional sense. In fact, the best I can tell, my chapter is the first in-depth biography of Landsteiner. An Austrian doctor feared Landsteiner would be lost to history, so in the 1970s he collected reminiscences from anyone he could find who had known Landsteiner. The book is a historian's delight - a treasure trove of quotes, anecdotes, photos, and facts. One of my best

memories in writing the book was sitting outside on the porch, pouring over the little nuggets the book contained. I've searched for the book since, and only found it available once - for \$357 dollars. That's a rare book about a rare man!

There is no doubt that Landsteiner was a genius. Beginning in 1923, he was nominated for a Nobel prize by fourteen scientists for three different discoveries - polio research, discoveries concerning the physiology of the immune system, and his discovery of the blood groups. In each field, as well as in the study of allergies, he can be considered a founding father.

Landsteiner was such an impressive scientist that I could not believe he was so little known. That gave me the idea for the book's title - Scientists Greater Than Einstein. He was of the same era as Einstein and I challenge anyone who has read his works and calculated his impact upon humanity, to disagree with the title.



War of the Sciences

<p>Physics is hard!</p>	<p>4 Forces</p> <p>PHYSICS</p>	<p>Ughh...</p>	<p>25,000 human protein coding genes</p> <p>Health Sciences</p>
<p>Chemistry is harder!!</p>	<p>112 Elements</p> <p>CHEMISTRY</p>	<p>Excuse me...</p>	<p>2,000,000 proteins in the human body</p> <p>Health Sciences</p>

BW ScienceHeroes.com

The Beginning and End...

The appalling thing is seeing young people maimed or wiped out while one can do nothing.

It looks like a miracle.

-Howard Florey, upon graduating from college

- Howard Florey, upon seeing that infected mice survived when treated with penicillin

Not an Ordinary Scientist...


Campbell knows all about diabetes but cannot treat it; Banting knows nothing about diabetes but can treat it."


- D.E. Robertson, countering complaints that Banting's slim research qualifications disqualified him from praise even though he discovered insulin


No single event in the history of medicine had changed the lives of so many people, so suddenly.


- Stephen Hume, Biographer of Frederick Banting

Answers to NAME THAT SCIENTIST!


 **Frederick Banting** became frustrated when John Macleod took over his insulin research and went on a month long drunk. Charles Best talked him back to the lab to finish insulin's development.

 **Howard Florey** worked as a ship's surgeon when he moved from Australia to England to be a Rhodes Scholar.

 **Bill Foege** used knowledge from both his forest fire fighter and missionary positions to develop the strategy of vaccinating only 6% of a population to eradicate smallpox.

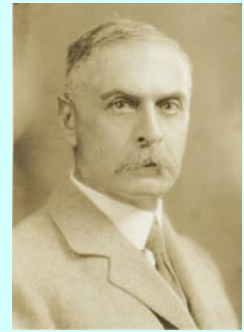
 **Karl Landsteiner** brought his dog to the lab every day. Around lunch time Waldi started barking, sparking Landsteiner to playfully reprimand him, "Waldi, you've not an atom of respect for science."

 **David Nalin** was a prodigy.

 **John Enders** was a member of Hemingway's "lost generation" and took a while to find his passion. His revolutionary work with viruses and the measles vaccine occurred after the age of 50.

Fascinating Landsteiner Facts:

- When Landsteiner discovered blood groups, his main job was as a pathologist. He performed 3,639 autopsies over the ten years he held that job, doing research on the side.
- A journalist, tallying up Landsteiner's work hours, concluded that over a 50 year span he spent 90% of his conscious life on scientific pursuits.
- Landsteiner's personality was reserved, so he was known as the "melancholy genius."
- Landsteiner published 346 scientific articles in his career.
- I highly recommend reading his blood group article. It is concise, understandable, very logical, and provides wonderful insight into his mind: *Über Agglutinationsercheinungen Normalen Menschlichen Blutes (On Agglutination Phenomena of Normal Human Blood, Papers on Human Genetics, ed. S.H. Boyer, 27-31. Englewood Cliffs, NJ: Prentice-Hall).*



Landsteiner's Genius:

"He was full of confident energy and enterprise. He had his workrooms equipped as if for chemistry and preferred assistants trained in that branch, not physicians or biologists. Social activities he avoided; in his view the day was for experiment only, reading and thinking could be done at night – until a late hour.... His energy was continuous and compelling, and no moment of idleness in the laboratory was tolerable to him.... To himself new ideas came endlessly and he was continually suggesting trial experiments which 'would take no time'."

-Peyton Rous, Nobel Laureate and associate

Read more about Lansteiner in
*Scientists Greater Than Einstein: The Biggest Lifesavers
of the Twentieth Century*
or at ScienceHeroes.com

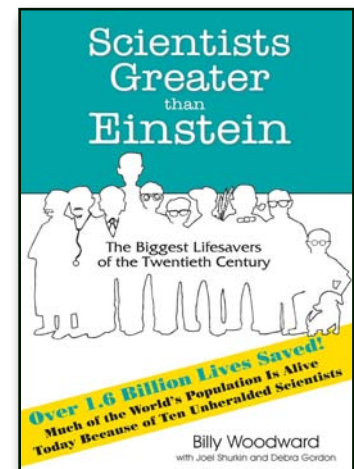
Read a science hero's chapter today!

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Billy@ScienceHeroes.com**

- ✓ **Al Sommer** (Vitamin A supplementation)
- ✓ **Akira Endo** (statins)
- ✓ **Bill Foege** (smallpox eradication)
- ✓ **David Nalin** (ORT)
- ✓ **Norman Borlaug** (Green Revolution)

For the first time ever, an extensive survey has been undertaken to discover who saved the most lives in history. The answer – **health scientists** – and they have had more impact upon humanity over the past 150 years than any other scientists. Ten chapters illuminate in rich detail a scientist's formidable research. In-depth interviews with the four living scientists are full of surprises, adventures, intrigues, and even feats full of danger. These ten scientists have saved over 1.6 billion lives. Is one of them yours or one of your loved ones? **Are you grateful?**

- Biostatistics by Amy R. Pearce, PhD
- Published by Quill Driver Books



ScienceHeroes.com is an educational website that tabulates the number of lives scientists save.

- ✓ Browse the profiles of more than 100 lifesaving scientists
- ✓ See our innovative **Read 1000 Science Stories** program designed for students
- ✓ Quizzes, cartoon makers, and much more!

See our real time Odometer, counting lives saved

