

**EXPAND YOUR
MIND
IMPROVE YOUR
BRAIN**

THREE VOLUMES IN ONE

J. C. SPENCER

Foreword by Robert K. Murray, M.D., PhD

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Expand Your Mind - Improve Your Brain may be used as a resource and
reference for studies. Included but not limited to studies about the brain,
neurological studies, neurodegenerative disease, neurotransmitters, humor,
thought management, memory, electrolytes, neurons, DNA, mitochondria,
placebo, fetal alcohol syndrome, savant, music and the mind, brain stimulation,
reversing brain damage, cognitive, aging, anti-aging, plant sugars, phytosugars,
plantsaccharides, glyconutrient, glycomics, glycobiology, glycoprotein technology,
toxins, obesity, fat loss, health improvement, pH factor, resistance, communica-
tion, chaos, culture change, DSHEA, since DSHEA, and knowledge about bad
sugars, good sugars, nine sugars, ninth sugar, fucose, galactose, glucose,
mannose, N-acetylgalactosamine, N-acetylglucosamine, N-acetylneuraminic
acid, xylose, and trehalose and what I call royal sugars.

PURPOSE of the Book

You can benefit from a new science discussed in these pages. A new science, glycomics, that you will discover can actually improve your own brain function. Learn how this evidence-based science is the future of healthcare and how tomorrow's patients will demand it.

You and your next generation will benefit from this science for the simple reason that over 600 diseases are directly controlled by the brain and every disease is influenced by proper function or malfunction of the brain. The ability to safely improve brain function is the Rosetta Stone of medical science.

My purpose will be achieved as you benefit by seeing improvement in your own brain function and improved wellness in that of your family. You will be introduced to new ways to stay mentally active and keep the neurons firing. You may discover there is no need to worry so much because there is hope. You will be encouraged to eat more super foods – more brain foods - what I call royal sugars or super foods. You will be encouraged to eat and drink high pH foods and drinks, to drink lots of clean water, preferably oxygenated and higher pH water (less acidic as explained in Chapter 20).

You will be encouraged to also exercise a little more and breathe deeply to get more oxygen to your brain and the rest of your body. Take a deep breath! There now, you just got more oxygen into your lungs, and 25% of it is now on its way to your brain.

You will find this book can help you fulfill your purpose in life. You will soon make new friends, and understand ways to keep the ones you have, if they are worthy of you. Do something good for someone today. Listen to good music. Read and listen to good humor every day. Read Scripture and other meaningful positive writings. Do not let negative people put negative thoughts in your head. Be happy. Be filled with joy which can be your strength. Make today better than yesterday and tomorrow better than today.

As you read these pages, you will begin the exciting venture to ***Expand Your Mind - Improve Your Brain.***

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FOREWORD

by Dr. Robert K. Murray

I came to know JC Spencer via his founding of The Endowment for Medical Research (Houston, Texas) and through his organization (and that of his many inspiring colleagues) of the first two Glycomics Medical Conferences sponsored by The Endowment. A major aim of these very successful and well attended Conferences was to inform healthcare workers and others of the new scientific area of Glycomics and its possible application to helping individuals suffering from chronic neurodegenerative conditions.

My impressions of JC were then, and are now, that he is a man with tremendous energy, enthusiasm and commitment to the goals of The Endowment. I believe that readers of this book will find these and other qualities of JC's shine through as they peruse this significant work.

What will you find in this volume? I can say that you will encounter a myriad of various fascinating subjects. Directly concerning the brain, these include discussions of neurons, neurotransmitters, optimal nutrition for the brain, a host of relevant matters on basic psychology, savants, mental exercises and recovery from brain damage. Other subjects include pH, electrolytes, rogue electrons, mitochondria, aging, the value of placebos, fetal alcohol syndrome and tips regarding healthful nutrition. With regard to sugars, the reader will find valuable information on simple sugars, sugar chains, glycoproteins and the basic concept of Glycomics. The nutritional value of various sugars is discussed, with some being rated bad and others as "royal".

A subject dear to JC's heart and that of his colleagues, particularly Charles Eschweiler (affectionately known as Chad), is the sugar trehalose. This is a plant disaccharide made up of two molecules of glucose linked in a specific manner. Attention to this sugar was started by a report that it appeared to benefit mice suffering from a model of Huntington's disease, a chronic neurodegenerative condition. The Endowment plans to conduct in-depth studies on the effects of this sugar on patients with several different chronic neurodegenerative diseases, including Alzheimer's disease and Parkinson's disease. Funds raised from the sale of this book will be used to further such work. Could there be a better cause?

The book is sprinkled liberally with down-home anecdotes based on JC's early life on a farm in Missouri. Throughout, JC emphasizes the therapeutic effect of humor. "Laugh and the world laughs with you, Weep, and you weep alone..." (Ella Wheeler Wilcox). Another theme dear to my own heart concerns the beneficial effects of good music.

The book is organized in three volumes. The first two volumes contain various Chapters covering the matters referred to above, as well as others. Volume Three contains a very substantial Glossary, various references and resources. The DSHEA Act, the Dietary Supplementary Health and Education Act of 1994, is presented and commented upon in some detail.

Well, enough of this Foreword. It is just keeping you back from getting on with reading this fascinating book. Keep your thinking cap on. Reading it will certainly stimulate your neurons!

Rob Murray, MD, PhD

Introduction

All my life, science has held a place close to my heart. It is not possible for me to separate science and faith. For me, they support each other. There is no conflict. In 1994 I started an exciting science venture that has become a passion. During these last few years, I have made friends with some of the most knowledgeable doctors and scientists on the planet, especially those in the field of glycomics. You will meet some of them in this book.

You will soon see why Massachusetts Institute of Technology (MIT) said that glycomics is “**one of the 10 emerging technologies that will change the world.**”

Sugars are more important than ever thought!

It has been a joy to help train professionals in the healthcare industry, and the best is yet to come. Art Linkletter was the keynote speaker at our first Glycomics Medical Conference, and Dr. Ben Carson honored us at the second conference.

It is not often that anyone has the opportunity to participate in the pioneering efforts of a new technology. “*Scientists are saying that glycomics could fuel a revolution in biology to rival that of the human genome.*”

- *New Scientist* 10/02

“*Glycomics is the study of applied biology and chemistry that deals with the structure and function of carbohydrates (sugars). The term glycomics is derived from the chemical prefix for sweetness or a sugar, “glyco-,” and was formed to follow the naming convention established by genomics (which deals with genes) and proteomics (which deals with proteins).*”

-Institute for Glycomics, Griffith University

“*‘This is going to be the future,’ declares biochemist Gerald Hart of Johns Hopkins University in Baltimore. ‘We won’t understand immunology, neurology, developmental biology or disease until we get a handle on glycobiology.’ ... ‘If you ask, what is the glycome for a single cell type, it’s probably many thousands of times more complex than the genome,’ says Ajit Varki, Director of the Glycobiology Research and Training Center at the University of California San Diego ... Raymond Dwek, Head of the University of Oxford’s Glycobiology Institute, who coined the term ‘glycobiology’ in 1988 says that sugars were often dismissed as unimportant, ‘as just decorations on proteins - people didn’t know*

Introduction

*how to deal with them'. They could not have been more wrong. As recent advances in genetics have unfolded, [sugars are more important than ever thought] ... Varki sees it as a journey of exploration. **"It's like we've just discovered the continent of North America. Now we have to send out scouting parties to find out how big it is ..."***

- *New Scientist*, 10/02 by science writer Karen Schmidt

"But even as doctors and drug companies struggle to interpret and exploit the recent explosion of data on genes and proteins, yet another field of biology is waiting to break out: glycomics. This emerging discipline seeks to do for sugars and carbohydrates what genomics and proteomics have done for genes and proteins -- move them into the mainstream of biomedical research and drug discovery."

- *Technology Review*, 10/01

"[Glycomes are] known to regulate hormones, organize embryonic development, direct the movement of cells and proteins throughout the body, and regulate the immune system. It shows yet again that the DNA in the genome is only one aspect of the complex mechanism that keeps the body running — decoding the DNA is one step towards understanding, but by itself it doesn't specify everything that happens within the organism."

- Michael Quinion

Quantum physics require that science and faith work together. There is no conflict for me, they support each other. Albert Einstein said, "*Science without religion is lame; Religion without science is blind.*" Sir Isaac Newton explained it this way, "The purpose of science is to seek to understand the mind of God." It is my love for science and my thirst to know how everything works that makes it possible for me to better understand how you can, indeed, ***Expand Your Mind - Improve Your Brain.***

"The real source of wealth and capital in this new era is not material things.. it is the human mind, the human spirit, the human imagination, and our faith in the future."

- Steve Forbes

PREFACE

The latest in scientific breakthroughs will make it possible to continue further to improve brain function physically and mentally.

Your brain operates on the fuel you supply, be it super food or junk food. The food supply line is for the physical. The mental supply line is super knowledge or junk knowledge determined by the choices you make moment by moment.

This work references well over 700 individuals. I have distilled pertinent knowledge from research by leading professors, doctors, and experts from around the world. Many universities have, within the last few years, established departments or research groups to explore and teach students in the related fields of neural science, glycobiology, glycomics, and mitochondrial research.

The National Library of Medicine cites over 444,000 (yes, that is four hundred Forty Four thousand) references to published papers on glycoproteins. Scientists are adding so many new research papers each day (thousands per month) that no one person can keep up with the progress of this science, with the possible exceptions of Kim Peek and Chad Eschweiler.

In this book, I deal much with the importance of nine specific sugars which I refer to as royal sugars. They may be called plant sugars, plant saccharides, phytosugars, phytosaccharides or glyconutrients. The healthful sugars included in this royal family are, fucose, galactose, glucose, mannose, N-acetylgalactosamine, N-acetylglucosamine, N-acetylneuraminic acid, xylose, and trehalose. The importance of these nine sugars is evidenced by the fact that the U. S. Patent Office has issued an astounding number of patents for the use of these nine sugars. When you take the number of patents on each sugar and add them together you get (as of this writing), 153,613 possible patents. About 103,000 of these patents were issued since 1995 and the number continues to grow.

Tomorrow's world will hardly be recognized by today's seasoned scientists and teachers. Change can be a positive experience. You can, indeed, ***Expand Your Mind - Improve Your Brain.***

This book will help prepare you for today's and tomorrow's world and show you how to better mine the data in order to utilize the largest knowledge database in human history. Knowing what to do with all this knowledge is called wisdom.

Expand Your Mind - Improve Your Brain is the beginning of an investigation of the brain and the mind that will expand the way you think and the way you live. This book will open up a whole new world of possibilities for you.

About the Author

J. C. Spencer is founder and CEO of The Endowment for Medical Research. He is a businessman, husband, father and grandfather living in Houston, Texas. He grew up being trained in business and manufacturing in the family-operated food packing company and milling company in Southwestern Missouri. Science was his love, and the refinement and perfection of any manufacturing and engineering process was his joy. His passion for science and a talent for graphics and photography led him to create a representative position with one of the largest color printing companies in the U.S. It was here that he learned the synergy of finding a need and filling it. He has worked as a consultant for many engineering and manufacturing corporations which gave him a unique and broad perspective in operations management. Over the years, Mr. Spencer expanded his ventures into various areas of science and finance. He has studied the science of the brain much of his life, and this book is the culmination of years of study and research. He has lectured internationally and currently speaks about glycomics and brain function. He has lectured on the science at Vanderbilt University and covers many aspects of health improvement for groups across the country. His passion to research and develop ways and means for improving brain function in children and adults benefits all of us. In just the few hours that it will take you to read this book, you can take advantage of his years of intense research that is handed to you on a silver platter in the “multi-book”™ ***Expand Your Mind - Improve Your Brain.***

The Endowment for Medical Research, a 501(c)(3) non-profit faith-based medical research and education public charity and think tank based in Houston, Texas, conducts nutritional surveys throughout the United States, Canada, and some foreign countries. The Endowment is also a think tank with a modest annual budget of approximately one million dollars and has supplied approximately three million dollars worth of nutrients to participants in nutritional pilot surveys for improving brain function, which improves mental skills and motor function. The benefits include positive changes in various neurodegenerative diseases including Alzheimer’s, Parkinson’s, Huntington’s, ALS, Lyme, autism, and ADHD, as well as a number of case studies. Two papers have been published on the advancements made with Alzheimer’s patients. The Endowment sponsored the First Glycomics Medical Conference in 2005 and the Second Glycomics Medical Conference in 2006. Category 1 credits toward AMA Physician’s Recognitions Award are available. Continuing Medical Education Credits and Continuing Education Units are furnished to pharmacists, physicians, nurses, chiropractors, dentists, and dietitians via enduring media.

Education can save a child and a nation.


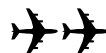



J. C. Spencer

“My people are destroyed for lack of knowledge:”

Hosea 4:6a KJV

A very big THANK YOU to the special people who helped make this book possible. At the end of the book I have referenced individuals, my teachers and my encouragers. Well over 700 MDs, PhDs, scientists, researchers, and educators contributed greatly to this book. I have referenced many Universities and Institutions and over 300 publications. Thank you to all the researchers for the work you have done to benefit others! Without the faithful staff and volunteers at The Endowment for Medical Research, none of this would have manifest. Thanks to you all, we have only just begun.

Legend for Glossary and References

	=	speaker we have engaged at an event of The Endowment for Medical Research.
	=	Speaker, available for speaking engagements. On the Speaker's Bureau of The Endowment for Medical Research.
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	=	Authored or co-authored a published paper(s), article(s), or comments referenced in the book.