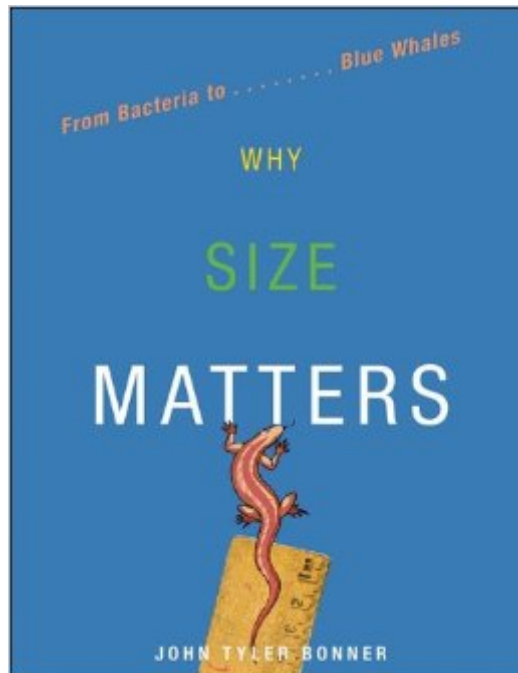


The book was found

# Why Size Matters: From Bacteria To Blue Whales



## Synopsis

John Tyler Bonner, one of our most distinguished and creative biologists, here offers a completely new perspective on the role of size in biology. In his hallmark friendly style, he explores the universal impact of being the right size. By examining stories ranging from Alice in Wonderland to Gulliver's Travels, he shows that humans have always been fascinated by things big and small. Why then does size always reside on the fringes of science and never on the center stage? Why do biologists and others ponder size only when studying something else--running speed, life span, or metabolism? *Why Size Matters*, a pioneering book of big ideas in a compact size, gives size its due by presenting a profound yet lucid overview of what we know about its role in the living world. Bonner argues that size really does matter--that it is the supreme and universal determinant of what any organism can be and do. For example, because tiny creatures are subject primarily to forces of cohesion and larger beasts to gravity, a fly can easily walk up a wall, something we humans cannot even begin to imagine doing. Bonner introduces us to size through the giants and dwarfs of human, animal, and plant history and then explores questions including the physics of size as it affects biology, the evolution of size over geological time, and the role of size in the function and longevity of living things. As this elegantly written book shows, size affects life in its every aspect. It is a universal frame from which nothing escapes.

## Book Information

Hardcover: 176 pages

Publisher: Princeton University Press; 1st edition (October 3, 2006)

Language: English

ISBN-10: 0691128502

ISBN-13: 978-0691128504

Product Dimensions: 7.1 x 5.8 x 0.7 inches

Shipping Weight: 10.4 ounces

Average Customer Review: 4.3 out of 5 stars [See all reviews](#) (13 customer reviews)

Best Sellers Rank: #954,763 in Books (See Top 100 in Books) #221 in [Books > Science & Math > Biological Sciences > Biology > Developmental Biology](#) #2629 in [Books > Science & Math > Biological Sciences > Ecology](#) #2851 in [Books > Textbooks > Science & Mathematics > Biology & Life Sciences > Biology](#)

## Customer Reviews

John Tyler Bonner is an Emeritus Professor of Biology at Princeton University. This present general

consideration of the importance of 'size' in overall evolutionary development comes after years of close observation and study of cellular processes. For Bonner the complexity of an organism is measured by the number and kinds, the overall variety of cells which comprise it. Very simply, organisms of smaller size cannot have systems of operation of a kind that larger ones can. As he understands it 'size matters' and is a prime determinant of the shape and structure of the organism. This is his summary of the main theme of this work." Changes in size are not a consequence of changes in shape, but the reverse: changes in size often require changes in shape. To put it another way, size is a supreme regulator of all matters biological. No living entity can evolve or develop without taking size into consideration. Much more than that, size is a prime mover in evolution. There is abundant evidence for the natural selection of size, for both increases and decreases. Those size changes have the remarkable effect that they guide and encourage novelties in the structure of all organisms. Size is not just a by-product of evolution, but a major player. Size increase requires changes in structure, in function, and, as we will see, in other familiar evolutionary innovations. It requires them because they are needed for the individual to exist. Life would be impossible without the appropriate size-related modifications." Bonner goes on to explain why 'size' has been neglected as a subject of biological study. He gives general principles which indicate the overall importance of size.

It must be true that size is important; I can count on regularly getting e-mails that tell me I ought to be dissatisfied with my current size and that offer me just the potion to improve it. That's not the big issue in *\_Why Size Matters: From Bacteria to Blue Whales\_* (Princeton University Press) by John Tyler Bonner. "No one can escape the universal rules imposed by size," Bonner writes in the preface. Or, "To put it another way, size is a supreme regulator of all matters biological." There are aspects of size here that are surprising, and all the more so for most of them being in plain sight for any of us to have come up with. Bonner is a biology professor emeritus, who has concentrated his career on smaller animals ("I have devoted my life to slime molds," begins one of his other books) but takes up the problems and potentials of scale for plants and animals of all sizes, even imaginary ones. Bonner does not mention science fiction movies which have as staples terrifying oversized creatures; his fictional examples are residents of the lands visited by Lemuel Gulliver, both the Lilliputians, one twelfth of Gulliver's "normal" height, and Brobdingnagians, twelve times his height. He repeatedly shows that if these were real biological creatures, just because of size difference, they would have different skeletons, different intellects, different voices, different metabolisms, and different lengths of life. Size would make those creatures different in many ways that mere inches

could not measure. Bonner may draw many of his examples from Swift's fantasy, but his observations are all drawn from physics and biology. Increasing an animal's size always increases its complexity.

[Download to continue reading...](#)

Why Size Matters: From Bacteria to Blue Whales BLUE BEETLE 1: THRILLS! MYSTERY!  
INTRIGUE!: 4 COMPLETE CLASSIC ISSUES OF THE BLUE BEETLE COMIC BOOKS FROM  
THE GOLDEN AGE OF THE 1940s - OVER 270 PAGES (BLUE BEETLE COMICS) War of the  
Whales: A True Story Mind in the Waters: A Book to Celebrate the Consciousness of Whales and  
Dolphins Men on Strike: Why Men Are Boycotting Marriage, Fatherhood, and the American Dream -  
and Why It Matters Standard Guide to Small-Size U.S. Paper Money (Standard Guide to Small-Size  
U.S. Paper Money 1928 to Date) EROTICA: BLACK SIZE MATTERS (Voyeur, First Time  
Interracial, Submissive White Woman Dominant Black Man, Menage, MFM, MMF) (SHORT HOT  
STORIES ANTHOLOGY) What Really Matters for Struggling Readers: Designing Research-Based  
Programs (3rd Edition) (What Really Matters Series) Bacteria for Breakfast: Probiotics for Good  
Health A New IBS Solution: Bacteria-The Missing Link in Treating Irritable Bowel Syndrome Plastics  
from Bacteria: Natural Functions and Applications (Microbiology Monographs) Bergey's Manual of  
Systematic Bacteriology: Volume One : The Archaea and the Deeply Branching and Phototrophic  
Bacteria (Bergey's Manual of Systematic Bacteriology 2nd Edition) Herbal Antibiotics, 2nd Edition:  
Natural Alternatives for Treating Drug-resistant Bacteria Herbal Antibiotics: Natural Alternatives for  
Treating Drug-Resistant Bacteria (Medicinal Herb Guide) Role of gut bacteria in human toxicology  
and pharmacology Why Can't My Child Behave?: Why Can't She Cope? Why Can't He Learn? The  
Feingold Diet updated for today's busy families IS THIS WHY AFRICA IS? (Why Africa is poor, Why  
Africa is not developing, What Africa needs, What Africa needs to develop): Africa, Africa, Africa,  
Africa Africa, Africa, Ebola, Ebola, Ebola, Ebola BLUE RIBBON WINNING Home Made Bread  
Recipes Volume 1 (Blue Ribbon Magazine Book 21) Waterfalls of the Blue Ridge: A Hiking Guide to  
the Cascades of the Blue Ridge Mountains Strauss: An Der Schonen Blauen Donau (On the  
Beautiful Blue Danube/The Blue Danube Waltz) for Voice and Piano (Lyrics in German) (Original  
Version) [Sheet Music] (ED, 07078)

[Dmca](#)