

## **Test of FAITH**



# Test of FAITH

*Spiritual Journeys with Scientists*



Edited by  
RUTH BANCEWICZ

WIPF & STOCK • Eugene, Oregon

TEST OF FAITH  
Spiritual Journeys with Scientists

Copyright © 2010 Ruth Bancewicz. All rights reserved. Except for brief quotations in critical publications or reviews, no part of this book may be reproduced in any manner without prior written permission from the publisher. Write: Permissions, Wipf and Stock Publishers, 199 W. 8th Ave., Suite 3, Eugene, OR 97401.

Wipf & Stock  
An imprint of Wipf and Stock Publishers  
199 W. 8th Ave., Suite 3  
Eugene, OR 97401

[www.wipfandstock.com](http://www.wipfandstock.com)

ISBN: 978-1-60899-894-4

‘Praise the source of faith and learning’ by Thomas Troeger (c) Oxford University Press Inc. 1986. Assigned to Oxford University Press 2010. Reproduced by permission. All rights reserved.

Unless otherwise stated, Scripture quotations are taken from the HOLY BIBLE, NEW INTERNATIONAL VERSION. Copyright © 1973, 1978, 1984 by the International Bible Society. Used by permission of Hodder & Stoughton Limited. All rights reserved. “NIV” is a registered trademark of the International Bible Society. UK trademark number 1448790.

Cover design by Contrapositive  
Print Management by Adare  
Typeset by Waverley Typesetters, Fakenham, Norfolk

# Contents

<i>Foreword</i>	vii
<i>Acknowledgements</i>	ix
<b>The Journey Begins</b>	xi
DR. RUTH BANCEWICZ <i>The Faraday Institute for Science and Religion, St. Edmund's College, Cambridge, England</i>	
1. <b>Learning the Language of God</b>	1
DR. FRANCIS COLLINS <i>Former Director, Human Genome Project</i>	
2. <b>Being Human: More than a Brain</b>	11
REVEREND DR. ALASDAIR COLES <i>Senior Lecturer in Clinical Neuroimmunology, Cambridge University, Honorary Consultant Neurologist to Addenbrooke's and Hinchingbrooke Hospitals, and Curate at St. Andrew's Church, Cambridge, England</i>	
3. <b>Exploring God's Universe</b>	23
DR. JENNIFER WISEMAN <i>Astrophysicist, NASA Goddard Space Flight Center</i>	
4. <b>Biology, Beliefs and Values</b>	35
PROFESSOR JOHN BRYANT <i>Professor Emeritus of Cell and Molecular Biology, Exeter University</i>	

5.	<b>Life in the Lab</b>	47
	PROFESSOR BILL NEWSOME <i>Professor of Neurobiology, Stanford University School of Medicine</i>	
6.	<b>Thinking Technology</b>	57
	PROFESSOR ROSALIND PICARD <i>Professor of Media Arts and Sciences, MIT; Director of the Affective Computing Research Group at the MIT Media Lab; Co-director, Things That Think Consortium</i>	
7.	<b>A Deeper Logic</b>	69
	DR. ARD LOUIS <i>The Rudolf Peierls Centre for Theoretical Physics, Oxford University</i>	
8.	<b>The Faith of a Physicist</b>	81
	REVEREND DR. JOHN POLKINGHORNE, KBE FRS <i>Former Professor of Mathematical Physics, Cambridge University, and former President of Queens' College, Cambridge, England</i>	
9.	<b>Heart and Mind: Understanding Science and Faith</b>	91
	DR. DEBORAH B. HAARSMA <i>Associate Professor in Physics and Astronomy, Calvin College, Grand Rapids, Michigan</i>	
10.	<b>The God Solution?</b>	103
	PROFESSOR ALISTER MCGRATH <i>Professor of Historical Theology, Harris Manchester College, Oxford</i>	
	<i>Epilogue</i>	113
	<i>Endnotes</i>	117

## Foreword

Had I not been so gormless<sup>1</sup> (“cack-handed,” to use my parents’ picturesque word) with regard to practical things – specifically some experiments called Elementary Analysis – I might have been a scientist myself. Certainly, my chemistry teacher leaned on me very hard indeed to get me to choose science rather than Greek for my ongoing high school education. But I suffer from some sort of disconnect between eye, brain and hand: with wearisome regularity I fail to see what others see needs to be done, and I never seem to do it properly when it is explained to me. As C. S. Lewis could never manage to drive a car, so I am a lost cause on all lab and bench skills, as was already clear to me at age thirteen when the fateful choice had to be made. So it was Greek for me by default, and about the nitty-gritty of the sciences I today know virtually nothing.

Yet I read the chapters of this book with very great interest. These scientists, like others I have known well, seem to me to excel in love of truth, honest humility, and down-to-earthness as a habit of mind. And one of them voices a belief that I have held in quietness for over sixty years and thought was peculiar to myself – namely, that when in the name of science people attack Christianity in savage and sarcastic terms, it is not because they have overwhelming arguments to deploy, but because they have in some way been hurt by persons who professed a Christian identity, and in consequence they are now gripped deep down, deeper perhaps than they themselves discern, by the passion that the world knows as revenge. Be that as it may, across the board, as it seems to me, the level of human insight matching scientific

expertise of these chapters is high, and they have left me feeling that here are folk with whom, as a mere theologian, I would love to spend some time. I hope other readers will enjoy this set of testimonies as much as I have done.

J. I. PACKER  
Vancouver, Canada  
*Easter 2009*



## Acknowledgements

Thanks must go to all ten of these scientists who were willing to share their stories. It was a privilege to be able to carry out these interviews and edit the transcripts into the form you see here. My research assistant James Crocker was a huge help during every phase of this project. Several people read the manuscript at various stages and I am grateful for their feedback: Denis Alexander, Connie Bertka, Andrew Bowie, Mark Brickman, James Crocker, Jim Moulton and John Urquhart. Many others were involved, providing the information, advice and encouragement that are always needed in producing a book. Thanks also go to editor Alison Hull, and Robin Parry and the team at Paternoster for making the process of producing a book seem so easy. This project was supported by a grant from the John Templeton Foundation.



# The Journey Begins

RUTH BANCEWICZ

*The Faraday Institute for Science and Religion,  
St. Edmund's College, Cambridge, England*

*Can science and faith be kept in separate compartments?*

*In some ways the central truths of Christianity stand apart from science but science does affect theology and the way that we live our lives: How can we use technology to care for the poor? What will you say when your doctor offers you a genetic test?*

*And some of the big questions in life demand answers that neither faith nor science can answer alone: How did we get here? How should we use the earth's resources? How do we deal with the fact that every new technology can be used for great harm as well as great good?*

*There are thousands of people who are equally at home in the church and the laboratory, and they have some fascinating stories to tell about their own discoveries in faith and science.*

## ***Being a Christian in Science***

As a PhD student in a genetics lab at Edinburgh University, I used to find the list of senior scientists on my Christians in Science<sup>1</sup> membership information reassuring. This wasn't because I felt pressured in any way as a Christian working in science but sometimes I wondered how my career might fit in with my faith. It was good to know that there were people who had been there before me and had done extremely well.

When I finished my studies I worked as a research scientist for several months. The plan was to spend six months learning some new techniques before going to work in the US but I realized that

research was not my niche. I found myself gravitating away from the lab bench and towards my desk and the writing, thinking and communication side of science. The opportunity came up to do all these things, minus the experiments, as the Development Officer for Christians in Science (CiS) and I grabbed it with both hands.

For three years I was in the happy position of being paid to interact with other scientists who were Christians. My work with CiS involved travelling around the UK, visiting universities, churches, conferences, Christian groups and the growing number of Christians in Science local branches. I spoke with a huge number of people about science and faith and heard all the different perspectives, especially on creation, which seems to be today's hot topic. It helped me to make far more sense of my own scientific and Christian knowledge than I ever could by myself.

Some people come to discussions of science and faith with an image of Christians drowning in a sea of scientific facts, unable to escape the inevitable death of religion. This view often comes from a Christian who's afraid or suspicious of science or an atheist who thinks science has killed God. In reality (and hopefully this is not a surprise) there are a huge number of scientists who are also Christians, and hundreds of books have been written explaining how faith and science fit together.

Surveys of the level of faith among scientists have produced some interesting results. The most comprehensive surveys have been carried out in the USA.<sup>2</sup> In 1916 the eminent American psychologist James H. Leuba found that only 42% of senior research scientists believed in a God who answers prayer. He predicted that religion was in a downward spiral and would gradually fade away, because science was "killing God."<sup>3</sup> People were shocked that scientific knowledge could have such a serious effect on society. In 1997 a second survey was published that shocked people in a different way. The lawyer and historian Edward Larson and author and journalist Larry Witham repeated the survey using exactly the same questions. They found that over 39% of scientists believed in a God who answers prayer, only a small reduction in 81 years, so the predicted downward spiral had never happened. It seems that the number of religious believers working in science simply reflects society as a whole,<sup>4</sup> rather than any specific relationship between science and faith. This is reflected in the make-up of

any lab around the world today: you'll find Christians, Muslims, Hindus, Jews, atheists, agnostics and others working in all fields of science. They use the same experimental methods and present their results in the same way.

Interestingly, the number of religious believers among high-ranking US scientists (members of the US National Academy of Sciences<sup>5</sup> and those in elite universities<sup>6</sup>) is only 7%. The contributors to this book are a testimony to the fact that this is more likely to be a result of social and political trends in US institutions, including the separation of higher education into religious and secular domains, and not a sign that spiritual rot sets in when a scientist makes it to the top.

### *Discovering Christianity and Science*

What I want to focus on in this book is how faith and science fit together in practice today. First of all, how do scientists find their faith? The scientists that I meet every day came to their Christian faith in different ways. Some were atheists or agnostics who looked at the evidence for the existence of God again as adults and changed their minds. Dr. Francis Collins, the former head of the Human Genome Project in the USA, and the scientist-turned-theologian Professor Alister McGrath, were both atheists who set out to find out about Christianity so they could shoot it down. They discovered something that changed their lives in a completely unexpected way. Others were introduced to Christianity at an early age and there was a point, often at university, when they decided to keep following or return to their faith. For example, Professor Sir Gillelean Prance, the former Director of Kew Gardens and former Director of the Institute for Economic Botany at the New York Botanical Gardens, was taken to church as a child but decided to become a Christian in his first week at university. For both these types of people, while they were in the middle of their scientific studies they discovered Christianity for themselves, showing that faith and science do quite naturally go hand in hand.

Science takes people into a huge range of careers: teaching, industry, writing, medicine, agriculture ... I've spent most of my time with Christians in Science interacting with scientists in a

university setting. It's been interesting to ask what drew people into research in the first place. The main reasons seem to be a thirst for knowledge or wanting to make the world a better place: most scientists share both motivations but to different extents.

I did my PhD in genetics at Edinburgh University, based in the Medical Research Council (government funded) Human Genetics Unit. It was on the grounds of a hospital, so there was a constant reminder of what we were there for. When I walked through the link corridor to the hospital, that hospital smell would hit me, and I would see people being wheeled along the corridor. It was a bit of a shock sometimes, remembering that what I was doing was so far from actually contributing to a cure for anything.

I chose my own PhD topic partly because I knew it could have an impact on people, and not just rich people in the west. I was looking at environmental pollutants and how they affect unborn children. A developing embryo that carries a disease gene is sometimes completely healthy until an environmental disturbance like a toxic chemical triggers the onset of a (genetic) disease. I was looking at a specific biological "trigger mechanism" that was thought to be important at very low levels of exposure to environmental hazards. We found evidence that this mechanism does have an effect in fish<sup>7</sup> and, now that I have left research, it's up to others to look into whether the same effect also occurs in humans.

The scientists who are motivated by a thirst for knowledge often find themselves doing research that won't have an impact on people for many years. Sometimes they feel guilty that they're not directly feeding the hungry, healing the sick or in "full-time Christian work." A common thread through many people's stories is a slight feeling of guilt over having such an interesting job. Scientists often feel they should follow a more "spiritual" career. For example, Ghilleen Prance was actually accepted for ordination in the Anglican Church before his future father-in-law encouraged him to keep on using his scientific talents. He finally realized that science could be just as important a calling as working in the church. We should be glad he did, because he was one of the first people to highlight the problems caused by cutting down vast areas of the Amazon rainforest. Many of the scientists that I meet have had to go through a process of learning to see their work as

a vocation or calling, and finding their niche in science where they can worship God every day through what they do. Doing research where the outcomes are somewhat unknown is sometimes more difficult than working in a profession that will affect people very directly but is just as valuable and may end up affecting more people over time. It is very difficult to predict what benefits basic research might bring to humanity in the long-term.

So how does a Christian who is a scientist live out their life in the lab? People sometimes have an image of lonely scientists struggling through their research at all hours of the day and night. The all hours part is often true, but in reality most labs are stuffed with people like sardines, each with their own two feet of bench space. Sharing expensive equipment and taking turns to clean up are part of the enterprise. You'll find the whole range of different types of people in research: sorters, ideas people, visual people, perfectionists, technology lovers, mathematicians, philosophers, loners, socialites, and so on. People have to be curious, creative, able to communicate and, most importantly, persistent. Most scientists have something of an anarchist in them: they are always looking for ways to challenge old ideas, disprove someone's (or their own) cherished theory and build new ones. The average research scientist doesn't just do experiments and write papers. They also spend their time preparing talks, writing grant applications, teaching students, going to conferences and socializing with their colleagues. There are usually rituals and traditions that make up for all the late nights and weekends in the lab: firing champagne corks as far as you can down the corridor, welcoming new students over pizza, comedy (?) sketches at the department Christmas party and the essential celebrations when papers are published, grants come in or students pass their PhDs.

There will be those in the lab who are finding it hard to look beyond the daily round of experiments, trying to write their next paper and keep their funding. Some may be convinced that religion is irrational and that God is a distant or non-existent figure that we can't claim to know anything about. But the lab can also be an amazingly fruitful place spiritually, where you're surrounded by original thinkers who are faced with the beauty and complexity of creation every day. The Christians that I talk