



## Roberta Bondar MD PhD

In shattering the proverbial glass ceiling, Dr. Roberta Bondar reached for the stars. She has experienced life's strength, beauty and fragility from heights few people, let alone a handful of women anywhere, have ever scaled. Dr. Roberta Bondar is Canada's first woman astronaut and the world's first neurologist in space (NASA MISSION STS-42, January 1992). Even before her selection to the Canadian Space Program in December 1983, Dr. Bondar was a highly accomplished physician and researcher studying the nervous system.

Dr. Bondar was specifically interested in how eyes and ears help us balance and orient ourselves with respect to our surroundings. Additionally, her research into the effects of low gravity and weightlessness on the brain's blood supply was particularly fitting for NASA's quest to study how spaceflight affects astronauts.

Over a period of eight days, Dr. Bondar circled our planet at thirty thousand kilometres per hour, conducting more than forty pioneering experiments in the world's first International Microgravity Laboratory (IML-1) situated three hundred kilometres above Earth. She focused on how humans react to weightlessness, such as the effects of low gravity on eye motion and ear function, changes in our balance system, the elongation of the spine and its associated back pain during low gravity, and the after-effects of spaceflight on astronauts.

Dr. Bondar's research into space medicine is helping future astronauts and researchers of space medicine uncover the myriad effects of weightlessness and prolonged periods of spaceflight on the human body. Through the combined efforts of Dr. Bondar's research and others, we know, for example, that bone loss may continue for some time after landing and may not be recoverable, or that changes in the body's immune system may compromise the human body's ability to fight infections. Her research (in 2014) shows that returning astronauts have impaired and irregular blood flow in the brain and this can potentially lead to long-term damages.

Dr. Bondar's research remains relevant to future space programs. With the rise of private space companies, space-tourism and planned missions to Mars, the health and safety of our astronauts, and potentially our citizens - is paramount.

An avid photographer, Dr. Bondar was also tasked with taking pictures of Earth during her time in space. Her experiences in space along with her photographs were published in the book *Touching the Earth* in 1994. She has had several exhibitions and book publications of her photographs including *Passionate Vision*, a book published in 2000 that documented Canada's national parks. In July 2009, Dr. Bondar established the Roberta Bondar Foundation that 'helps cultivate in all ages a sense of awe, respect and appreciation for other life forms that share our planet'.