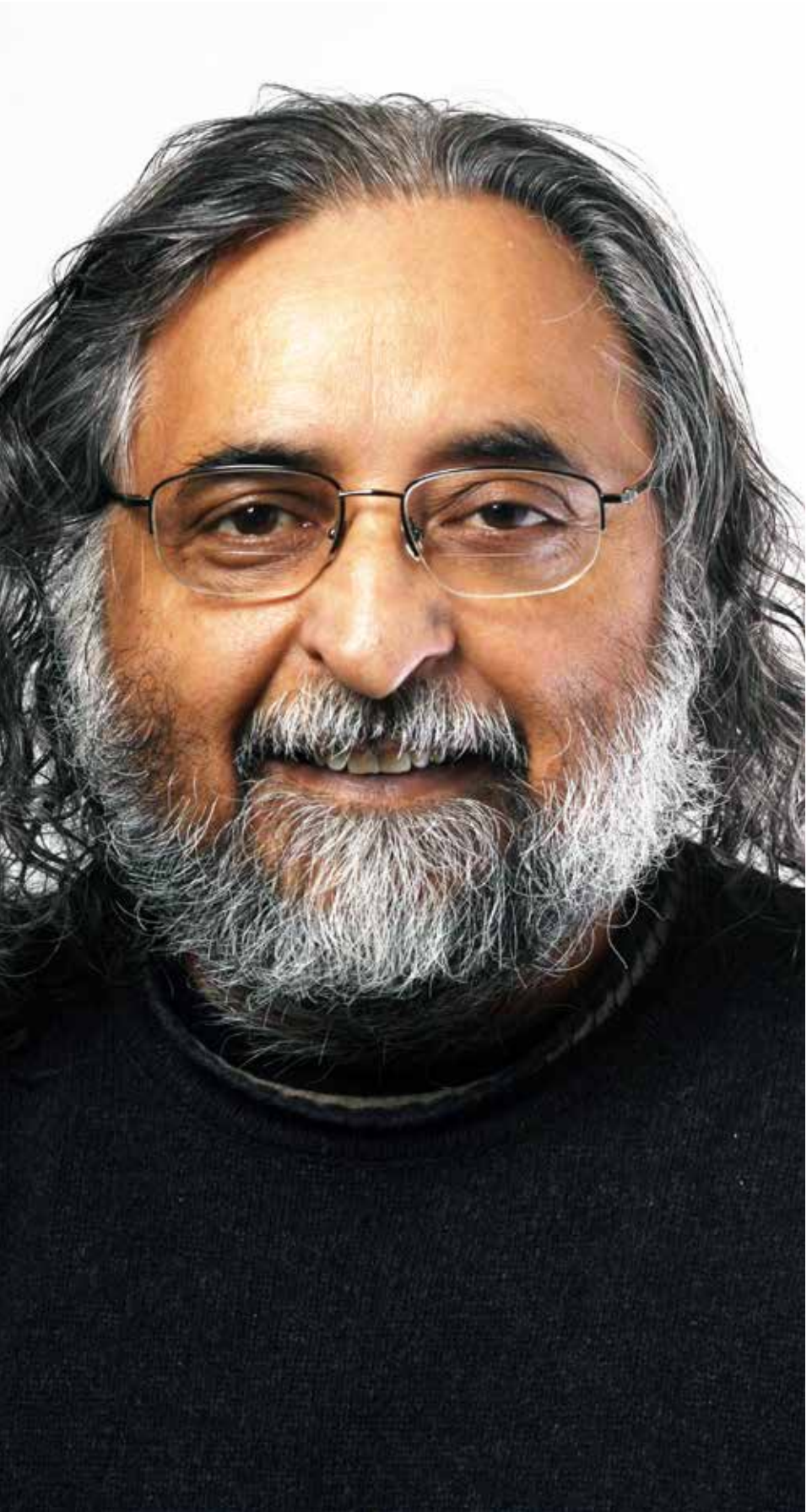
Dr. Suresh Rattan

Dr. Suresh Rattan heads the Laboratory of Cellular Ageing, at the Department of Molecular Biology and Genetics, Aarhus University, Denmark. He is the recipient of the Lord Cohen Medal in Gerontology from the British Society for Research on Ageing, and an Honorary Doctorate from the Russian Academy of Medical Sciences. Dr. Rattan gave the first keynote address on the topic "the biology of healthy ageing" at the Second International Workshop on Food and Neurocognitive Diseases organized at SQU. Dr. Rattan speaks more about the biology of ageing and his passion for science communication and music.



Horizon: Can you give a short definition of ageing in biological terms? You said that ageing is the state when the repair mechanism of our body weakens. What is the cause of the weakening?

Dr. Rattan: Biologically, ageing is both a period of life and a process by which our cells, tissues and organs progressively become weaker in function, tolerance, robustness and resilience. This change leads to an increased possibility of the emergence of one or more diseases and eventual death. The cause of this weakening is the inefficiency of the biochemical maintenance, repair and other defensive systems, because of the accumulation of molecular damage in the cells.

Horizon: Is ageing in our genes?

Dr. Rattan: Both yes and no. There are no special genes (gerontogenes) with the sole function of causing ageing and death. Genes are essential for our survival and genes do determine our ability to live and to maintain health. Such genes are called longevity assurance genes or vitagenes. These are normal functional genes required for survival, defence, repair, and other functions. We do not yet know how many genes and what types of their interactions are required for normal survival and health. Genes determine health, but not the lifespan of an individual.

Horizon: Does stress shorten our life? In your presentation, you mentioned that stress of choice can promote health; can you explain?

Dr. Rattan: Uncontrolled, unwanted, continuous, chronic and severe stress is definitely very harmful for the quality and length of life. However, repeated mental and physical challenges with "stress of choice" have health beneficial and life-extending effects. Exercise is the best example of such stress of choice. Exercise induces little bit of damage and stress, and in return the body tries to counteract that damage. This phenomenon of mild stress-induced health benefits is called hormesis, and conditions, such as exercise, are called hormetins. Sauna, spices in the food, mental challenge, and once-a-week fasting are some other examples of useful hormetins.

Horizon: Living long and living well: can we do both or are they the same?

Dr. Rattan: Living well or the quality of life is a matter of several social, psychological and biological factors. Biologically, the way our bodies have evolved in nature, it is not really possible to live long and live well in terms of without becoming weaker, without having diseases, etc. Evolution has made our bodies only for about 45 to 50 years of reasonably healthy and functional life, but after that period ageing sets in and almost everything starts becoming less well. Modern medicine and other technologies can surely help to keep the body well to a greater extent, and this situation will become even better in the future. However, for real well-being, we need to have a strong supportive social life and personal positive attitudes, even if biologically the body is ageing, weakening and dying.

Horizon: In addition to your professional research work on the biology of ageing, you are interested in the public communication of science. How would you underline the importance of the latter? Could you summarize what you have learned from experience in this field?

Dr. Rattan: I think there is a tremendous need of science education and science practice in daily life. It is not just for understanding how different machines work or what medicines can be used, but science is needed to appreciate the potential and value of human life, the importance of ethical behaviour, the equality of all human beings, the importance of responsibility towards nature and so on. For me, science and the scientific way of thinking and living are the universal uniters; science does not divide people in this and that group; science can eliminate hatred, wars and other social evils happening all around. Science teaches me tolerance, acceptance, and it helps me become free from the narrow, divisive and violent viewpoints and ideologies. That is why I try to communicate and promote science, especially among children and youngsters.