

Mauro Giacca

FOREVER YOUNG *molecules and myths on aging, rejuvenation and stem cells*

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The myth of immortality has always been central in our human culture. Over the centuries it has shaped the legends of the fountain of youth, the elixir of life or the philosopher's stone. Still, we do not yet understand how an organism maximum life span is determined and why this differs so much in the different living beings on the planet. What we start understanding, however, is how genes and molecules regulate aging. Specific genetic mutations determine a several fold life span increase in mice, worms and flies; novel molecular mechanisms link oxygen metabolism with aging; cellular content renewal by cell self-eating maintains organs young and healthy; young stem cells can rejuvenate old organs. Finally, and most relevant, caloric restriction (namely, undernutrition without malnutrition) promotes longevity in all the investigated species, from flies to monkeys. While these novel discoveries appear truly exciting, the possibility of effectively modifying human life span inevitably raises very alarming societal and ethical issues.

MAURO GIACCA

Prof. Mauro Giacca obtained his degree in Medicine in 1984 from the University of Trieste, Italy and his PhD in Microbiology in 1989 from the University of Genoa, Italy. Since 2004, he is the Director of the Trieste Component of the International Centre for Genetic Engineering and Biotechnology (ICGEB), where he has been the Group Leader of the Molecular Medicine Laboratory since 1995. From 2000 to 2005, he has been Associate Professor of Molecular Biology at the "Scuola Normale Superiore" in Pisa, Italy and Director of the Molecular Biology Laboratory of the same Institution. Since 2005 he is Full Professor of Molecular Biology at the University of Trieste.

WHEN

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WHERE

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