

3rd World Conference on *Ageing and Gerontology*

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Probiotic interventions to expand healthy human longevity

Hippocrates proposed that all diseases originate in the intestine, and the Russian scientist Elie Metchnikoff proposed that human aging was caused by the “intestine putrefaction” (i.e., “gut dysbiosis”). Today, we are beginning to understand the genetic and molecular basis of how the intestinal microbiota (the trillions of microorganisms that inhabit the intestine), and in particular certain probiotics, could play a fundamental role in how slowly or how quickly a person ages (biological age versus chronological age). Our paradigm to prevent human aging and natural death itself is through the selection of key probiotic bacteria with anti-aging properties. Our model of study during the last 20 years is the probiotic bacteria of Japanese origin *Bacillus subtilis natto* DG101 (i.e., Kyojin Probiotic[®]). This probiotic has proven properties in the prevention of non-communicable diseases (diabetes, obesity) in addition to anti-aging and healthy prolongevity effects in human beings. In the *Caenorhabditis elegans* animal model, *B. subtilis natto* DG101 extends the animal's life expectancy by 40 to 50% without showing signs of animal aging. The extension of life expectancy occurred concomitantly with the maintenance of the animal's cognitive, neurological and locomotor capacities. In transgenic strains of *C. elegans* used as genetic models of Parkinson's and Alzheimer's diseases (strains that produce alpha-synuclein or with accelerated death of dopaminergic neurons, for Parkinson's; or that express the Beta-amyloid peptide, for Alzheimer's, PD and AD, respectively) the diseases did not manifest when the intestines were colonized with *B. subtilis natto* DG101, unlike the PD and AD animals in whose intestines *B. subtilis natto* DG101 was absent, which quickly became ill and died. Significantly, the prolongevity and neuroprotective effect of *B. subtilis natto* DG101 is primarily due to a FOXO- and Nrf2-dependent downregulation of the insulin-like signaling system (ILS) that precisely is a key player in the extended and healthy longevity of many human centenarians. Overall, the incorporation of *B. subtilis natto* DG101 (i.e., Kyojin Probiotic[®]) and other friendly gut bacteria (i.e., other *Bacillus* with live biotherapeutic properties) to the human diet represents a promising, non-genetic and safe intervention to slowdown, prevent or revert human aging.

Biography

Biochemist (Faculty of Biochemical and Pharmaceutical Sciences, National University of Rosario, UNR); PhD in Biological Sciences (UNR); International Master's in Human Microbiota (Technological University of Spain); Professor of the Diploma Program in Microbiota and Nutrigenomics at the University of Mendoza; advanced studies in Philosophy (Faculty of Humanities and Arts, UNR). Postdoctoral Fellow in Molecular Biology of Signal Transduction in Bacteria (The Scripps Research Institute, Department of Molecular and Experimental Medicine, San Diego, California, USA). University professor and researcher, Latin American Fellow of the Pew Charitable Trust in Biological Sciences (San Francisco, USA); Fulbright International Scholar (Washington, DC, USA). With 43 years of experience in scientific research; recipient of more than 20 national and international awards for his teaching and scientific career; director of more than 40 scientific research projects funded by national and international government agencies and private companies.

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He has published over 50 original articles in prestigious journals and given over 150 presentations at scientific conferences, supervised dozens of postgraduate and doctoral theses, trained over 50 professionals in science, been a visiting professor at more than 15 universities and research institutes worldwide (France, Spain, Germany, India, Japan, Brazil, Cuba, Chile, USA, UK), and founded and/or catalyzed the creation of half a dozen biotechnology companies, including Kyojin S.A. in Argentina and Juventas 4life SL in Spain. Current Research Topics of Interest: Role of Microbiota and Probiotics in Neuroprotection, Antitumor Therapies and Healthy Longevity.