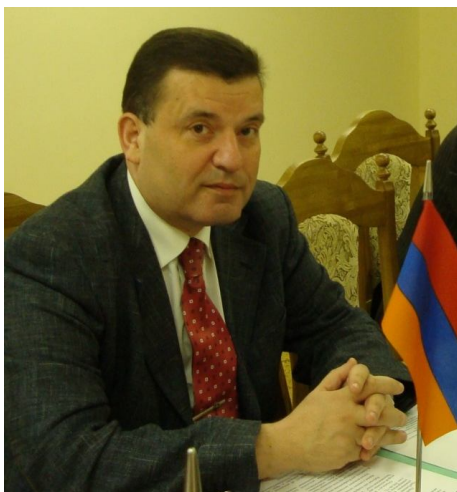


ARMEN H. TRCHOUNIAN BIOLOGIST, TEACHER,
ORGANIZER OF SCIENCE AND EDUCATION
(to the 60th anniversary)

It is approaching the jubilee of a great scientist, biologist, renowned educator, prominent organizer of science and education, Head of the Department of Microbiology, Plants and Microbes Biotechnology of Yerevan State University, Corresponding member of National Academy of Sciences (NAS) of the Republic of Armenia, Doctor of Biological Sciences, Professor Armen Trchounian.

A. Trchounian was born in Yerevan. In 1973 he graduated with honors (gold medal) from the Yerevan secondary school № 132, and in 1978 with honors from the Faculty of Biology of Yerevan State University, specialty “biophysics”. During the years of study, he showed outstanding ability in creative activities, was a Lenin’s scholar, and his thesis was



awarded with a commemorative medal of the Republic Ministry of Higher Education as the best scientific work of students. In 1982 A. Trchounian defended his PhD thesis, in 1990 doctorate (DSc) and in 2002 he was awarded with the academic title of Professor.

Scientific activities of A. Trchounian began at the Chair of Biophysics, Faculty of Biology of YSU, where he was a PhD student, worked after graduation and in 1993–2011 Full Professor. Then he moved to the Department of Microbiology and Biotechnology of Plants and Microorganisms, working as a Head of the Department. He also leads a basic Laboratory of Microbiology, Bioenergetics and Biotechnology, Research Institute of Biology, YSU, thematic research groups.

His research interests include the study of ion transport across the membranes and its role in cell physiology. He has justified the principle of the direct interaction of membrane protein systems. He proposed a model of the proton-potassium pump in bacteria, suggesting a direct transfer of energy from one protein to another within super-complexes that was discussed by various bioenergetics groups. He was able to show the mechanism of the energy transfer through the dithiol-disulfide transitions between proteins. Actually A. Trchounian formulated the hypothesis of the bacterial proton ATPase, which plays a key role in the transformation of energy and the interaction with the other membrane proteins to perform new functions during fermentation.

Of significance is promising perspective innovative research of Trchounian’s laboratory on the evolution of molecular hydrogen (H₂) in bacteria: he has found an extremely important area of research, and very soon has become one of the world leaders in this field. Studying the mechanisms of H₂ formation and its regulation, A. Trchounian developed the theory of the regulation of bacterial metabolism via the redox potential. Together with G. Sawers (Martin Luther University in Halle-Wittenberg, Germany) suggested the

interaction of proton and hydrogen cycles in bacteria as an important process in the cell. New methods for the determination of H₂ were developed and adopted, the optimal conditions and mechanisms involved different hydrogenases were studied; new strains of bacteria generating H₂ were isolated and constructed, ways of their practical application in the implementation of the fuel and energy program were proposed. Of importance is the novel phenomenon of H₂ production from glycerol and other byproducts and organic waste by bacteria. In the development of H₂ biotechnology, there were using of mixed carbon sources, non-sulfur photosynthetic bacteria isolated from Armenian mineral springs and their association with other bacteria, it was shown the role of heavy metals. These works have received much international recognition, for which the author was cited by leading experts in H₂ energy. He was awarded with the Outstanding Service Award of the International Association for Hydrogen Energy (USA, 2014); recently it has been decided to award him with Akira Mitsui International prize (USA, 2016).

The range of Trchounian's interests is wide enough: he manages to find a sharp and attractive challenges and propose bold solutions: he identified the second K⁺ transport system in acidic environments together with H. Kobayashi (Chiba University, Japan); the sensitivity of bacteria to enhance the osmotic stress created by Na⁺ salts; the membranous effect of electromagnetic millimeter waves and an increase in sensitivity of bacteria to antibiotics. He proposed the bacterial targets of millimeter waves, including proton ATPase. Prospective studies are microorganisms in Armenia, having biotechnological potential. In recent years, together with Russian cosmonauts and physicists, he was been involved in research on the biophysical problems of manned space flight. A large amount of research A.Trchounian carried out in framework of international projects funded by different science foundations in USA, Germany, France, UK, Japan and other countries and within the international cooperation. We have to sometimes wonder his exceptional talent and hard work, special skills of scientific analysis and a great responsibility to the scientific community! As "high-level scholar-professional", "productive researcher of our time" A. Trchounian was characterized by academicians V.P. Skulachev and M.A. Ostrovsky, many other world renowned scientists.

A. Trchounian is the author of over 550 scientific papers, published in the most prestigious international journals in USA, Great Britain, Germany, Netherlands, Russia and others. Among these works are critical reviews in journals with high impact, book "Bacterial Membranes" (India, 2009). He is the participant of more than 75 international scientific forums in different countries, having more than 30 lectures and oral presentations. By the invitations, he repeatedly traveled abroad (USA, England, Germany, Italy, Canada, China, Norway, Poland, Russia and others), where at 27 universities gave lectures and scientific seminars, carried out the research. For a series of studies on bacterial membranes, Trchounian has been awarded with the prize of the President of the Republic of Armenia in the field of Natural Sciences (2003); for the best scientific work – Prize of the International Union of Armenians, Ministry of Diaspora and NAS of Armenia (2010). He received his honors award of excellence (USA), was awarded with the Order of Honor Cross and Medals of prominent biologists (A. Virchow, R. Koch, B. Negovsky) of the European Academy of Natural Sciences (Germany), medal of Sissakian.

Of particular importance is Trchounian's activity as an expert of different national science foundations and boards of a number of European countries. Objective and demanding he is recognized as an outstanding expert, and is marked by recognition diploma of Elsevier. He is the editor of two international journals published in Switzerland and India, a member of the editorial boards of twenty national and mostly international journals.

A. Trchounian successfully performs scientific-educational work in YSU and Russian-Armenian (Slavonic) University (RAU). His lectures have a modern approach and known among students. He is the author of the textbook "Biological Membranes" (2001), author and editor of many books, textbooks and teaching manuals. He has been active in

training in Armenia: under his supervision were reserved 23 doctoral and PhD theses. He created excellent scientific school; young staffs of Trchounian's lab are also the winners of many national and international competitions, received grants and awards, many of them have positions and work in universities in USA and European countries. He was awarded with the title of Honorary Professor of RAU and other universities. For outstanding service in education and mentoring Trchounian was awarded with UNESCO and American Society for Microbiology (ASM) Leadership Grant for International Educators (2009) and marked by the Certificate of ASM (2011). Under his leadership, the programs designed conception of school biology course was created; he edited and updated textbooks on biology; he is the co-author of the school textbook "Natural Science" (2013–2014) and author of the book "In the World of Living Cells" for high school.

Multifaceted scientific and organizational activity of Trchounian was deployed as Chief of the Office of Science and Training of the teaching staff, Ministry of Education and Science (2001–2002), and then Chairman of the Supreme Attestation Commission of the Republic of Armenia (2002–2010). By decree of the President of the Republic of Armenia he was awarded with the degree of the State adviser of the civil service (2006). He published the book "The Current State and Trends of the Highest Academic Certification" (2004), participated in the European Union program in university management and management of higher education, in conferences to exchange experience in Belarus, Italy, Canada, Estonia, Russia, Sweden and others. His activity was carried out also in the Councils of YSU and the Armenian State Pedagogical University after Abovyan, continues in the specialized councils for awarding degrees in YSU, in national and international scientific academies, associations and scientific societies. He is a member of the Academic Council of YSU, Faculty of Biology and other institutes and scientific centers. Significant was his long-term activity as a member of the Coordination Committee of the International Science and Technology Center and the Council on Cooperation in Education of the Commonwealth of Independent States (CIS), marked by Certificate of Merit of the Executive Committee of CIS and Lomonosov Order (Russia). He is the ASM Ambassador to Armenia (from 2012) and a Delegate and member of the Education Group of the FEMS.

A. H. Trchounian is member of the editorial board of "The Proceedings of the YSU" since 2012.

For his contribution to science and education he was honored with Certificate of Appreciation from the Chairman of the National Assembly of the Republic of Armenia, awarded with the commemorative gold medals of the Ministry of Education and Science of Armenia, YSU and other state universities in Armenia, Abovyan medal, Marshal Baghramyan medal, other medals and awards.

We have tried to characterize scientific-pedagogical and public activity of A. Trchounian, but the work was difficult: it highlighted the distinguished versatility of its activity and its exceptional efficiency, worthy of gratitude. Congratulating Armen Trchounian's anniversary, we wish good health and new successes in science and teaching.

*E.G. Afrikyan and L.L. Osipyan,
Academicians of the NAS of Armenia*

*Editorial board of "Proceedings of the YSU"
joins to the congratulations and wishes
years of fruitful collaboration.*