AGING RESEARCH INSTITUTE NEWSLETTER

Tabriz University of Medical Sciences (TUOMS)

Editorial

Aging: Global emergency

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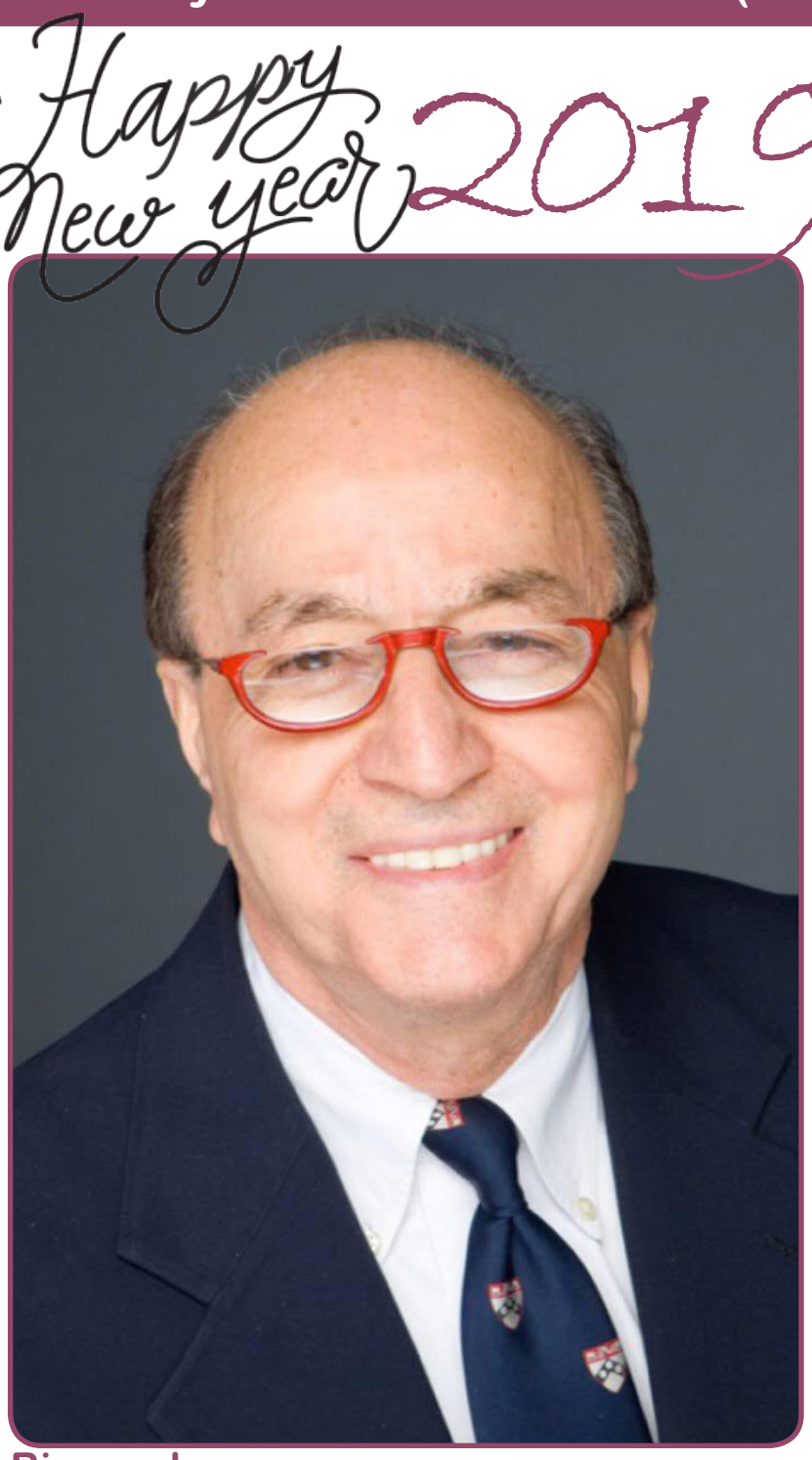
"Want your children's respect, respect the olds" [1]

Ali Ibn Abi Taleb, Imam Ali (Peace be upon him); 15 September 601 – 29 January 661, was the cousin of the prophet of Islam, Muhammad (blessings of Allah upon him). Being the symbol of eternal humanity, his quotations indicate the very fact that he was more a reformist rather than an ordinary individual. Special attention has been paid to respecting the elderly in the texts available from him.

Avicenna explains aging as a natural process through the life. Men of medicine in Traditional Persian Medicine (TPM) like Avicenna and Razi have made suggestions in terms of physical exercise, eating and drinking, and psychological and mental well-being to preserve and maintain health of older adults. To initiate with slow walking, then enhancing its speed gradually and ending before getting tired is an effective method to preserve elderlies' health [1]. Decreased birth rate and increased life expectancy have made global population to be inclined inevitably toward aging. Societies, early or late, will experience the very fact of population aging. Regardless of still partially youthfulness of Iranian population, there is evidence indicating its severe inclination toward aging in upcoming decades [2]. It is predicted that 9% of elderly≥60 years of age in 2015 [3] will pass 33% in 2050 [4]. Better to say, Iran will face a Tsunami of population aging in the close future. Population structure and demographics are among the highlighted variables upon which social planning must be founded. It is while; people requirements vary according to their age [5]. Population aging and its outcomes, in most of the societies, has turned to be a focused social challenge. [cont.]

1.From Ghurar al-Hikam wa Durar al-Kalim; by Imam Ali, H 10096. (Arabic)



Biography

Abass Alavi was born in 1938 in Ghare-Aghaj district of Tabriz. After graduating from Ferdosi high school in Tabriz, he enrolled in Tehran University of Medical Sciences and subsequently served in the Sepaheh Behdasht in a village (Kinevars) near Abhar. He decided to continue his training in the U.S., and went to Philadelphia for a residency. He was there that realized clinical medicine was not satisfying, but that he wished to find a more scientific specialty. He found a radiology residency at Harvard and subsequently, a fellowship at the University of Pennsylvania in Nuclear Medicine, and started in that field in 1971.

Professor Alavi worked on pioneering research in tomographic imaging of function imaging with the collaboration of Dr.David Kuhl and Dr.Martin Reivich which led to the development of FDG. He was the first person in the world to use FDG to image human brain and the whole body in 1976. Subsequently, he conducted pioneering research in central nervous system disorders as well as many malignancies and [cont.]

Chancellor's Message

Prof. Mohammad Hossein Somi

With increasing the life expectancy over time, the citizenry will experience aging. A stage that, if combined with percipience, can be consolation for elder population, their relatives as well as the society. Expanding the kingdom of science, research in the field of aging is a useful step towards the welfare, emotional and health support of the elderly. It is hoped that the attempts of the aging research institute of TUOMS will succeed to profit people especially the precious eldery.

Dean's Message

Prof. Seyed Kazem Shakouri

The global population is aging and Iran will be one of the fastest aging countries in the world in upcoming decades, according to the WHO. Therefore, the problems of the elderly should be taken into consideration by the health professionals and then right policies in this regard should be put in place. This is not possible unless by conducting accurate research in this field…

Hence the aging research institute of TUOMS has been established and performed 10 international projects in cooperation with reputable universities of the world, including Pennsylvania, Copenhagen, and Odense. The first time utility of PET for the research projects of the country is the one the noticeable activity of this center. I hope with the assistance of the professors and students as well as the governmental and international cooperation, the institute will be one of the active research centers in field of aging in the Middle East.

Editorial [cont.]

Increased aged population is the contemporary world's socio-economic and health challenge [6] being dubbed in today's world as "Global emergency" [7]. Increased governmental expenditure to pay for retired population salary, care and health services, and social welfare plans of older adults can jeopardize financial stability and economy in many societies. Population ageing leaves deep impacts on diverse layers of society among which, one can mention its overwhelming costs in terms of clinical care and health services [8]. High burden of diseases in old age will contribute in increasing demand for efficient health services [9] in its different levels including primary health care, out- and in-patient services, paraclinical services, rehabilitation, home care and consequently health cost [10]. There will be close days in which population aging will turn to be a national challenge in Iran, and in its specific sense, for health system. In case of its mismanagement and inefficient planning, it will be a serious threat for the society. Managing needs of growing number of older adults, health promotion and improving quality of life of aged people demands devoted, multi-dimensional, and intersectional collaborations.

Below the urgencies are summarized:

- Developing inter- and multi-disciplinary research on aging
- Making and revising supportive legislations on aged population
- Developing and upgrading urban furniture, public places and public transporting system
- Establishing and developing settings for older people's social activities, physical exercise, and leisure times.
- Reforming health system upon elderly people's requirements to provide them with integrated care
- Training efficient and resourceful working staff in the fields of prevention, care, treatment, rehabilitation and promoting elderly health
- A comprehensive insurance system for elderly people with full coverage
- Establishing and developing NGOs and social media to provide elderly with more social participation
- Establishing and developing full-time care providing nursing homes for elderly people
- Encouraging more public collaborations and establishing charities to fulfil elderly needs

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Top Articles

Congratulations to Dr. Bahman Yousefi, assistant professor of biochemistry, TUOMS, on having his articles entitled:"the role of melatonin , a multitasking molecule, in retarding the processes of ageing" and "The multiple functions of melatonin in regenerative medicine" published in journal of Ageing Research Reviews (IF=8.973) which have been selected as the top articles of this issue. To show greetings, Aging Research Institute has given him a special grant.

Biography [cont.]

inflammatory diseases. He has been a very productive researcher in almost all fields of nuclear medicine and medical imaging. His pioneering research with medical imaging techniques has been based applications of modern imaging modalities including PET, SPECT, CT, and MRI.

He has released extensive publications including more than 2700 write-ups and numerous books. He has released entensive publications including more than 2700 write-ups and numerous books. He has amassed 6200 citations by time, earning him an H-index of 125. He has trained numerous nuclear medicine specialists from various countries, and some are now experts in the field. His efforts have been rewarded by the most prestigious prizes given by the society of nuclear medicine, including the George Charles de Hevesy Nuclear Pioneering Award and the Cassen Prize of the Society of Nuclear Medicine, along with honorary degrees from the University of Southern Denmark, Bologna, Gdansk, Tabriz, Shiraz, and the University of Sciences in Philadelphia.

Our Institute...

Aging Research Institute including Neurosciences Research Center, Research Center of Psychiatry and Behavioral Sciences, and Physical Medicine and Rehabilitation Research Center has been established in Tabriz University of Medical Science (TUOMS) in 2016 in honor of professor Abass Alavi for the his indefatigable and resolution to advance aging studies. The establishment of this institute was offered by former deputy dean of Research and Technology of Medical Faculty (Prof. Hassan Soleimanpour) and was approved by chancellor of TUOMS (Prof. Mohammad Hossein Somi) and dean of Medical Faculty (Prof. Seyed Kazem Shakouri). The head of the institute is Prof. Seyed Kazem Shakouri and its deputy dean is Prof. Hassan Soleimanpour.

This institute actually tries to promote national understandings about aging processes by implementation of national and international scientific capabilities and cooperation with other global and distinguished centers of science.

Our vision in the institute is to minimize the aging problems of our society that is gained through the appropriate administration of psychological and social principles related to elderly people. We also look to have better and modern services and we hope to benefit from aged people's potentials as much as we can.

Our aim is to create infrastructure related to aging research and a database for aging and in the same time, develop aging-related technological, social and community-based activities to transfer knowledge to the community.

Our mission is to promote health and life quality of aged individuals by focusing on physical, cognitive, and social dimensions. This will be done according to modern sciences which will be generated through indefatigable researches and production and dissemination of knowledge. We will try to provide new educational opportunities for the students and health service providers.

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ANNOUNCEMENT

Aging Research Institute of TUOMS provides funding for systematic reviews in cooperation with Students' Research Committee (Division of Faculty of Medicine) of TUOMS. For more information contact with the institute.

Student letter

Emerging Prospective of Exosomes for Treatment of Stroke

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Ischemic stroke is one of the main reasons of morbidity, persistent disability, and death which causes the severe social economic burden worldwide[1]. Currently, the only confirmed therapy for ischemic stroke is thrombolysis, however, due to hemorrhagic problem, thrombolysis is still not commonly practiced[2]. Investigation into novel therapeutic attitudes for stroke has determined that intravenous administration of mesenchymal stem cells (MSCs) is a worthy approach to develop recovery through augmenting mechanisms involved in brain plasticity[3, 4]. With the discovery of exosomes (extracellular vesicles) that contain many molecules, a new frontier of signal transduction was opened[5]. Multiple studies have found MSC-derived exosomes to be good candidates for the treatment of stroke due to their ability to mediate restorative effects and to play a role in the neural plasticity mechanisms involved in stroke[6]. MSC-derived exosomes have repair mechanisms to induce restorative effects in stroke models, such as: functional recovery, long-term brain protection, grey matter repair, peripheral immune response, white matter repair, biodistribution, endogenous drug delivery nanosystem [4, 7, 8]. These membranous structures derived from stem cells transport exogenous functional mRNA and miRNA sequences to target cells involve in disease progression and can help to treat acute ischemic stroke[9]. For example, exosomes from miR-30d-5p overexpressing Adipose Derived Stem Cells (ADSCs) during the acute phase of stroke could be a promising therapeutic strategy for ameliorating cerebral injury by promoting M2 microglial/macrophage polarization and inhibiting the inflammatory response[10]. We anticipate that extra efforts on exosomes secreted from stem cells containing clinical trials, will be available in the immediate prospect.

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Alavi meetings

Alavi meetings are held in Odense each year in honor of Professor Abass Alavi and the 18th one will be held in Feb 2019. In this manner, Aging Institute of TUOMS has held three Alavi Meetings in Tabriz in years 2016, 2017, and 2018. It was an honor to host professors from PENN University and Odense University Hospital (OUH)/Southern Denmark University (SDU) in these meetings as the following:
Abass Alavi, Poul Flemming Høilund-Carlsen, Albert Gjedde, Manouchehr Seyedi Vafaee, Kim Brixen, Anne Pernille Hermann, Uffe Holmskov, Jens M. Lauritsen, and Anders Meinert Pedersen.
Each Alavi meeting is held in 2 days and consists of a scientific program about the international projects of the institute, new research ideas in the field of aging, workshops and student sessions.
Presentation of new projects and also progress reports of ongoing ones are of the main objectives in these meetings which are presented and reviewed by the international professors.
Moreover, student sessions as a major part of these meetings, have been able to attribute a great interest in the meetings. It is usually a very effective and impressive section in which the talented undergraduate and postgraduate students of TUOMS present their research ideas and proposals. Henceforth, professors from TUOMS, PENN, and OUH/SDU give them advice to improve their projects and presentations. In addition, these sessions provide an opportunity for talented students to gain experiences by visiting the universities of other countries. As there have been some Iranian students traveling to Denmark and also some Danish students coming to Iran who were cooperating on a project about imaging analysis. We hope to be able to hold the 4th Alavi meeting in year 2019.

International projects (No.1)

Evaluation the effects of HMGA2 on tumor development and stemness effect of gene on human breast cancer

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Behzad Baradaran


Morten Gjerstorff


Behzad Manasoori

Breast cancer (BC) is one of the most common cancers among women. This cancer has a high prevalence, incidence in Iran. The disease is diagnosed in advanced stages, and most patients in Iran are younger (10 years) compared to patients in Western countries. In breast cancer, a small percentage of cells have the ability to start tumor growth, invasion, metastasis, and have resistance feature to treatment; these cells are known as cancer stem cells. HMGA2 and CD133 are among the proteins that increased in cancer stem cells, and some microRNAs which known as tumor suppressor are reduced.
The aim of this study was to evaluate the role of the HMGA2 gene as one of the factors of cancer stem cells and its effect on the stemness marker of CD133 in breast cancer cells. It is also attempting to target these two proteins by inducing micro-RNA, and investigating the effects of the micro-RNA on migration, invasion, and cancer stemness, taking an effective step in the modern treatment based on Target Therapy by nucleotide base treatment for Breast Cancer patients.
Clinical and in vitro studies of this project have come to an end, and we have achieved acceptable results in regulating gene expression as a targeted therapy for breast cancer, and we hope that doing basic research in this area will be an effective step in the treatment of breast cancer.
The team's future goal is to investigate and introduce other micro-RNAs as regulatory small molecules for cancer, especially breast cancer, as well as determining their involved molecular mechanisms.
In a joint project titled “Evaluation the effects of HMGA2 on tumor development and stemness effect of this gene on human breast cancer” with the University of Southern Denmark, Mr. Behzad Mansoori will be a Ph.D. student of immunology and Dr. Morten Gjerstorff will act as a Danish supervisor.

Special thanks to Denmark

Aging Research Institute would like to make grateful acknowledgement to its Danish professors specially Professor Gjedde and Dr. Vafaee for all their efforts in donating a PET-scanner device from Denmark.It is also worthy of appreciation for the efforts of Mr. Akbar Azizi from our institute in transporting this device.


Albert Gjedde


Manouchehr Seyedi Vafaee


Akbar Azizi

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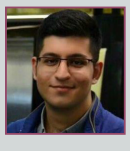

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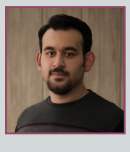

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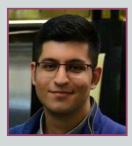

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