Healthy ageing and regenerative medicine

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The 8th European Congress of Biogerontology (ECB), joint with the 2nd International RESOLVE Meeting, was held on March 10–13, 2013, in Israel, starting at the Ben-Gurion University of the Negev, Beer-Sheba, and continuing at the Dead Sea. This outstanding event was in continuation of the activities of the Biological Section of the International Association of Gerontology and Geriatrics-European Region (IAGG-ER, <http://iagg-er.org/>), in a close cooperation with the EU Consortium RESOLVE (<http://www.resolve.punkt-international.eu/>). The meeting gathered together over 140 scientists from 24 countries all over the world, from Australia and Singapore to Canada and USA.

Among the major questions that were addressed are:

- Is ageing a common mechanism of age-related diseases?
- How can the breakthroughs in regenerative medicine and stem cell biology help in promoting healthy lifespan?
- What are other ways to achieve this goal?

The scientific part of the meeting included nine oral and one poster sessions and two keynote lectures

presented by Vera Gorbunova (“Cancer resistance and exceptional longevity”) and Nir Barzilai (“Discovering longevity genes and their target”). The oral sessions were as follows (for each session, presented are the relevant papers included in this special issue):

Session 1: Integrative view on ageing and related pathology (Demetrius and Driver 2013; Mitnitski et al. 2013; Rattan 2013). Chairs: Suresh Rattan (Denmark) and Vadim Fraifeld (Israel).

Session 2: Stem cells, induced pluripotency and tissue remodeling (Grafi 2013; Khokhlov 2013; Phanthong et al. 2013; Phelps et al. 2013; Raveh-Amit et al. 2013). Chairs: András Dinnyés (Hungary) and Gideon Grafi (Israel).

Session 3: Fibroproliferative repair—an emerging challenge of the 21st century (Sagiv and Krizhanovsky 2013; Thannickal 2013; Ziesche et al. 2013). Chairs: Victor J. Thannickal (USA) and Rolf Ziesche (Austria).

Session 4: Cellular senescence, immunoaging and immunocorrection (Konstantonis et al. 2013; Sagiv and Krizhanovsky 2013). Chairs: Graham Pawelec (Germany) and Doron Melamed (Israel).

Session 5: Novel strategies for the treatment of neuro- and muscle-degeneration (Buga et al. 2013; Phelps et al. 2013; Fiol-deRoque et al. 2013; Yeh et al. 2013). Chairs: Jose Julio Rodriguez (Spain) and Abraham Reznick (Israel).

Session 6: Genetics and epigenetics of ageing and longevity (Gentschew et al. 2013; Gonzalez-

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Covarrubias 2013; Lezzerini et al. 2013). Chairs: Gil Atzmon (USA) and Almut Nebel (Germany).

Session 7: Biomarkers and signatures of ageing (Duran et al. 2013; Mitnitski et al. 2013). Chairs: Joao Pedro de Magalhaes (UK) and Louis Shenkman (Israel).

Session 8: Lifespan extension—where we are and where to go? (Gertler and Cohen 2013; Muradian 2013). Chairs: Khachik Muradian (Ukraine) and George Roth (USA).

Session 9: Round Table “Converging Science and Health Policy: Is Ageing a Common Mechanism of Age-Related Diseases?” Chairs: Nir Barzilai (USA) and Vadim Fraifeld (Israel).

On the whole, the meeting provided a unique arena for discussing these principle issues, exchanging the ideas, and developing new contacts between researchers. A special emphasis was placed on the mechanistic links between aging and age-related pathology, many of which are associated with an imbalanced fibroproliferative repair. One of the major conclusions of the meeting is that understanding and combating the age-related diseases and fibroproliferative disorders in particular could be achieved only in the context of aging—a view which could lead for developing new strategies in biomedical research and health policy.

Not only the recognized scientists but also many young researchers, graduate and even undergraduate students actively participated in the meeting work. Three of them were awarded by the *Young Investigator Prize*:

- Friederike Flachsbart (Institute of Clinical Molecular Biology, Christian-Albrechts-University, Kiel, Germany): Beyond the forkhead (First Prize for the oral presentation).
- Hadas Raveh-Amit (Biotalentum Ltd, Godollo, Hungary): Cancer stem cells networks and protein misfolding (Second Prize for the oral presentation).
- Hagai Yanai (Ben-Gurion University of the Negev, Beer-Sheba, Israel): Slow but steady wins the race (Prize for the best poster).

The full programme and abstracts are available at the congress website: <http://biogerontology.wix.com/resolve>

This special issue of *Biogerontology* compiles invited review articles, research papers, opinions and methods presented at the 8th ECB, but which had gone

through the proper peer-reviewing process before acceptance for publication.

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References

- Buga A-M, Di Napoli M, Popa-Wagner A (2013) Preclinical models of stroke in aged animals with or without comorbidities: role of neuroinflammation. *Biogerontology*. doi:10.1007/s10522-013-9465-0
- Demetrius LA, Driver J (2013) Alzheimer's as a metabolic disease. *Biogerontology*. doi:10.1007/s10522-013-9479-7
- Duran AL, Potter P, Wells S, Kirkwood T, von Zglinicki T, McArdle A, Scudamore C, Meng Q-J, de Haan G, Corcoran A, Bellantuono I (2013) Shared Ageing Research Models (ShARM): a new facility to support ageing research. *Biogerontology*. doi:10.1007/s10522-013-9457-0
- Fiol-deRoque MA, Gutierrez-Lanza R, Terés S, Torres M, Barceló P, Rial RV, Verkhatsky A, Escrivá PV, Busquets X, Rodríguez JJ (2013) Cognitive recovery and restoration of cell proliferation in the dentate gyrus in the 5XFAD transgenic mice model of Alzheimer's disease following 2-hydroxy-DHA treatment. *Biogerontology*. doi:10.1007/s10522-013-9461-4
- Gentschew L, Flachsbart F, Kleindorp R, Badarinarayan N, Schreiber S, Nebel A (2013) Polymorphisms in the superoxide dismutase genes reveal no association with human longevity in Germans: a case-control association study. *Biogerontology*. doi:10.1007/s10522-013-9470-3
- Gertler AA, Cohen HY (2013) SIRT6, a protein with many faces. *Biogerontology*. doi:10.1007/s10522-013-9478-8
- Gonzalez-Covarrubias V (2013) Lipidomics in longevity and healthy aging. *Biogerontology*. doi:10.1007/s10522-013-9450-7
- Grafi G (2013) Stress cycles in stem cells/iPSCs development: implications for tissue repair. *Biogerontology*. doi:10.1007/s10522-013-9445-4
- Khokhlov AN (2013) Impairment of regeneration in aging: appropriateness or stochasticity? *Biogerontology*. doi:10.1007/s10522-013-9468-x
- Konstantonis D, Papadopoulou A, Makou M, Eliades T, Basdra EK, Kletsas D (2013) Senescent human periodontal ligament fibroblasts after replicative exhaustion or ionizing radiation have a decreased capacity towards osteoblastic differentiation. *Biogerontology*. doi:10.1007/s10522-013-9449-0
- Kozhevnikova OS, Korbolina EE, Stefanova NA, Muraleva NA, Orlov YL, Kolosova NG (2013) Association of AMD-like retinopathy development with an Alzheimer's disease

- metabolic pathway in OXYS rats. *Biogerontology*. doi:[10.1007/s10522-013-9439-2](https://doi.org/10.1007/s10522-013-9439-2)
- Lezzerini M, Smith RL, Budovskaya Y (2013) Developmental drift as a mechanism for aging: lessons from nematodes. *Biogerontology*. doi:[10.1007/s10522-013-9462-3](https://doi.org/10.1007/s10522-013-9462-3)
- Mitnitski A, Song X, Rockwood K (2013) Assessing biological aging: the origin of deficit accumulation. *Biogerontology*. doi:[10.1007/s10522-013-9446-3](https://doi.org/10.1007/s10522-013-9446-3)
- Muradian K (2013) ‘Pull and push back’ concepts of longevity and life span extension. *Biogerontology*. doi:[10.1007/s10522-013-9472-1](https://doi.org/10.1007/s10522-013-9472-1)
- Phanthong P, Raveh-Amit H, Li T, Kitiyanant Y, Dinnyes A (2013) Is aging a barrier to reprogramming? Lessons from induced pluripotent stem cells. *Biogerontology*. doi:[10.1007/s10522-013-9455-2](https://doi.org/10.1007/s10522-013-9455-2)
- Phelps M, Pettan-Brewer C, Ladiges W, Yablonka-Reuveni Z (2013) Decline in muscle strength and running endurance in klotho deficient C57BL/6 mice. *Biogerontology*. doi:[10.1007/s10522-013-9447-2](https://doi.org/10.1007/s10522-013-9447-2)
- Rattan SIS (2013) Healthy ageing, but what is health? *Biogerontology*. doi:[10.1007/s10522-013-9442-7](https://doi.org/10.1007/s10522-013-9442-7)
- Raveh-Amit H, Berzsenyi S, Vas V, Ye D, Dinnyes A (2013) Tissue resident stem cells: till death do us part. *Biogerontology*. doi:[10.1007/s10522-013-9469-9](https://doi.org/10.1007/s10522-013-9469-9)
- Sagiv A, Krizhanovsky V (2013) Immunosurveillance of senescent cells: the bright side of the senescence program. *Biogerontology*. doi:[10.1007/s10522-013-9473-0](https://doi.org/10.1007/s10522-013-9473-0)
- Thannickal VJ (2013) Mechanistic links between aging and lung fibrosis. *Biogerontology*. doi:[10.1007/s10522-013-9451-6](https://doi.org/10.1007/s10522-013-9451-6)
- Yeh C-Y, Verkhatsky A, Terzieva S, Rodríguez JJ (2013) Glutamine synthetase in astrocytes from entorhinal cortex of the triple transgenic animal model of Alzheimer’s disease is not affected by pathological progression. *Biogerontology*. doi:[10.1007/s10522-013-9456-1](https://doi.org/10.1007/s10522-013-9456-1)
- Ziesche R, Golec M, Samaha E (2013) The RESOLVE concept: approaching pathophysiology of fibroproliferative disease in aged individuals. *Biogerontology*. doi:[10.1007/s10522-013-9453-4](https://doi.org/10.1007/s10522-013-9453-4)