Dr. Gilad Lehmann

CURRICULUM VITAE AND LIST OF PUBLICATIONS

Personal Details:

Name:	**Gilad Lehmann**
Birth:	December 21,1980, Israel
Marital status:	Married + 2
Nationality:	Israeli and Italian
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Languages:	Fluent Hebrew and English

Aim: I am interested in a professional researcher position with preference to lead a research team. Technically, I have a broad experience and I would best fit to a multi-disciplinarity group that combines wet lab work with bioinformatics.

Employment

Currently	Since April, senior scientist at BioGenCell, a small start-up in the field of stem cell-based regenerative medicine. I will stop working there on September.
2020 -2021	September to March - Head of the genomic center at the Azrieli Faculty of Medicine, Bar-Ilan University.
2017 – 2020	Lab manager at the Cell Migration and Invasion laboratory (head: Dr. Hava Gil-Henn) at the Azrieli Faculty of Medicine, Bar-Ilan University.
2017	4 months at Dyn labs Ltd., in Assaf-Harofeh Medical Center, Zerifin, Israel. My role was to sequence DNA from biopsies of tumor lesions for personalized medicine.

Education:

2013 - 2016	Postdoctoral student in Medical Sciences at the Laboratory of Professor Aaron Ciechanover, the Cancer and Vascular Biology Research Center, Rappaport Faculty of Medicine and Research Institute, Technion, Israel.
2007 - 2012	Ph.D. in Medical Sciences, Laboratory for the Biology of Aging, The Shraga Segal Department of Microbiology and Immunology, Faculty of Health Sciences, Ben-Gurion

University of the Negev, Beer Sheva, Israel. *Dissertation topic*: Mitochondrial determinants of longevity in mammals (advisor: Prof. Vadim Fraifeld).

2005 - 2007 M.Sc. in Medical Sciences, Laboratory for the Biology of Aging, The Shraga Segal Department of Microbiology and Immunology, Faculty of Health Sciences, Ben-Gurion University of the Negev, Beer Sheva, Israel. Average grade for the courses (total 21 courses): 95
M.Sc. Research project: Comparative analysis of mtDNA base composition and longevity in vertebrates (supervisor: Prof. Vadim Fraifeld). Final M.Sc. grade: 94.

2002 - 2005 B.Sc. in Biology, Department of Life Sciences, Natural Sciences, Faculty of Natural Sciences, Ben-Gurion University of the Negev, Beer Sheva, Israel. *Research project* (during 3rd year): Comparative analysis of mtDNA and species - specific lifespan (supervisor: Prof. Vadim Fraifeld).

Internships:

1) The Marine Biological Laboratory (MBL) summer school for Molecular Biology of Aging (I was one of only two non-US citizens accepted for the course), July 25 to August 14, 2010 in Woods Hole, MA, USA.
2) Link-Age and Mark-Age Summer School for Biogerontology and biomarkers of ageing (ageing research projects within the 6th Framework Programme of the European Commission), June 29th to July 3rd, 2009 in Frejus, France.

Research experience:

1. Production of BioGenCell BGC10X autologous stem cells-based product. This was done in a clean room in compliance with GMP regulations and was used to treat a compassionate patient with critical limb ischemia (CLI).
2. Adoptive cell transfer (autologous cancer immunotherapy) project. The experimental procedures included (1) isolation of PBMCs from the patient's blood (2) assembly of MHC-peptides (neoantigens) on labeled IMMUDEX dextramers (3) FACS or MACS isolation of the bound T-cells (4) ELISpot assay to test the T-cells reactivity and (5) growing the isolated T-cells in culture. Following this, a similar but clinical workflow was carried out at the Rabin Medical Center Beilinson hospital.
3. Post-doctoral studies at the lab of Professor Aaron Ciechanover on (i) regulation of mitochondrial matrix proteins by the ubiquitin proteasome system and (ii) ubiquitin-proteasome system in bacteria. By using

bioinformatics, proteomics, and classical biochemical approaches I showed for the first time that ubiquitinated proteins are found in the matrix of isolated mitochondria. In bacteria, I found a new ubiquitin-like protein which we named UBact (for Ubiquitin Bacterial).

4. Ph.D. dissertation on my finding that the mitochondrial DNA GC% is a predictor of lifespan across mammalian species (advisor: Prof. Vadim Fraifeld). I used data mining, bioinformatics and statistical tools to construct a model and show that the combination of mitochondrial DNA GC%, body mass and body temperature explain ~80% of the variations in the mammalian species lifespan. Based on my PhD, a database called "MitoAge" was built that is available online (http://www.mitoage.info).
5. MSc. research project (Grade: **93** of 100) *Thesis Title:* Comparative analysis of mtDNA base composition and longevity in vertebrates (supervisor: Prof. Vadim Fraifeld). The project focused on the relationship between the mtDNA base composition of vertebrate species and their lifespans. This study employed data mining, bioinformatics tools and statistics and showed that the mtDNA GC% correlates with the mammalian lifespan. The results obtained are in support of the idea that the mammalian longevity could be determined by factors that are associated with the mtDNA.
6. 3rd-year research project towards a B.Sc. degree (Grade **97** of 100). *Project Title:* Comparative analysis of mtDNA and species-specific lifespan (supervisor: Dr. Vadim Fraifeld). The project focused on a comprehensive data mining and bioinformatics analysis of animal species mitochondrial DNAs (mtDNA) and lifespans. The results showed for the first time the there exist a correlation between the mtDNA base composition and animal species lifespan which was especially strong in mammals.

Teaching experience

Three years as a teaching assistant in the courses "Biology of Aging" for graduate students. Two years as a teaching assistant in the courses "Bacteriology" and "Chemistry" for undergraduate students.

Honors and awards

June 2015 — **The Amir Abramivich Research Prize** for the study on mitochondrial determinants of mammalian longevity.

January 2013 — **The Lady Davis Fellowship Trust** for Post-Doctoral studies at the Technion.

February 2010	**The Bergman prize 2010** – awarded (to our research group) by the Israeli Gerontological Society for the study on the biology of aging "Determinants of Aging, Longevity and Age-Related Diseases: New Strategies for Life Prolongation".
March 2008	Faculty of Health Sciences **Deans list** for achievements in studies and research.
October 2007	**Negev scholarship** for outstanding students – doctoral studies Kreitman School of Advanced Graduate Studies, Ben-Gurion University of the Negev.

Membership in scientific societies and committees

2019-present	Member of the executive committee in the Israeli Gerontological Society (Head of the biological division)
2008-2012	Member of the executive committee in the Israeli Gerontological Society (Head of the students' division)
2008-present	The Israel Gerontological Society

LIST OF PUBLICATIONS

(a) Peer-reviewed papers in scientific journals:

1. Tacutu R, Thornton D, Johnson E, Budovsky A, Barardo D, Craig T, Diana E, **Lehmann G**, Toren D, Wang J, Fraifeld VE, de Magalhães JP (2018) Human Ageing Genomic Resources: new and updated databases. *Nucleic Acids Res.* 46(D1):D1083-D1090. DOI: 10.1093/nar/gkx1042.
2. **Lehmann G**, Udasin RG, Livneh I, Ciechanover A (2017) Identification of UBact, a ubiquitin-like protein, along with other homologous components of a conjugation system and the proteasome in different gram-negative bacteria. *Biochem Biophys Res Commun* 483: 946-950. DOI: 10.1016/j.bbrc.2017.01.037
3. **Lehmann G**, Ziv T, Braten O, Admon O, Udasin RG, Ciechanover A (2016) Ubiquitination of specific mitochondrial matrix proteins. *Biochem Biophys Res Commun* **475**: 13-18. DOI: 10.1016/j.bbrc.2016.04.150.
4. **Lehmann G**, Udasin RG, Ciechanover A (2016) On the linkage between the ubiquitin-proteasome system and the mitochondria. *Biochem Biophys Res Commun* **473**: 80-86. DOI: 10.1016/j.bbrc.2016.03.055.
5. Toren D, Barzilay T, Tacutu R, **Lehmann G**, Muradian KK, Fraifeld VE (2015) MitoAge: a database for comparative analysis of mitochondrial DNA, with special focus on animal longevity. *Nucleic Acids Res* **44***:* D1262-1265. DOI: 10.1093/nar/gkv1187.

6. **Lehmann G**, Muradian KK and Fraifeld VE (2013) Telomere length and body temperature – independent determinants of mammalian longevity? *Front Genet* 4, 111. DOI: 10.3389/fgene.2013.00111.
7. Tacutu R, Craig T, Budovsky A, Wuttke D, **Lehmann G**, Taranukha D, Costa J, Fraifeld V, de Magalhaes JP (2013) Human ageing genomic resources: integrated databases and tools for the biology and genetics of ageing. *Nucleic Acids Res* **41**: D1027-D1033. DOI: 10.1093/nar/gks1155.
8. Muradian K, **Lehmann G**, Fraifeld V (2010) NUMT ("new mighty") hypothesis of longevity. *Rejuvenation Research* **13**: 152-155. DOI: 10.1089/rej.2009.0974
9. de Magalhaes JP, Budovsky A, Costa C, **Lehmann G**, Fraifeld V, Church GM (2009) The Human Ageing Genomic Resources: online tools for gerontology. *Aging Cell* 8: 65-72. DOI: 10.1111/j.1474-9726.2008.00442.x.
10. **Lehmann G**, Segal E, Tacutu R, Muradian K, and Fraifeld V (2008) Mitochondrial determinants of mammalian longevity. *Problems of Aging and Longevity* 17: 211-229.
11. **Lehmann G**, Segal E, Muradian K, Fraifeld V (2008) Do mitochondrial DNA and metabolic rate complement each other in determination of the mammalian maximal life span? *Rejuvenation Research* 11: 409-417. DOI: 10.1089/rej.2008.0676.
12. **Lehmann G**, Budovsky A, Muradian K, Fraifeld V (2006) Mitochondrial genome anatomy and species-specific lifespan. *Rejuvenation Research* 9: 223-226. DOI: 10.1089/rej.2006.9.223.

(b) Papers in students journals:

1. **Lehmann G** (2010) Breakthrough in the research of aging and longevity. *Dabeshet* **82**: 24-25.

(c) Presentations at scientific conferences/meetings:

1. **Lehmann G**, Muradian K, Barzilay T, Fraifeld VE (2015) Mitochondrial determinants of mammalian longevity. CNRS – Jacques Monod Conference "Comparative biology of aging", Roscoff, France, October 12-16 (**oral**).
2. Toren D, Barzilay T, Tacutu R, **Lehmann G**, Muradian KK, Fraifeld VE (2015) MitoAge: a database for comparative analysis of mitochondrial DNA, with special focus on animal longevity. CNRS – Jacques Monod Conference "Comparative biology of aging", Roscoff, france, October 12-16 (poster).
3. **Lehmann G,** Muradian KK, Fraifeld VE. Genomic predictors of mammalian longevity. 9th European Congress of Biogerontology, Seville, Spain, October 16-18, 2014 (**oral**).

4. **Lehmann G**, Muradian KK, Fraifeld VE. Three-pathway model of mammalian longevity. Sixth conference: Strategies for Engineered Negligible Senescence (SENS), Queens' College, Cambridge, UK, September 3-7, 2013 (poster).
5. **Lehmann G**, Muradian K, Fraifeld V. NUMT (‘‘New Mighty’’) hypothesis of longevity: update. The 8th European Congress of Biogerontology (ECB). Ben-Gurion University of the Negev, Beer-Sheva, Israel, 10-13 March (poster).
6. **Lehmann G**, Muradian K, Fraifeld V. Mitochondrial Determinants of the Mammalian Life Span. Eurosymposium on Healthy Ageing. *A new age of long term health and longevity*. Brussels, December 12-14, 2012 (**oral**).
7. **Lehmann G**, Taranukha D, Muradian K, Fraifeld V. Back to the Temperature. Fifth conference: Strategies for Engineered Negligible Senescence (SENS), Queens' College, Cambridge, UK, August 31 – September 3, 2011 (**oral**).
8. **Lehmann G**, Muradian K, Fraifeld V. Mitochondrial Determinants of Longevity: *A New Wind of the Old Story*. Gerontological Society of America 62nd Annual Scientific Meeting, Atlanta, Georgia, November 18-22, 2009 (**oral**).
9. **Lehmann G**, Zagorodniy A, Muradian K, Fraifeld V. Opposite correlations of nuclear and mitochondrial DNA base composition with maximum life span in mammals. Forth Conference: Strategies for Engineered Negligible Senescence (SENS), Queens' College, Cambridge, UK, September 3-7, 2009 (poster).
10. **Lehmann G**, Segal E, Tacutu R, Fraifeld V, Khackik M. Mitochondrial DNA control region: base composition and correlation with maximum life span in mammals. The 19th IAGG World Congress, Paris, France, July 5-9, 2009 (poster).
11. **Lehmann G**, Segal E, Tacutu R, Muradian K, Fraifeld V Mitochondrial determinants of mammalian longevity. Understanding Aging: Biomedical and Bioengineering Approaches, UCLA, Los Angeles, CA, June 28-29, 2008, 8 http://www.mfoundation.org/UABBA/presenting/abstracts/lehmann. (**oral**; selected from submitted abstracts).
12. **Lehmann G**, Muradian K, Fraifeld V. Mitochondria and longevity: a new “wind” of the old story. The 2nd Ukraine-Israel Symposium on the Biology of Aging, Kiev, Ukraine, June 18–19, 2008 (**oral**; presented by V. Fraifeld).
13. **Lehmann G**, Segal E, Muradian K, Fraifeld V. GC content of mitochondrial DNA and metabolic rate are independent and powerful players in two major longevity pathways. EUROMIT 7 – The 7th European Meeting on Mitochondrial Pathology 2008, Stockholm: From basic mechanisms to disease and aging, June 11–14, 2008, 67 (poster).
14. **Lehmann G**, Segal E, Muradian K, Fraifeld V. Mitochondrial determinants of lifespan in warm-blood organisms. The 17th Bi-Annual Meeting of the Israeli Gerontological Society, Tel-Aviv, Israel, February 4–5, 2008, 149 (**oral**).

15. Tacutu R, Segal E, **Lehmann G**, Fraifeld V. RepeatSurveyor – a tool for visualization and analysis of mitochondrial DNA repeats. *Ibid.* (poster).

16. Segal E, **Lehmann G**, Tacutu R, Muradian K, Fraifeld V. Mammalian longevity is associated with the length of D-loop and the number of direct repeats in mitochondrial DNA. *Ibid.* (poster).

17. **Lehmann G**, Segal E, Muradian K, Fraifeld V. Two mitochondria-associated factors – GC content and metabolic rate explain over 3/4 of variation in mammalian maximum longevity. The 5th Congress of the Federation of the Israel Societies for Experimental Biology. Eilat, January 28–31, 2008, http://www.weizmann.ac.il/conferences/FISEB08/new_pages/other/abstracts_pdf/Posters%20A.pdf?eventid=1108 (poster).

18. **Lehmann G**, Segal E, Muradian K, Fraifeld V. Do mitochondrial DNA and metabolic rate complement each other in determination of the mammalian maximal life span? Third Conference: Strategies for Engineered Negligible Senescence (SENS), Queens' College, Cambridge, UK, September 6–10, 2007, (**oral**; selected from submitted abstracts).

19. **Lehmann G**, Segal E, Muradian K, Fraifeld V. Mitochondrial DNA base composition and longevity in different taxa of vertebrates. The 12th Congress of International Association of Biomedical Gerontology (IABG), Spetses Island, Greece, May 20-24, 2007 (poster).

20. **Lehmann G**, Budovsky A, Muradian KK, Segal E, Fraifeld VE. Codon usage in mitochondrial genome and life span of primates. The 3rd International Conference on Functional Genomics of Ageing, Palermo, Sicily, Italy, March 29 – April 1, 2006 (poster).

21. **Lehmann G**, Budovsky A, Muradian K, Fraifeld V (2005) Mitochondrial genome anatomy and species-specific lifespan. *Rejuvenation Res* 8 (Suppl 1): S-24 (#19). Second Conference: Strategies for Engineered Negligible Senescence (SENS), Queens' College, Cambridge, UK, September 7–11, 2005 (poster).

(d) Online resources:

1. The data on mitochondria-associated factors for different species have been organized and integrated in the Human Ageing Genomic Resources - GenAge and AnAge databases (Curator: V. Fraifeld) (http://genomics.senescence.info/index.html)

2. The database for comparative analysis of mitochondrial DNA characteristics with animal longevity: http://www.mitoage.info/.