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## BIOGRAPHICAL SKETCH

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NAME Gadi Pelled, Ph.D., D.M.D.	POSITION TITLE Assistant Professor
eRA COMMONS USER NAME (credential, e.g., agency login) pelledg	

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)

INSTITUTION AND LOCATION	DEGREE (if applicable)	MM/YY	FIELD OF STUDY
Hebrew University of Jerusalem	B.Sc.	1992	Medical Sciences
Hebrew University of Jerusalem	D.M.D.	1995	Dental Medicine
Hebrew University of Jerusalem	Ph.D.	2007	Tissue Engineering

### A. Personal statement

I have been investigating the use of adult mesenchymal stem cells (MSCs) for skeletal tissue regeneration for the last fifteen years. My studies have shown that MSCs were able to regenerate skeletal tissues such as bone and tendon. Moreover, I have shown using state-of-the-art nanotechnological tools that engineered bone generated by MSCs has similar chemical, topographical and nano-mechanical properties, as does natural mature bone. Importantly, in order to promote tissue regeneration and monitor the effect of stem cell implantation, state-of-the-art technologies are needed. I have used dynamic culture systems in my studies in order to investigate the feasibility of growing bone tissue in the lab. In addition, I have developed a novel imaging-based method to analyze tendon tissue mechanics, in vivo. So far I have published more than sixty research articles, reviews, book chapters and abstracts. My work has been reported in leading journals including: *Journal of Clinical Investigation*, *Biomaterials*, *Tissue Engineering*, *Journal of Orthopaedic Research*, *Journal of Bone and Mineral Research*, and *Molecular Therapy*. In addition, I have presented both invited and competitive lectures at numerous national and international meetings among them in the Orthopedic Research Society, American Society of Gene Therapy, and Tissue Engineering and Regenerative Medicine International Society. Recently, I have led a project aiming at ultrasound gene delivery to bone injury sites (Shapiro, 2014).

### B. Positions and Honors

#### Positions

Years	Position, Place
1998-2001	Residency in Oral Pathology; Hebrew University of Jerusalem, Faculty of Dental Medicine, Oral Pathology Department
2002 - 2007	Instructor, Skeletal Biotechnology Lab, Hebrew University of Jerusalem, Faculty of Dental Medicine
2007-	Research scientist, Skeletal Biotechnology Lab, Faculty of Dental Medicine; Hebrew University of Jerusalem, Jerusalem, Israel.
2006-	Research Scientist II, Skeletal Regeneration and Stem Cell Therapy Lab, Department of Surgery and Cedars-Sinai Regenerative Medicine Institute, Cedars- Sinai Medical Center, Los Angeles, CA.
2013-	Assistant Professor, Skeletal Regeneration and Stem Cell Therapy Lab, Department of Surgery and Cedars-Sinai Regenerative Medicine Institute, Cedars- Sinai Medical Center, Los Angeles, CA.

## Honors

1996	Award for excellent D.M.D. thesis; The Hebrew University of Jerusalem, Israel.
1999	Scholarship for biomedical research training; Israel Ministry of Health
2000-2003	Rector's scholarship for excellent graduate students; The Hebrew University of Jerusalem, Israel.
2000	The Golda Meir Fellow for Excellence; The Hebrew University of Jerusalem, Israel.
2002	The Isaac Kaye innovations award; The Hebrew University of Jerusalem, Israel.
2003	Travel award; American Society of Gene Therapy (ASGT)- annual meeting
2003	Award for best young investigator poster; European Tissue Engineering Society (ETES)- annual meeting
2003	Short-term research grant; Minerva foundation.
2004	Finalist, New Investigator Research Award (NIRA); Orthopedic Research Society (ORS) 50th annual meeting.
2005	The Harvey M. Kruger Family Center For Nanoscience and Nanotechnology prize, The Hebrew University of Jerusalem, Israel.
2009	Travel award: The Institute of Molecular Imaging Sciences of the Academy of Molecular Imaging – World Molecular Imaging Congress 2009.
2012-	Member of Editorial Board: <i>Journal of Regenerative Medicine and Tissue Engineering</i>

## **C. Peer-reviewed publications (out of 59, h-factor currently 26)**

1. Sheyn D, Mizrahi O, Benjamin S, Gazit Z, **Pelled G**, Gazit D. Genetically modified cells in regenerative medicine and tissue engineering. *Adv Drug Deliv Rev.* 2010; 62(7-8):683-698.
2. Garty S, Kimelman-Bleich N, Hayouka Z, Cohn D, Friedler A, **Pelled G**, Gazit D. Peptide-modified "smart" hydrogels and genetically engineered stem cells for skeletal tissue engineering. *Biomacromolecules*, 2010; 11(6):1516-1526 .
3. Kallai I, van Lenthe H, Ruffoni D, Zilberman Y, Müller R, **Pelled G**, Gazit D. Quantitative, structural and image-based mechanical analysis of nonunion fracture repaired by genetically engineered mesenchymal stem cells. *J Biomech.* 2010;43(12):2315-20.
4. #Sheyn D, #**Pelled G**, Netanel D#, Domany E, Gazit D. The Effect of Simulated Microgravity on Human Mesenchymal Stem Cells Cultured in an Osteogenic Differentiation System: A Bioinformatics Study. *Tissue Eng Part A.* 2010;16(11): 3403-3412. (# Equal contribution).
5. Sheyn D, Rütthemann M, Mizrahi O, Kallai I, Zilberman Y, Tawackoli W, Kanim LE, Zhao L, Bae H, **Pelled G**, Snedeker J, Gazit D. Genetically Modified Mesenchymal Stem Cells Induce Mechanically Stable Posterior Spine Fusion. *Tissue Eng Part A.* 2010;16(12):3679-86.
6. Kimelman-Bleich N, Seliktar D, Kallai I, Helm GA, Gazit Z, Gazit D, **Pelled G**. The effect of ex vivo dynamic loading on the osteogenic differentiation of genetically engineered mesenchymal stem cell model. *J Tissue Eng Regen Med.* 2011;5(5):384-93.
7. Smith BJ, Sutton GM, Wu X, Yu G, Goh BC, Hebert T, **Pelled G**, Gazit Z, Gazit D, Butler AA, Gimble JM. Ovariectomy and genes encoding core circadian regulatory proteins in murine bone. *Osteoporosis Osteoporos Int.* 2011;22(5):1633-9.
8. Kimelman-Bleich N, **Pelled G**, Zilberman Y, Kallai I, Mizrahi O, Tawackoli W, Gazit Z, Gazit D. Targeted Gene-and-host Progenitor Cell Therapy for Nonunion Bone Fracture Repair. *Mol Ther.* 2011;19(1):53-9.
9. Zhang Y, Gazit Z, **Pelled G**, Gazit D, Vunjak-Novakovic G. Patterning osteogenesis by inducible gene expression in microfluidic culture systems. *Integr Biol (Camb).* 2011;3(1):39-47.
10. Kallai I, Mizrahi O, Tawackoli W, Gazit Z, **Pelled G**, Gazit D. Micro-Computed Tomography-Based Structural Analysis of Various Bone-Tissue Regeneration Models. *Nat Protoc.* 2011;6(1):105-10.
11. Sheyn D, Kallai I, Tawackoli W, Cohn Yakubovich D, Oh A, Su S, Da X, Lavi A, Kimelman-Bleich N, Zilberman Y, Li N, Bae H, Gazit Z, **Pelled G**, Gazit D. Gene-Modified Adult Stem Cells Regenerate Vertebral Bone Defect in a Rat Model. *Mol Pharm.* 2011; 3;8(5):1592-601.
12. **Pelled G**, Snedeker JG, Ben-Arav A, Rigozzi S, Zilberman Y, Kimelman-Bleich N, Gazit Z, Müller R, Gazit D. Smad8/BMP2-engineered Mesenchymal Stem Cells Induce Accelerated Recovery of The Biomechanical Properties of The Achilles Tendon. *J Orthop Res.* 2012; 30(12):1932-9.

13. #Ben Arav A, #Pelled G, Zilberman Y, Kimelman-Bleich N, Gazit Z, Schwarz EM, Gazit D. Adeno-Associated Virus–Coated Allografts: A Novel Approach for Cranioplasty. *J Tissue Eng Regen Med.* 2012 Nov;6(10):e43-50. Epub 2012 Sep 3. PubMed PMID: 22941779. (# Equal contribution).
14. Shapiro G, Kallai I, Sheyn D, Tawackoli W, Koh YD, Bae H, Trietel T, Goldbart R, Kost J, Gazit Z, Gazit D, Pelled G. Ultrasound-mediated Transgene Expression in Endogenous Stem Cells Recruited to Bone Injury Sites. *Polym. Adv. Technol.* 2014;25: 525–531.

#### D. Research Support.

##### Ongoing Research Support

1. CIRM TR4-06713 “Gene Targeting to Endogenous Stem Cells for Segmental Bone Fracture Healing”  
12/1/13 – 11/30/16

The objective of the project is to develop a new therapeutic modality for segmental fracture repair consisting of ultrasound-mediated gene targeting to endogenous MSCs.

Role: Investigator.

2. NIH R01DE19902 “PTH Effects on Craniofacial Allografting”. 07/1/09 – 6/30/15

The goal of the proposal is to define the effects of PTH on bone healing using allografts with specific emphasis on scar tissue formation and inflammation.

Role: Investigator.

##### Completed Research Support:

1. Telemedicine and Advanced Technology Research Center (TATRC) U.S. Army Medical Research and Materiel Command. “Molecular and Tissue Imaging for Stem Cell Therapeutics and Tissue Engineering of Spinal Vertebrae”. (PI – D. Gazit)  
9/2009- 9/2012

Purpose: Develop molecular imaging tools for tracking genetically engineered MSCs implanted in vertebral bone defects.

Role: Co-I.

2. CIRM RT1-01027 “A Novel SPECT Microscopy System for 3D Imaging of Single Stem Cells In Vivo”.  
3/2009 - 2/2011 (PI- D. Wagenaar)

Purpose: Develop a new non-invasive nuclear microscope for the 3D visualization of individual stem cells within living laboratory animal subjects.

Role: Co-investigator.

3. CIRM TR2-01780 “Systemic Adult Stem Cell Therapy for Osteoporosis-Related Vertebral Compression Fractures”. 3/1/11- 2/28/14

The goals of the project are to develop a stem cell-based therapy for osteoporotic vertebral fractures. Our hypothesis is that that PTH will induce MSC homing to the bone defects leading to accelerated bone repair.

Role: Co-I.

4. CIRM RT2-02057 “Tri-Resolution Visualization System for Stem Cells and Tissue Regeneration Monitoring” 10/01/11- 31/07/12

The goal of this project is to develop a SPECT-MR imaging system with triple resolution capabilities for stem cell tracking in vivo.

Role: Co-I.