

PERSONAL DETAILS

Izhak Kehat

Identification number: 027841832

Date and place of birth: 23/8/1970 Haifa, Israel

ACADEMIC DEGREES

- 2005 Doctor of Philosophy
Department of Physiology, Faculty of Medicine.
Technion- Israel institute of technology.
- 1997 Doctor of Medicine
Faculty of Medicine. Technion- Israel Institute of
technology.
- 1992 Bachelor of Science in Medical Sciences
Faculty of Medicine. Technion- Israel Institute of
technology.

ACADEMIC APPOINTMENTS

- 2012 Assistant Professor, Faculty of Medicine. Technion- Israel
Institute of technology.
- 2007 Post doctoral fellow. Jeffery D. Molkenin Lab. Howard Hughes
Medical Institute. Cincinnati Children's hospital Medical Center
- 2006 Clinical Lecturer, Technion-Israel Institute of Technology
- 2006 Teaching Assistant, Department of Physiology and Cell
Biophysics, Technion-Israel Institute of Technology
- 2001-2002 Teaching Assistant, Department of Physiology and Cell
Biophysics, Technion-Israel Institute of Technology

1990-1991 Teaching Assistant, Department of Anatomy, Technion-Israel
Institute of Technology

PROFESSIONAL EXPERIENCE

2012- Senior cardiologist, Echo lab, Department of Cardiology,
Rambam Medical Center

2011-2012 Echocardiography Fellow, Department of Cardiology,
Rambam Medical Center

2006-2011 Fellow, Department of Cardiology, Rambam Medical Center

2002-2006 Residency in Internal Medicine, Department of Internal
Medicine, Rambam Medical Center

1998-2000 Diving Medical Officer, Israeli Naval Medical Institute, IDF

1996-1998 Brigade Medical Officer, IDF

1997 ECFMG Certified

RESEARCH INTERESTS

Control of cardiac gene expression
Signaling in myocardial hypertrophy
Human embryonic stem cell derived cardiomyocytes
Diving and hyperbaric medicine

TEACHING EXPERIENCE

Tutor – Internal Medicine, Cardiology

Lecturer- Physiology for Medical Students TEAMS- American program, Dept. of
Medicine, Technion

Lecturer- Physiology for Medical Students Dept. of Medicine, Technion

Lecturer - Physiology for Engineers, Dept. for Bioengineering, Technion
Teaching Assistant, Anatomy for Medical Students (undergraduate)
Teaching Assistant, Cardiovascular Physiology for Medical Students
(undergraduate)
Teaching Assistant, Biophysics for Medical Students (undergraduate)
Lecturer, Diving Medicine Course (graduate)
Lecturer, Cardiovascular Physiology for Intensive Care Nursing
(graduate)

HONORS

2012 Zeigler award for original medical research
2012 Best lecturer award, Faculty of Medicine, Technion
2012 The Daniel Shiran outstanding cardiology fellow, Israel Heart
Society
2011 Legacy Heritage Research Institute Researcher
2006 Human Frontier Science Program Long term Fellowship
2005 J.J. Kelerman Young Investigator Award, Israel Heart Society
2005 The Rena Yarom Young Investigator Award for Cardiovascular
Research. Israeli group for heart research, subsection of the
International Society for Heart Research (ISHR)- European section
2004 The European Lecture. The 70th Annual meeting of the German
Society of Cardiology--Heart and Circulatory Research.
2004 Rambam Medical Center- Best Research Work -1st Prize.
2003 Complexity Science foundation scholarship
2002 American Heart Association - trainee abstract award
2002 Wolf Foundation Award for Research Students
2002 Henry Neufeld Research Award for Original Work, Israel Heart
Society
2001 American Heart Association - trainee abstract award
2001 Rambam Medical Center- Best Research Work -1st Prize.
2001 The Rena Yarom Young Investigator Award for Cardiovascular
Research. Israeli group for heart research, subsection of the
International Society for Heart Research (ISHR)- European section

- 1997 Best Intern award, Carmel Hospital, Haifa, Israel.
- 1997 Doctor of Medicine, Summa Cum Laude. Technion-Israel Institute of Technology.
- 1996 M.D. Dissertation - commended for excellence with special distinction.
- 1993 Scholarship for elective in medicine, at the University of Illinois.
- 1992 President's list for scholastic excellence, Technion-Israel Institute of Technology.
- 1992 Bachelor of Science in Medical Sciences, Summa Cum Laude.
- 1991 President's list for scholastic excellence, Technion-Israel Institute of Technology.
- 1990 President's list for scholastic excellence, Technion-Israel Institute of Technology.
- 1989 President's list for scholastic excellence, Technion-Israel Institute of Technology.

PUBLIC PROFESSIONAL ACTIVITIES

Ad hoc Reviewer – Cardiovascular Research, Journal of Cardiovascular Pharmacology and Therapeutics, Journal of American College of Cardiology, Thrombosis and Hemostasis, Circulation

Grant application Reviewer - Israel Academy of Sciences and Humanities Foundation (ISF), Austrian Science Fund

MEMBERSHIP IN PROFESSIONAL SOCIETIES

- American heart association
- Israeli group for heart research, subsection of the International Society for Heart Research (ISHR)- European section

PUBLICATIONS

Theses

M.D. dissertation: The physiological role of voltage and time dependant potassium conductance in the outer layer of the turtle retina. Commended for excellence with special distinction. Technion-Israel Institute of technology.

Supervisor: Prof. I. Perlman

Ph.D. Thesis: Electromechanical Assessment of Embryonic, Fetal and Adult Cardiomyocyte Cultures: Possible Role in the Regeneration of Functional Myocardium. Technion-Israel Institute of technology.

Supervisor: Prof. L. Gepstein

Refereed papers in professional journals:

- Basic research

1. **Kehat I**, Accornero F, Aronow BJ, Molkenin JD. Modulation of chromatin position and gene expression by HDAC4 through interaction with nucleoporins.
J Cell Biol. J Cell Biol. 2011 Apr 4;193(1):21-9
2. **Kehat I**, Davis J, Tiburcy M, Accornero F, Saba-EI-Leil MK, Maillet M, York AJ, Lorenz JN, Zimmermann WH, Meloche S, Molkenin JD. Extracellular Signal-Regulated Kinases 1 and 2 Regulate the Balance Between Eccentric and Concentric Cardiac Growth.
Circ Res. 2011 Jan 21;108(2):176-83
3. Tsika RW, Ma L, **Kehat I**, Schramm C, Simmer G, Morgan B, Fine DM, Hanft LM, McDonald KS, Molkenin JD, Krenz M, Yang S, Ji J. TEAD-1 overexpression in the mouse heart promotes an age-dependent heart dysfunction.
J Biol Chem. 2010 Apr 30;285(18):13721-35

4. Caspi O, Itzhaki I, Arbel G, **Kehat I**, Gepstien A, Huber I, Satin J, Gepstein L. In Vitro Electrophysiological Drug Testing using Human Embryonic Stem Cell Derived Cardiomyocytes.
Stem Cells Dev. 2008 May 29
5. Caspi O, Huber I, **Kehat I**, Habib M, Arbel G, Gepstein A, Yankelson L, Aronson D, Beyar R, Gepstein L. Transplantation of human embryonic stem cell-derived cardiomyocytes improves myocardial performance in infarcted rat hearts.
J Am Coll Cardiol. 2007 Nov 6; 50(19):1884-93
6. Huber I, Itzhaki I, Caspi O, Arbel G, Tzukerman M, Gepstein A, Habib M, Yankelson L, **Kehat I**, Gepstein L. Identification and selection of cardiomyocytes during human embryonic stem cell differentiation.
Faseb J 2007 Apr 13
7. **Kehat I**, Heinrich R, Ben-Izhak, O, Miyazaki H, Gutkind SJ, and Aronheim A. Inhibition of basic leucine zipper transcription is a major mediator of atrial dilatation.
Cardiovasc Res 2006 Jun 1;70(3):543-54
8. **Kehat I**, Khimovich L, Caspi O, Gepstein A, Shofti R, Arbel G, Huber I, Satin J, Itskovitz-Eldor J, Gepstein L. Electromechanical integration of cardiomyocytes derived from human embryonic stem cells.
Nat Biotechnol. 2004 Sep 26
9. Satin J, **Kehat I**, Caspi O, Huber I, Arbel G, Itzhaki I, Magyar J, Schroder EA, Perlman I, Gepstein L. Mechanism of spontaneous excitability in human embryonic stem cell derived cardiomyocytes.
J Physiol. 2004 Sep 1;559(Pt 2):479-96.
10. **Kehat I**, Amit M, Gepstein A, Itskovitz-eldor, J, Gepstein L. Development of cardiomyocytes from human ES cells.
Methods Enzymol 365:461-73; 2003
11. Snir M, **Kehat I**, Gepstein A, Coleman R, Itskovitz-Eldor J, Livne E, Gepstein L. Assessment of the Ultrastructural and Proliferative Properties of Human Embryonic Stem Cell-Derived Cardiomyocytes.

Am J Physiol Heart Circ Physiol. 285(6):H2355-63; 2003

12. **Kehat I**, Gepstein A, Spira A, Itskovitz-Eldor J, Gepstein L. High-resolution electrophysiological assessment of human embryonic stem cell-derived cardiomyocytes: a novel in vitro model for the study of conduction. *Circ Res* 91(8):659-61; 2002.
13. Kol S, **Kehat I**, Adashi EY. Ovarian Interleukin-1 induced gene expression: privileged genes threshold theory. *Med Hypotheses* 58(1):6-8, 2002
14. Feld, Y., Melamed-Frank, M., **Kehat, I.**, Tal, D., Marom, M., Gepstein, L. Electrophysiological Modulation of Cardiomyocytic Tissue by Transfected Fibroblasts Expressing Potassium Channels: A Novel Strategy to Manipulate Excitability. *Circulation* 29;105(4):522-9, 2002
15. **Kehat I**, Kenyagin-Karsenti D, Snir M, Segev H, Amit M, Gepstein A, Livne E, Binah O, Itskovitz-Eldor J, Gepstein L. Human embryonic stem cells can differentiate into myocytes with structural and functional properties of cardiomyocytes. *J Clin Invest* 108(3):363-4, 2001
16. Shoshani O, Ullmann Y, Shupak A, Ramon Y, Gilhar A, **Kehat I**, Peled IJ.
The role of frozen storage in preserving adipose tissue obtained by suction-assisted lipectomy for repeated fat injection procedures. *Dermatol Surg* 27(7):645-7; 2001
17. Shoshani O, Shupak A, Ullmann Y, Ramon Y, Gilhar A, **Kehat I**, and Peled IJ. The effect of hyperbaric oxygenation on the viability of human fat injected into nude mice. *Plast Reconstr Surg* 106(6):1390-6; 2000.

- **Clinical Research**

18. Shoshani O, Berger J, Fodor L, Ramon Y, Shupak A, **Kehat I**, Gilhar A, Ullmann Y. The effect of lidocaine and adrenaline on the viability of injected adipose tissue--an experimental study in nude mice
J Drugs Dermatol. 4(3):311-6. 2005
19. **Kehat I**, Shupak A, Goldenberg I, Shoshani O. Long-term hematological effects in Special Forces trainees.
Mil Med 168(2):116-9, 2003.
20. **Kehat I**, Shupak A. Hyperbaric oxygen vs. normobaric oxygen in carbon monoxide intoxication.
Undersea Hyperb Med 27:47, 2000.

Review papers

21. **Kehat I**, Molkenin JD. Molecular pathways underlying cardiac remodeling during pathophysiologic stimulation.
Circulation. 2010 Dec 21;122(25):2727-35.
22. **Kehat I**, Molkenin JD. Extracellular signal-regulated kinase 1/2 (ERK1/2) signaling in cardiac hypertrophy.
Ann N Y Acad Sci. 1188:96-102, 2010
23. **Kehat I**, Gepstein L. Electrophysiological coupling of transplanted cardiomyocytes.
Circ Res. 101(5):433-5, 2007
24. **Kehat I**, Hasin T, Aronheim A. The role of basic leucine zipper protein-mediated transcription in physiological and pathological myocardial hypertrophy.
Ann N Y Acad Sci 1080:97-109, 2006
25. Gepstein L, **Kehat I**. Restoration of heart functions using human embryonic stem cells derived heart muscle cells.
Discov Med. 5(25):11-7, 2005
26. Lev S, **Kehat I**, Gepstein L. Differentiation pathways in human embryonic stem cell-derived cardiomyocytes.
Ann N Y Acad Sci. 1047:50-65, 2005

27. **Kehat I**, Gepstein, L. Human embryonic stem cells for myocardial repair.
Heart fail rev 8,229-236, 20003

Patents

2004 , Derivation and use of human embryonic stem cell derived cardiomyocytes,
Pending

CONFERENCES

Plenary or invited talks

1. University of Michigan, Kellogg Eye Center, Grand Rounds
Ann-Arbor, Michigan, USA. November 16, 2000
Human Embryonic stem cell derived cardiomyocytes.
2. Stem Cells in Future Medicine and Geriatrics Seminar
Ben-Gurion University
Beer-Sheba, Israel. March 18, 2002
Derivation of Cardiomyocytes from human embryonic stem cells.
3. 68th German Cardiac society Meeting.
Manheim, Germany. April 5-7, 2002
Cardiomyocytes derived from human embryonic stem cells.
4. Leibniz Symposium on Cardiovascular Regeneration
1st Colloquium Center of Competence Cardiovascular Implants
Hannover, Germany. May 24-25, 2002
Human embryonic stem cell Derived Cardiomyocytes - implications for
research and medicine.
5. Technische Universität, Institut für Pharmakologie und Toxikologie,
Medizinische Fakultät Carl Gustav Carus.
Dresden, Germany. May 26, 2002
Human embryonic stem cell derived cardiomyocytes - implications for
research and medicine.
6. Friedrich-Alexander Universität Erlangen-Nürnberg, Department of
Pharmacology.
Erlangen, Germany. May 28, 2002
Human Embryonic Stem Cell Derived Cardiomyocytes - Implications For
Research and Medicine.
7. Cardiostim 2002. 13th international congress.
Nice, France. June 19-22.

- Human Embryonic Stem Cell Derived Cardiomyocytes for Myocardial Repair.
8. Cardioascona 2003. 4th International Ascona Workshop on Cardiomyocyte Cell Biology. Ascona, Switzerland, April 13-17th 2003
Human Embryonic Stem Cell Derived Cardiomyocytes.
 9. Transcatheter Cardiovascular Therapeutics. Washington DC, USA. September 15-19, 2003. Human Embryonic Stem Cell Derived Cardiomyocytes - Implications For Research and Medicine.
 10. **The European Lecture.** The 70th Annual meeting of the German Society of Cardiology--Heart and Circulatory Research. April 15-17, 2004, Mannheim, Germany.
Stem cell therapy in cardiology.
 11. Acute Cardiac Care. European Society of Cardiology Working Group. Rome, Italy. October 17-20, 2004. Stem Cell Based Therapy.
 12. 3rd Fairberg Cardiac Workshop. April, 2005. Portugal.
Human Embryonic Stem Cell Derived Cardiomyocytes.
 13. From Stress to Repair in the Cardiovascular System. King's College London. 27th March 2006.
London, UK
Human Embryonic Stem Cell Derived Cardiomyocytes for Cardiac Repair
 14. 4th Fairberg Cardiac Workshop. 23-27 April, 2006. Charlestone, USA.
The role of basic leucine zipper protein-mediated transcription in physiological and pathological myocardial hypertrophy
 15. **Opening Keynote Address.** 5th international meeting on substrate-integrated microelectrode arrays. July 4-7, 2006.
Reutlingen, Germany.
Human embryonic stem cell derived cardiomyocytes - in vitro assessment and in vivo applications
 16. Winter Meeting on Translational Basic Science of the Heart Failure Association of the European Society of Cardiology . 24-27 January 2007, Garmisch-Partenkirchen Germany.
Differentiation of human embryonic stem cells.
 17. International Society of heart research, European section annual meeting. June 2011, Haifa, Israel.
Modulation of chromatin position and gene expression by HDAC4 through interaction with nucleoporins.

18. Winter Meeting on Translational Basic Science of the Heart Failure Association of the European Society of Cardiology . 19-22 January 2012, Switzerland.
Modulation of gene expression by HDAC4
19. International Society for Heart Research European Section, Israeli subsection. 1 march, 2012, Bar Ilan
Global regulation of gene expression in the heart
20. Israel Heart society 59th annual meeting. 16-19 April, 2012, Tel-aviv
Extracellular Signal-Regulated Kinases 1 and 2 (ERK1/2) regulate the balance between concentric and eccentric cardiac growth
21. The Biochemistry, Biology and Pathology of MAP Kinases Conference. October 14-18, 2012 - Ma'ale Hachamisha, Israel
ERK1/2 regulate the balance between eccentric and concentric growth of the heart
22. Frontiers in Cardiovascular Regeneration International Symposium November 7-8, 2012. San Diego, USA
Mechanisms of cardiac concentric and eccentric growth
23. Israel Heart society heart failure working group meeting. October 25, 2012, Tel-Aviv
Inflammatory cardiomyopathy

RESEARCH GRANTS (ACTIVE)

2012-2015 Niedersachsen - Israel Research Cooperation Program - Unraveling the mechanisms of asymmetrical growth and localized translation in cardiac myocytes: molecular imaging and identification of signaling responsive RNA-binding proteins- 105,000 Eu

2012-2016 Israel Science Foundation (ISF) 873/12 – Histone deacetylase complex in cardiac hypertrophy, 852,000 NIS

2012-2015 Rappaport institute Grant – 60,000 USD

2012-2016 FP7-PEOPLE-2011-CIG Enigma – Histone Deacetylase protein complex controls cardiac hypertrophy, 100,000 Eu

2012 Technion intramural grant for cardiology – eccentric and concentric cardiac hypertrophy, 10,000 USD