CURRICULUM VITAE

2017

Hadassa Degani, Ph.D.

Title: Professor Emeritus

Birthday: February 3, 1943

Birthplace: Tel Aviv, Israel

Home Address: 4 Israel Gallili St.

Tel Aviv 6937704

Tl: 972 (0)504594294

Israel

Office Address: Department of Biological Regulation

Weizmann Institute of Science

Rehovot 76100

Israel

Tl: 972-8-934 2017

Fax: 972-8-934 6154

Email : hadassa.degani@weizmann.ac.il

# Education

1963-1966 B.Sc. Hebrew University, Jerusalem (Chemistry)

1967-1969 M.Sc. Feinberg Graduate School, Weizmann Institute, Rehovot (Physical

Chemistry)

1970-1974 Ph.D. State University of New York at Stony Brook, Stony Brook, N.Y.

(Chemistry)

Postgraduate work

1974 Biochemistry Department, SUNY at Stony Brook, N.Y

1975 Chemistry Department, Tel Aviv University, Tel Aviv

Faculty Appointments

1976 - 1979 Scientist, Isotope Department, The Weizmann Institute of Science, Rehovot

1979 - 1983 Senior Scientist, Isotope Department, The Weizmann Institute of Science, Rehovot

1983 - 1994 Associate Professor, Chemical Physics Department, The Weizmann Institute of Science, Rehovot

1994 - 2013 Professor, Department of Biological Regulation, The Weizmann Institute of Science, Rehovot

2013 Professor Emeritus, Weizmann Institute of Science

1995- 2010 Adjunct Professor of Radiologic Science, School of Medicine of The University of Pennsylvania, Philadelphia, USA.

Administrative Appointments

2000- 2005 Head, Department of Biological Regulation, Weizmann Institute of Science, Rehovot, Israel

2002- 2007 Advisor of the Weizmann Institute president for advancing Women in Science

Professional Experience Outside of the Weizmann Institute

1979 (July, August) Visiting Scientist, Department of Biochemistry, University of Oxford, England

1983 (July, August) Visiting Professor, Department of Pathology, Evanston Hospital, Evanston, USA

1983 – 1984 Visiting Professor, Department of Molecular Biophysics and Biochemistry, Yale University, New Haven, CT, USA

1987 (July, August) Visiting Professor, Nuclear Magnetic Resonance and Medical Spectroscopy, Fox Chase Cancer Center, Philadelphia, PN, USA

1996 – 1997 Visiting Professor, Unite de Biologie des Interactions Cellulaires, Pasteur Institute, Paris, France

2007- 2008 Visiting professor, Department of Radiology, Stanford University, Stanford, California, USA

Honors

1969 J.F. Kennedy Award, Feinberg Graduate School, Weizmann Institute, Rehovot

1978 Yaroslavsky Award for Biophysics

1980 Incumbent of the Wormser Career Development Chair

1997 Incumbent of The Fred and Andrea Fallek Professorial Chair in Breast Cancer Research.

1998 - Woman of Distinction Award; Hadassah International Jewish Women's Organization,

1999 The Noel Foundation and UNIFEM Life Award for Commitment to Breast cancer Research, USA.

2010 "Teva Founders Prize" for Imaging of Diseases Research

2011 European Society of Breast Cancer- Honorary Lecturer in recognition of exceptional achievements in the field of Breast Imaging

Memberships in Professional and Scientific Societies

The International Society of Magnetic Resonance in Medicine

American Association of Cancer Research

American Chemical Society

Special activities

Secretary of the Cancer Study Group of the International Society of Magnetic Resonance in Medicine (ISMRM), 1994-1996.

Member of the International Working Group for Breast MRI formed by the Public Health Services on Women’s Health, NIH, 1997-1999.

Member of the International Working Group for dynamic contrast enhanced MRI formed by NCI, NIH, 1999.

Member of the Editorial Board of NMR in Biomedicine 1998 - 2004.

Member of the academic committee and of the board of governors of Afeka, The Academic College of Engineering –Tel Aviv, 2002 – 2016.

Deputy Chairman of the scientific advisory Board for the Singapore Bioimaging Consortium, Singapore, 2005-2010.

**Bibliography**

**Research Publications**

1. H.A. Degani and D. Fiat, "NMR studies of metal-porphyrins". *J. Am. Chem. Soc*. **93**, 4281-4284 (1971).

2. N. Shavit, H. Degani and A. San Pietro, "Effect of ionophorous in chloroplasts". *Biochem. Biophys. Acta* **216**, 208-219 (1970).

3. H. Degani and N. Shavit, "Ion movement in isolated chloroplasts". *Archives of Biochem. and Biophys*. **152**, 339-346 (1972).

4. H. Degani, H.L. Friedman, G. Navon and E.M. Kosower, "Fluorimetric and circular dichroism measurements for antibiotic X-537A with univalent and divalent cations". *J.C.S. Chem. Comm*. 431-432 (1973).

5. H. Degani and H.L. Friedman, "Ion-binding by X-537A. Formulas, formation constants and spectra of complexes". *Biochemistry* **13**, 5022-5032 (1974).

6. H. Degani and H.L. Friedman, "Ion binding by X-537A. Rates of complexation of Ni2+ and Mn2+ in methanol". *Biochemistry* **14**, 3755-3761 (1975).

7. H. Degani, R.M.D. Hamilton and H.L. Friedman, "Ion-binding by X-537A. Equilibrium and rate of complexation of Co2+". *Biophysical Chemistry* **4**, 363-366 (1976).

8. H. Degani, "Kinetics of monensin complexation with sodium ions by 23-Na NMR spectroscopy". *Biophysical Chemistry* **6**, 345-349 (1977).

9. H. Degani, "NMR kinetic studies of the ionophore X-537A mediated transport of manganous ions across phospholipid bilayers". *Biochim. Biophys. Acta* **509**, 364-369 (1978).

10. H. Degani and G.A. Elgavish, "Ionic permeabilities of membranes. 23-Na and 7-Li NMR studies of ion transport across the membrane of phosphatidylcholine vesicles". *FEBS Lett.* **90**, 357-360 (1978).

11. H. Degani, A. Danon and S.R. Caplan, "Proton and Carbon-13 NMR studies of the polar lipids of Halobacterium halobium". *Biochemistry* **19**, 1626-1631 (1980).

12 H. Degani and R.E. Lenkinski, "Ionophoric properties of Angiotensin II peptides NMR kinetic studies of the hormone mediated transport of manganese ions across phosphatidylcholine bilayers". *Biochemistry* **19**, 3430-3434 (1980).

13. C. Lipschitz-Farber and H. Degani, "Kinetic of water diffusion across phospholipid membranes; 1-H and 17-O NMR relaxation studies". *Bioch. Biophys. Acta* **600**, 291-300 (1981).

14. H. Degani, S. Simon and A.C. McLaughlin, "The kinetics of ionophore X-537 A-mediated transport of manganese through dipalmitoylphosphatidylcholine vesicles". A 1-H-NMR Study". *Biochim. Biophys. Acta* **646**, 320-328 (1981).

15. F.T. Bonner, H. Degani and M.J. Akhtar, "Nitrogen-15 Magnetic Resonance Spectroscopy of trioxydinitrate: N-protonation of an Oxoanion". *J. Am. Chem. Soc*. **103**, 3739-3742 (1981).

16. H. Degani, M. Gochin, S.J.D. Karlish and Y. Shechter, "EPR studies and insulin like effects of vanadium in rat adipocytes". *Biochemistry* **20**, 5795-5799 (1981).

17. H. Degani and Z. Bar-On, "Nuclear Magnetic Resonance kinetic studies of diffusion and mediated transport across membranes". *Period. Biol*. **83**, 61-67 (1981).

18. F.F. Brown, I. Sussman, M. Avron and H. Degani, "NMR studies of glycerol permeability in lipid vesicles, erythrocytes and the alga *Dunaliella*". *Biochim. Biophys. Acta* **690**, 165-173 (1982).

19. H. Degani and M. Avron, "The diffusional water permeability in the halotolerant alga *Dunaliella* as measured by Nuclear Magnetic Resonance". *Biochim. Biophys. Acta* **690**, 174-177 (1982).

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21. H. Degani, A. Shaer, T.A. Victor and A.M. Kaye, "Estrogen-induced changes in high-energy phosphate metabolism in rat uterus: 31-P NMR studies". *Biochemistry* **23**, 2572-2576 (1984).

22. R. Tirosh, H. Degani and G. Berke, "Selective depletion of high energy phosphates induced in nucleated cells by antibody and complement: 31-P NMR study". *Complement* **1**, 207-212 (1984).

23. H. Degani, I. Sussman, G.A. Peschek and M. Avron, "Osmoregulatory metabolism of the alga *Dunaliella*; 13-C and 1-H NMR studies". *Biochim. Biophys. Acta* **846**, 313-323 (1985).

24. Z. Bar-On and H. Degani, "Permeability of alkylamines across phosphatidylcholine vesicles". *Biochim. Biophys. Acta* **813**, 207-212 (1985).

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31-P and 13-C NMR studies of choline and ethanolamine uptake". *Biochem. Biophys. Acta* **1095**, 5-16 (1991).

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66. E. Furman H, M. Margalit, A.F.Maretzek and H. Degani, "Angiogenic response of MCF7 human breast cancer to hormonal treatment: assessment by dynamic GdDTPA enhanced MRI at high spatial resolution", *JMRI* **6**, 195-202, 1996

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68. E. Furman-Haran, R. Margalit, D. Grobgeld and H. Degani, "Dynamic Contrast Enhanced Magnetic Resonance Imaging Reveals Stress Induced Angiogenesis in MCF7 Human Breast Tumors" *Proc. Natl. Acad. Sci. USA*, 93, 6247-6251, (1996).

69. Yen-ling T. Ting, D. Sherr and H. Degani,"Variations in the energy and phospholipid metabolism in normal and cancer human mammary epithelial cells" *Anticancer Research* , **16**, 1381-1388, (1996).

70. R. Katz-Brull and H. Degani, "Kinetics of choline transport and phosphorylation in human breast cancer cells; NMR application of the zero trans method". *Anticancer Research,* , **16**, 1375-1380, (1996).

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74. H. Degani, V. Gusis, D. Weinstein, S. Fields and S. Strano, Mapping pathophysiological features of breast tumors by MRI at high spatial resolution, *Nature Medicine* **3**, 780-782, (1997).

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89. R. Katz-Brull, R. Margalit and H. Degani, “Differential Routing of choline in implanted breast cancer and normal organs” *Magn Reson Med*, **46**, 31-38, (2001).

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93. E. Furman Haran and H. Degani, Parametric analysis of breast MRI, *J Comput Assist Tomogr*; Review. **26**: 376-386, (2002).

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**Patents**

**Title:** APPARATUS FOR MONITORING A SYSTEM IN WHICH A FLUID FLOWS

**Inventors:** DEGANI Hadassa

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| **Country** | **Application** | **Publication** | **Grant** | **Status** |
| Israel | 18/01/1996 - 116810 | - | - | Abandoned |
| PCT | 21/01/1997 - PCT/US97/00801 | 24/07/1997 - WO 97/26507 | - | Expired |
| Canada | 21/01/1997 - 2,242,599 | - | 2,242,599 - 05/04/2005 | Granted |
| Israel | 21/01/1997 - 125486 | - | 125486 - 11/03/2004 | Granted |
| U.S.A | 21/01/1997 - 09/101,708 | - | 6,353,803 - 05/03/2002 | Granted |
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| U.S.A | 14/09/2011 - 13/232,485 | 26/01/2012 - 2012-0022804-A1 | 8,498,835 - 30/07/2013 | Granted |

**Title:** THREE TIME POINT LUNG CANCER DETECTION, DIAGNOSIS AND ASSESSMENT OF PROGNOSIS (CT)

**Inventors:** DEGANI Hadassa, WEINSTEIN Daphna

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| **Country** | **Application** | **Publication** | **Grant** | **Status** |
| U.S.A | 08/04/2004 - 60/560,898 | - | - | Expired |
| PCT | 08/04/2005 - PCT/IB2005/001252 | 20/10/2005 - WO 2005/096694 | - | Published |
| U.S.A | 08/04/2005 - 10/593,887 | 29/01/2009 - 2009-0028405-A1 | 7,693,320 - 06/04/2010 | Granted |

**Title:** MRI CONTRAST AGENTS FOR DIAGNOSIS AND PROGNOSIS OF TUMORS

**Inventors:** DEGANI Hadassa, MILSTEIN David

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| **Country** | **Application** | **Publication** | **Grant** | **Status** |
| U.S.A | 31/01/2005 - 60/647,821 | - | - | Expired |
| PCT | 31/01/2006 - PCT/IL2006/000124 | 03/08/2006 - WO 2006/080022 | - | Published |
| European Patent Office | 31/01/2006 - 06701708.7 | 31/10/2007 - 1 848 466 | - | Examination |
| Israel | 31/01/2006 - 184965 | - | 184965 - 01/02/2012 | Granted |

**Title:** LUNG CANCER DIAGNOSIS USING MAGNETIC RESONANCE IMAGING DATA OBAINED AT THREE TIME POINTS

**Inventors:** DEGANI Hadassa, FURMAN-HARAN Edna

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| **Country** | **Application** | **Publication** | **Grant** | **Status** |
| PCT | 28/04/2005 - PCT/IB2005/002350 | 02/11/2006 - WO 2006/114658 | - | Expired |
| U.S.A | 29/04/2005 - 60/676,268 | - | - | Expired |
| U.S.A | 28/04/2005 - 11/912,554 | 07/08/2008 - US-2008-0187200-A1 | 7,949,164 - 24/05/2011 | Granted |
| U.S.A | 28/04/2005 - 13/091,196 | 06/10/2011 - 2011-0245657 | 8,116,546 - 14/02/2012 | Granted |

**Title:** METHOD FOR OBTAINING SPATIAL IMAGES THROUGH MRI AND PROCESSING THE RESULTING SPATIAL IMAGES

**Inventors:** DEGANI Hadassa, EYAL Erez

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| **Country** | **Application** | **Publication** | **Grant** | **Status** |
| U.S.A | 17/10/2006 - 60/829,705 | - | - | Expired |
| PCT | 17/10/2007 - PCT/US2007/081580 | 24/04/2008 - WO 2008/048982 | - | Expired |
| U.S.A | 17/10/2007 - 12/443,943 | 15/04/2010 - 2010-0092058-A1 | 8,175,366 - 08/05/2012 | Granted |

**Title:** METHOD AND APPARATUS FOR COMPUTER-AIDED DIAGNOSIS OF CANCER AND PRODUCT

**Inventors:** DEGANI Hadassa, EYAL Erez

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| --- | --- | --- | --- | --- |
| **Country** | **Application** | **Publication** | **Grant** | **Status** |
| U.S.A | 17/05/2007 - 60/938,626 | - | - | Expired |
| U.S.A | 15/02/2008 - 61/029,072 | - | - | Expired |
| PCT | 16/05/2008 - PCT/US2008/063936 | 27/11/2008 - WO 2008/144539 | - | Published |
| U.S.A | 16/05/2008 - 12/598,801 | 10/06/2010 - 2010-0142786-A1 | 8,509,570 - 13/08/2013 | Granted |

**Title:** METHOD AND APPARATUS FOR DUCTAL TUBE TRACKING IMAGING FOR BREAST CANCER AND DIAGNOSIS AND PRODUCT

**Inventors:** DEGANI Hadassa, EYAL Erez

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Country** | **Application** | **Publication** | **Grant** | **Status** |
| U.S.A | 14/04/2008 - 61/044,697 | - | - | Expired |
| PCT | 14/04/2009 - PCT/US2009/040423 | 22/10/2009 - WO 2009/129200 | - | Published |
| Eurasian Patent | 14/04/2009 - 201071191 | - | - | Examination |
| European Patent Office | 14/04/2009 - 09732437.0 | 05/01/2011 - 2 269 083 | - | Published |
| India | 14/04/2009 - 3423/KOLNP/2010 | 25/11/2011 - | - | Published |
| Israel | 14/04/2009 - 208193 | - | - | Filed |
| JapaU | 14/04/2009 - 2011-505121 | 26/05/2011 - 2011-516237 | - | Examination |
| U.S.A | 14/04/2009 - 12/936,940 | 17/02/2011 - 2011-0038521-A1 | 8,526,698 - 03/09/2013 | Granted |

Title: DIFFUSION ELLIPSOID MAPPING OF TISSUE

Inventor: DEGANI Hadassa

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| --- | --- | --- | --- | --- |
| U.S.A/PCT | 6/11/2017 15/344518 | - | - | Published |
|  |  |  | - |  |

The patent describes methods and devices for generating novel diffusion ellipsoid maps from diffusion tensor imaging (DTI) scan data. . The utility of the disclosed methods and devices in breast cancer detection is demonstrated.