

Eitan M. Akirav, Ph.D., M.Sc.

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US Citizen, Open for Relocation

Work Experience

Feb 2019 – Current Enzo Life Sciences, Farmingdale, NY

Direct, Business Development and Translational Science Group

- Identify new market opportunities, develop new product lines, identify customer segmentation in device and clinical diagnostics
- Conceive, build, and maintain big data repositories to provide long-term strategic planning (5-10 year out plan). Databases include: customer lists, potential leads, market data and trend.
- Develop and implement marketing strategies, disseminate information to sales team. Information includes: marketing collaterals, customer facing activities, and brand recognition.
- Coordinate R&D, validation, and business strategy for the US diagnostics market. Assist in GMP compliance, IVD/CE product marking, and FDA application for molecular diagnostics, anatomical pathology, and immunoassays program
- Build a network of clinical and operational collaborators to contribute to company publication, increase company branding and market awareness of Enzo products and services.
- Understand and prepare for changes in government regulations and reimbursement rates predicted to affect clinical laboratories in the US (PAMA).
- Team building, candidate screening and hiring of new talent to expand Enzo's business development, product management and product development teams.
- Adopt Enzo IP and technology to clinical utility together with the Translational Science and Laboratory Developed Tests (LDT) groups

Nov 2017 – Feb 2019 Enzo Life Sciences, Farmingdale, NY

Senior Manager, Business Development

April 2011 – Nov 2017 New York University- Winthrop Hospital (Mineola, NY)

Principal Investigator. Established Biomarker program focused on Autoimmunity and Drug Development

- Managed a group of scientists including postdocs, technicians, graduate students, medical fellows and undergraduate students
- Developed a one-of-a-kind biomarker for measuring cell loss in type 1 diabetes, type 2 diabetes, cancer, and multiple sclerosis (CNS) based on circulating cell-free DNA.
- Initiated, communicated and executed IRB-approved clinical trials. Served as PI on four human trials in close collaboration with endocrinologists and neurologists. Ensured compliance with HIPAA regulation and state guidelines.
- Coordinated sample collection, storage, shipping and analysis with centralized lab services
- Coordinated data analysis, interpretation, and communication with NYU Statistical Core
- Prepared and submitted manuscripts to high ranking peer-reviewed medical journals
- Applied, obtained and managed extramural awards from publicly traded companies (Novo Nordisk, Islet Sciences Inc.), private foundations (JDRF, National Multiple Sclerosis Society, The Hilton Foundation), and institutions (Medical College of Wisconsin, Benaroya Research Institute)

August 2011- Present Stony Brook University School of Medicine, Stony Brook, NY

Assistant Professor of Research, Academic

- Academic appointment allowing for student mentoring and academic duties such as curriculum formulation

Sept. 2015- Present Adelphi University, Garden City, NY

Adjunct Faculty, Academic

- Taught freshman students general biology with laboratory component (Bio 111).
- Served as a thesis mentor for Ms. Lauren Kenna working towards her M.Sc. degree

Jan 2014- Jan 2015 Islet Sciences Inc., San Diego, CA

Member of the Scientific Advisory Board

- Served as a principal member of the scientific advisory board
- Consulted on biomarker pipeline development for type 1 diabetes mellitus
- Participated in company meetings together with stakeholders and investors
- Consulted on IP, licensing, and commercialization of biomarker panels for type 1 diabetes

Education

June 2007 - Mar 2011 Yale University School of Medicine, New Haven, CT

Postdoctoral Fellow Laboratory of Kevan C. Herold, MD Department of Immunobiology

- Developed the first biomarker of β -cell loss in type 1 diabetes based on circulating cell-free DNA. Studies included analysis of animal samples and clinical samples from type 1 diabetic patients
- Initiated studies examining the role of the receptor for glycation endproducts (RAGE) in the context of T cell activation in asthma and T cells from type 1 diabetic patients
- Examined the role of glucose in β -cell recovery using the NOD-mouse model of type 1 diabetes following immunomodulation using anti-CD3 antibody

Jan 2003 - May 2007 Yale University School of Medicine, New Haven, CT

Graduate Student, PhD Laboratory of Nancy H. Ruddle, PhD Department of Immunobiology

- Established the role of thymic-derived B-cells in the expression of tissue-specific antigens in the thymus
- Determined the role of self-antigen in the activation of naturally-occurring CD25+CD4+ regulatory T cells in the experimental autoimmune encephalomyelitis mouse model of multiple sclerosis

Sept 2000 - Dec 2002 University of Toronto, Toronto, ON, Canada

Graduate Student, MSc Laboratory of Mladen Vranic, MD Department of Physiology

- Established the effects of leptin on glucose metabolism and the hypothalamic-pituitary-adrenal (HPA) axis in the STZ-treated rat model of type 1 diabetes

Sept 1997 - May 2000 Bachelor of Science Summa Cum Laude, Biology

Tel Aviv University, Tel Aviv, Israel

Patents

- **Granted**
 - US 20130230850 A1 Methods for using probes-based PCR detection to measure the levels of circulating demethylated beta cell-derived DNA as a measure of beta cell loss in diabetes
- **Pending**
 - US 20160017288 A1 Methods for inducing the formation of islet structures and improving beta cell function
 - US 20140256574 A1 Compositions and methods for diagnosing disease and disorders associated with beta cell death

Publications

1. **Eitan M. Akirav** and Dieter Schapfel. Surviving the PAMA Pinch- How the Protecting Access to Medicare Act (PAMA) will affect clinical laboratories – and what you can do about it. *The Pathologist*, March 2018.
2. Spelios MG, Afinowicz LA, Tipon, RC and **Akirav EM**. Human EndoC- β H1 β -cells form pseudoislets with improved glucose sensitivity and enhanced GLP-1 signaling in the presence of islet-derived endothelial cells. Jan. 2018, Epub ahead of print.
3. Kenna LA, Olsen JA, Spelios MG, Radin MS and **Akirav EM**. β -cell death is decreased in women with gestational diabetes mellitus. *Diabetology & Metabolic Syndrome*. Aug. 2016, 24;8(1):60.
4. Olsen JA, Kenna LA, Tipon RC, Spelios MG, Stecker MM and **Akirav EM**. A Minimally-invasive Blood-derived Biomarker of Oligodendrocyte Cell-loss in Multiple Sclerosis. *EBioMedicine*. June 27 2016. Epub ahead of print
5. Olsen JA, Kenna LA, Spelios MG, Hessner MJ, and **Akirav EM**. Circulating Differentially Methylated AmylinDNA as a Biomarker of β -cell loss in Type 1 Diabetes. *PLoSONE*, April 2016, eCollection.
6. Spelios MG, Olsen JA, Kenna LA and **Akirav EM**. Islet Endothelial Cells Induce Glycosylation and Increase Cell-Surface Expression of Integrin β 1 in β cells. *J. Biol. Chem.*, 2015 Jun 12;290(24): 15250-9.
7. **Akirav EM**, Henegariu O, Preston-Hurlburt P, Schmidt AM, Clynes R, Herold KC. The Receptor for Advanced Glycation End Products (RAGE) Affects T Cell Differentiation in OVA-Induced Asthma. *PLoS One*. 2014 Apr 23;9(4):e95678.
8. Spelios MG, Kenna LA, Wall B, **Akirav EM**. In Vitro Formation of β Cell Pseudoislets Using Islet-Derived Endothelial Cells. *PLoS One*, 2013 Aug 28;8(8):e72260
9. Lebastchi J, Deng S, Lebastchi AH, Beshar I, Gitelman S, Willi S, Gottlieb P, **Akirav EM**, Bluestone JA, Herold KC. Immune therapy and β -cell death in type 1 diabetes. *Diabetes*. 2013 May;62(5):1676-80.
10. **Akirav EM**, Preston-Hurlburt P, Garyu J, Henegariu O, Clynes R, Schmidt AM, Herold KC. RAGE expression in human T cells: a link between environmental factors and adaptive immune responses. *PLoS One*. 2012;7(4):e34698
11. **Akirav EM**, Lebastchi J, Galvan EM, Henegariu O, Akirav M, Ablamunits V, Lizardi PM, Herold KC. Detection of β cell death in diabetes using differentially methylated circulating DNA. *Proc Natl Acad Sci U S A*. 2011 Nov 22;108(47):19018-23.
12. **Akirav EM**, Xu Y, Ruddle NH. "Resident B Cells Regulate Thymic Expression of Myelin Oligodendrocyte Glycoprotein". *Journal of Neuroimmunology, J of Neuroimmunology*, 2011 June;235(1-2):33-9
13. **Akirav EM**, Baquero MT, Opare-Addo LW, Akirav M, Galvan E, Kushner JA, Rimm DL,

Herold KC. "Glucose and inflammation control islet vascular density and beta-cell function in NOD mice: control of islet vasculature and vascular endothelial growth factor by glucose". *Diabetes*, 2011, Mar;60(3): 876-83.

14. **Akirav EM**, Bergman CM, Hill M and Ruddle NH. "Depletion of CD4+CD25+ T Cells Exacerbates Experimental Autoimmune Encephalomyelitis Induced by Mouse, but not Rat, Antigens", *J Neurosci Res*. 2009 Nov 15;87(15):3511-9.

15. Chen Y, **Akirav EM**, Chen W, Henegariu O, Moser B, Desai D, Shen JM, Webster JC, Andrews RC, Mjalli AM, Rothlein R, Schmidt AM, Clynes R, and Herold KC. "RAGE ligation affects T cell activation and controls T cell differentiation", *Journal of Immunology*, 2008, Aug;181:4272-80

16. Inouye KE, Yue JT, Chan O, Kim T, **Akirav EM**, Park E, Riddell MC, Burdett E, Matthews SG, Vranic M. "Effects of insulin treatment without and with recurrent hypoglycemia on hypoglycemic counterregulation and adrenal catecholamine - synthesizing enzymes in diabetic rats." *Endocrinology*. 2006 Apr;147(4):1860-70

17. Chan O, Inouye KE, **Akirav EM**, Park E, Riddell MC, Matthews SG, Vranic M. "Hyperglycemia does not increase basal hypothalamo-pituitary-adrenal activity in diabetes, but it does impair the HPA response to insulin-induced hypoglycemia." *Am J Physiol Regul Integr Comp Physiol*. 2005 Mar 17

18. Chan O, Inouye K, **Akirav E**, Park E, Riddell MC, Vranic M, Matthews SG. "Insulin alone increases hypothalamo-pituitary-adrenal activity, and diabetes lowers peak stress responses." *Endocrinology*. 2005 Mar;146(3):1382-90

19. **Akirav EM**, Chan O, Inouye K, Riddell MC, Matthews SG, Vranic M. "Partial leptin restoration increases hypothalamic-pituitary-adrenal activity while diminishing weight loss and hyperphagia in streptozotocin diabetic rats." *Metabolism*. 2004 Dec;53(12):1558-64

20. Inouye K, Chan O, Riddell MC, **Akirav E**, Matthews SG, Vranic M. "Mechanisms of impaired hypothalamic-pituitary-adrenal (HPA) function in diabetes: reduced counterregulatory responsiveness to hypoglycemia." *Diabetes Nutr Metab*. 2002 Oct;15(5):348-55

Reviews:

1. Olsen JA and **Akirav EM**. Remyelination in multiple sclerosis: Cellular mechanisms and novel therapeutic approaches. *J Neurosci Res*. 2014 Oct; Epub ahead of print.

2. Ahmed ST, **Akirav E**, Bradshaw E, Buckner J, McKinney E, Quintana FJ, Waldron-Lynch F, Nepom J. Immunological biomarkers: catalysts for translational advances in autoimmune diabetes. *Clin Exp Immunol*. 2013 May;172(2):178-85

3. **Akirav EM**, Ruddle NH, Herold KC. "The role of AIRE in human autoimmune disease." *Nat Rev Endocrinol*. 2011 Jan;7(1):25-33. Epub 2010 Nov 23.

4. Ruddle NH, **Akirav EM**. "Secondary Lymphoid Organs: Responding to Genetic and

Environmental Cues in Ontogeny and the Immune Response". Journal of Immunology, 2009, Aug;183:2205-2212

5. **Akirav EM**, Kushner JA and Herold KC. "Beta cell mass and Type 1 diabetes: going, going, gone?" Diabetes. Diabetes. 2008 Nov;57(11):2883-8.

Book Chapters:

1. Fundamental immunology / editor, William E. Paul. Edition: 7th ed. Publisher: Philadelphia: Lippincott Williams & Wilkins, **Eitan Akirav**, Noelia Alonso Gonzalez, Lucy A. Truman, Nancy H. Ruddle, Chapter 3.

2. Stem Cell Therapy for Diabetes / editor, Shimon Efrat. Edition: 1st ed. Publisher: Springer, **Eitan M Akirav** and Kevan C. Herold, Chapter 12.

3. Fundamental immunology / editor, William E. Paul. Edition: 6th ed. Publisher: Philadelphia: Lippincott Williams & Wilkins, **Eitan Akirav**, Shan Laio and Nancy H. Ruddle, Chapter 3.

Invited Talks

2011 Boston Ithaca Islet Club, Oral Presentation, McGill University, Montreal, Quebec, Canada.

2011 Lecture at the JDRF Biomarker Workshop, NYC, NY

2012 Invited Speaker, University of Toronto, Faculty of Medicine, Dept. of Physiology, Toronto, Ontario, Canada.

2012 Boston Ithaca Islet Club, Oral Presentation, University of Vermont, VA.

2013 Invited Speaker, JDRF Long Island Chapter, Farmingdale, NY

2013 Invited Speaker, World Diabetes Day, Mineola, NY

2014 Boston Ithaca Islet Club, Oral Presentation, Joslin Diabetes Center, Boston, MA.

2014 Invited Speaker, Lecture at University of Massachusetts Diabetes Center of Excellence Grand Rounds, Amherst, MA.

2015 Invited Speaker, Keystone Symposia, Beta Cell Biology, Kyoto, Japan

2016 Invited Speaker, Diabetes Symposium, Medical College of Wisconsin, Milwaukee, WI

2016 Invited Speaker, Children's Hospital Seminar Series, Medical College of Wisconsin, Milwaukee, WI

2016 Invited Speaker, University of Alabama- Birmingham, Birmingham, AL

2016 Invited Speaker, University of Pittsburgh Medical Center, Endocrine University, Pittsburgh, PA