
Emrah Altindis, MSc, Ph.D.

Assistant Professor, Boston College, Biology Department

Adjunct Faculty, Joslin Diabetes Center and Harvard Medical School
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Education and Academic Research Experience

Boston College, Biology Department

Assistant Professor, September 2018-Present

- Research Topics:** 1. Functional characterization of viral insulin/IGF-1 like peptides
2. Exploring the role of microbiome in (i) Type 1 Diabetes and (ii) celiac disease autoimmunity
3. Evolution of insulin/IGF-1 superfamily

Harvard Medical School, Joslin Diabetes Center

Adjunct Faculty, January 2019-Present

Harvard Medical School, Joslin Diabetes Center

Instructor of Medicine at HMS and Research Associate at Joslin
Postdoctoral fellow with **Dr. C. Ronald Kahn**, September 2014 – September 2018

Integrative Physiology and Metabolism

Joslin Diabetes Center, Boston, MA, USA

Research Topics: (i) Identification of viral hormones and characterization of viral insulins, (ii) gut microbiota and T1D autoimmunity, (iii) regulation of host functions by gut microbiota, (iv) identification of exosomal proteins

Harvard Medical School

Postdoctoral fellow with **Dr. John Mekalanos**, August 2011–September 2014

Department of Microbiology and Immunobiology

Harvard Medical School, Boston, MA, USA

Research Topic: Type VI secretion system and outer membrane vesicles of *Vibrio cholera*

Bologna University and Novartis Vaccines

Graduate student with **Dr. Sabrina Liberatori** and **Dr. Rino Rappuoli**, June 2007-May 2011

Molecular and Cellular Biology, Bologna University

Research Center, Novartis Vaccines and Diagnostics Srl, Siena, Italy

Research Topic: Development of a new bioinformatics tool for antibacterial vaccine research and identification of new vaccine candidates for *Staphylococcus aureus* and *Streptococcus agalactiae*

Middle East Technical University

MSc. student with **Dr. Gulay Ozcengiz**, September 2004- May 2007

Department of Biotechnology, Graduate School of Natural and Applied Sciences

Middle East Technical University, Ankara, Turkey

Research Topic: Immunoproteomics characterization of *Bordetella pertussis*

Ege University

Undergraduate studies, 2000-2004

Department of Bioengineering, Faculty of Engineering

Ege University, Izmir, Turkey

Peer-reviewed Research Articles

1. Zhang F, **Altindis E**, Kahn CR, DiMarchi RD, Gelfanov V. A Viral Insulin-Like Peptide is a Natural Competitive Antagonist of the Human IGF-1 Receptor. *Mol Metab.* 2021 Aug 13;101316. Online ahead of print.
2. Chrudinová M, Moreau F, Noh HL, Páníková T, Žáková L, Friedline R, Valenzuela F, Kim J, Jiráček J, Kahn CR, **Altindis E***. Characterization of Viral Insulins Reveals White Adipose Tissue Specific Effects in Mice. *Mol Metab.* 2020 Nov 18;101121 **Corresponding author*
3. **Altindis E**, Cai W, Sakaguchi M, Zhang F, Guoxiao W, Liu F, Gelfanov V, De Meyts P, DiMarchi R and Kahn CR. Viral insulin-like peptides activate human insulin and IGF-1 receptor signaling: A paradigm shift for host-microbe interactions. **PNAS**, 2018 Mar 6;115 (10):2461-2466.
4. Fujisaka S., Pacheco JA., Soto M., Kostic Aleksandar, Dreyfuss JM., Pan H., Ussar S., **Altindis E.**, Li N., Bry L., Clish CB., and Kahn CR. Diet, genetics and gut microbiome drive dynamic changes in plasma metabolites. **Cell Rep.** 2018 Mar 13;22 (11):3072-3086.
5. Fujisaka S, Ussar S, Clish C, Devkota S, Dreyfuss J, Sakaguchi M, Konishi M, Softic S, **Altindis E et al.** Antibiotic Modification of Gut Microbiota Improves Insulin Signaling Via Effects on Bile Acids Depending on Host Genetics. **J Clin Invest.**, 2016 Dec 1;126 (12):4430-4443.
6. **Altindis E***, Dong T*, Catalano J, Mekalanos JJ. Secretome analysis of *Vibrio cholerae* Type VI Secretion System reveals a new effector-immunity pair. **mBio**, 2015 Mar 10;6 (2):e00075. * equal contribution
7. **Altindis E**, Cozzi R, Di Palo B, Necchio F, Mishra PR., Fontana MR, Soriani M, Bagnoli F, Maione D, Grandi G, Liberatori S. Protectome analysis: a new selective bioinformatics tool for bacterial vaccine candidate discovery. **Mol Cell Proteomics**, 2015 Feb;14 (2):418-29.
8. **Altindis E**, Fu Y, Mekalanos JJ. Proteomic analysis of the *Vibrio cholerae* outer membrane vesicles. **PNAS**, 2014 Apr 15;111 (15):E1548-56.
9. Mishra R, Mariotti P, Fiaschi L., Nosari S., Maccari S., Liberatori S, Fontana M R, Pezzicoli A, Falugi F, **Altindis E et al.** . *Staphylococcus aureus* FhuD2 is involved in the early phase of staphylococcal dissemination and generates protective immunity in mice. **J Infect Dis**, 2012 Oct 1;206 (7):1041-9, 2012.
10. Doro F, Liberatori S, Rodríguez-Ortega MJ, Rinaudo CD, Rosini R, Mora M, Scarselli M, **Altindis E et al.** Surfome analysis as a fast track to vaccine discovery: identification of a novel protective antigen for Group B *Streptococcus* hypervirulent strain COH1. **Mol Cell Proteomics**, 2009 Jul; 8 (7):1728-37.
11. **Altindis E**, Tefon BE, Yildirim V, Ozcengiz E, Becher D, Hecker M, Ozcengiz G. Immunoproteomic analysis of *Bordetella pertussis* and identification of new immunogenic proteins. **Vaccine**, 2009 Jan 22; 27 (4):542-8.

Submitted Research Articles (under review)

1. Girdhar K, Huang Q, Chrudinova M, Yang Y., Tolstikov V., Kiebish M.A. Ludvigsson JF, Palm NW, Ludvigsson J, **Altindis E***. Children Developing Celiac Disease Have a Distinct and Proinflammatory Gut Microbiota in the First 5 Years of Life. *BioRxiv*. **Corresponding author, Nature Communications*
<https://www.biorxiv.org/content/10.1101/2020.02.29.971242v2>
2. Girdhar K, Huang Q, Chow I, Raisingani A, Brady C, Atkinson M, Kwok W. Kahn CR **Altindis E.*** A human gut commensal, *Parabacteroides distasonis* enhances Type 1 Diabetes autoimmunity via molecular mimicry.
<https://www.biorxiv.org/content/10.1101/2020.10.22.350801v1> **Corresponding author, PNAS*
3. Garcia-Martin R, Brasil Brandao B, **Altindis E*** and Kahn CR*. Tissue Differences in the Exosomal Proteome and Their Potential as Indicators of Altered Tissue Metabolism.**Co-corresponding author, Cell Reports*
4. Marion Soto², Girdhar K, Orliaguet L, Cederquist C, Huang Q¹, Sundaresh B, Hu J, Canfora EE, Dirice E, Fujisaka S⁷, Goossens GH, Blaak EE, Kulkarni RN, Kahn CR, **Altindis E***. Gut Microbiota Regulate Pancreatic Growth, Exocrine Function and Gut Hormones **Corresponding author, Diabetes*

Reviews, Chapters and Monographs

1. Girdhar K, Powis M, Raisingani A, Chrudinová M, Huang R, Tran T, Sevgi K, Dogru YD, **Altindis E***. Viruses and Metabolism: The Effects of Viral Infections and Viral Insulins on Host Metabolism. *Annu. Rev. Virol.* 2021, *in press*.
2. Dedrick S., Sundaresh B., Huang Q., Brady C., Yoo T., Cronin C., Rudnicki C., Flood M., Momeni B., Ludvigsson J., **Altindis E.*** The Role of Gut Microbiota and Environmental Factors in Type 1 Diabetes Pathogenesis. *Front Endocrinol (Lausanne)*. 2020 Feb 26;11:78.
3. Huang Q., Kahn C.R., **Altindis E.*** Viral Hormones: Expanding Dimensions in Endocrinology. **Endocrinology**, **2019**, Volume 160, Issue 9, September, 2165–2179.
4. **Altindis E.** Antibacterial Vaccine Research in 21st Century: From Inoculation to Genomics Approaches. **Current Topics in Medicinal Chemistry**, **2013** October v13:20
5. **Altindis E**, Izulla P. An overview of African health: this time for Africa? Building on 2010 FIFA World Cup success. **Expert Rev Anti Infect Ther**, **2010** Dec; 8(12):1325-8.
6. **Altindis E.** Vaccines for all: Institut Pasteur vaccinology course. **Expert Rev Vaccines**, **2010** Sep; 9(9):1023-6.
7. **Altindis E**, Gulce Iz S, Ozgun Ozen M, Nartop P, Deliloglu Gurhan I, Gurel A. Plant Derived Edible Vaccines and Therapeutics. **Frontiers in Clinical Drug Research-Anti-Infectives**, **2014**, ISBN: 978-1-60805-855.
8. **Altindis E.** A Proteomic Approach for *Bordetella pertussis*. **Book. VDM Verlag** , **2009** ISBN-10: 3639141091

Invited Seminars and Conference Talks

1. **Discovery of Microbial Insulin Mimics Leads to the Identification of Unique Characteristics.** Institute of Biomedical Investigations (**Autonomous University of Madrid**, Spain). Host: Prof. Wolfgang Link.
2. Expanding the Dimensions in Insulin Research: Discovery of Viral Insulins. April 30, **2021**. **University of Algarve** (Portugal), Biomedicine Research Centre. Host: Prof. Maria Leonor Faleiro.
3. Insulin and Viral Insulin Research. **Boğaziçi University** (Istanbul, Turkey) Science Club. May 22, **2021**. 15. Molecular Biology and Genetics Meeting. Host: Boğaziçi University Science Club
4. Characterization of Microbial Insulin/IGF-1 Mimics. April 14, **2021**. **Boston College** Chemistry Department. Host: Prof. Jianmin Gao
1. Discovery of Microbial Insulin Mimics. April 13, 2021. Host: **Indiana University** Biology Department Seminar Series. (*Every year, the microbiology graduate student body nominates a guest speaker to give a talk, and I was honored to be selected by their votes. I did not know any of the students).
2. Discovery and Characterization of Microbial Insulin Mimics. March 31, **2021**. **Ohio University** - Basic and Translational Seminar Series. Host: Associate Prof. Kevin Lee
3. Discovery and Characterization of Microbial Insulins. **Indiana University**, School of Medicine. Department of Microbiology and Immunology. November 12, **2020**. Host: Prof. Christopher Robinson
4. Discovery of microbial insulin mimics: Do they play a role in diabetes? **North Arizona University**, Pathogen and Microbiome Institute. March 4, **2020**. Host: Prof. Jason Ladner
5. Invited Speaker. Bridging Virology and Endocrinology: Viral Hormones. 14th Annual Peptide Therapeutics Symposium, Peptide Therapeutics Foundation/ October 24-25, **2019**, Salk Institute, La Jolla, California
6. Insulin Goes Viral: Characterization of Microbial Insulin Mimics in Human Disease. **University of Minnesota**, Division of Rheumatic and Autoimmune Diseases. 07/24/**2019**. Host: Prof. Brian Fife
7. Viral Endocrinology: Discovery of Viral Insulins. American Society of Virology Annual Meeting. July 19-24, **2019**, Minneapolis, MN

8. Gut Microbiota Regulate Pancreatic Growth, Exocrine Function, and Gut Hormones. 79th American Diabetes Association Meeting. June 7-11, **2019**, San Francisco, CA
9. “Expanding Dimensions in Diabetes Research: Discovery of Microbial Insulin mimics” Stanford University Diabetes Research Center, *Stanford University*. June 7, **2019**. Host: Prof. Katrin J. Svensson, Ph.D.
10. Microbial Insulin Mimics in Type 1 Diabetes Autoimmunity. Gordon Research Conference: IGF and Insulin System in Physiology and Disease, March 10 - 15, **2019**, Ventura, CA.
11. Expanding Dimensions in Host-Microbe Interactions: Microbial Insulin mimics Center for Infectious Diseases, University of Texas, Austin. Center for Infectious Diseases, March 8, **2019**, Austin, USA. Host: Prof. Bryan W Davies, PhD
12. Discovery of Viral Hormones and Characterization of Viral Insulins. Channing Division of Network Medicine Seminar Series, *Harvard Medical School*, January 11, **2019**, Boston, USA. Host: Prof. Yang-Yu Liu, PhD
13. **Keynote Lecture**: Viral insulin-like peptides activate insulin and IGF-I receptor signaling. 43rd Symposium on Hormones and Cell Regulation, European Society of Endocrinology (ESE). October 10, **2018**. Alsace, France.
14. Discovery of Viral insulins. *Pasteur Institute*, October 5, **2018**, Paris, France. Host: Frédéric Tangy, PhD
15. Identification of Cross Reactive Insulin Immunogenic Epitopes from Commensal Gut Microbes. 78th American Diabetes Association Meeting, June, **2018**, Orlando, USA
16. Viral Insulin-like Peptides Activate Human Insulin and IGF-1 Receptor Signaling: A New Paradigm for Host-Microbe Interactions. January, **2018**. Joslin Diabetes Center Seminar Series, Boston, USA.
17. Viral Hormones and Insulins. January, **2018**. BTBC, Boston, USA.
18. Viral Insulin-Like Peptides Are New Ligands of Human Insulin and IGF-1 Receptors. June, **2017**, 77th American Diabetes Association Meeting, San Francisco, USA.
19. Fecal Proteomics Analysis Provides a Novel Window into the Effects of Diet and Gut Microbiome on Host Gut Metabolism. Cellular Mechanisms and Cell-Based Therapies of Diabetes, **2016**. Boston, USA.
20. MetaVaccinology: A new bacterial vaccine discovery tool. **2011**, 5th Vaccine and ISV Annual Global Congress, Seattle, USA.
21. Proteomics and Vaccinology: a case study for Group B Streptococcus. **2009**, 2nd International Workshop on Expression, Structure and Function of Membrane Proteins, Florence, Italy.

Current External Funding

1. NIH, NIDDK K01, Mentored Research Scientist Career Development Award. (2018-2021)
2. The G. Harold & Leila Y. Mathers Foundation Research Award. (2019-2022)
3. The G. Harold & Leila Y. Mathers Foundation Research Award. (2020-2023)

Completed External Funding

1. Mary K. Iacocca Senior Postdoctoral Fellowship, Iacocca Family Foundation (2015-2016).

Teaching

1. **Microbiome and Human Disease (BIOL510001)**
2. **Medical Biochemistry and Metabolism (BIOL4290)**

Service

1. IACUC 2019-
2. Graduate Admissions Committee 2019-
3. Academic Integrity Committee 2019-
4. Diversity, Equity and Inclusion Committee 2020-

Other Experience and Professional Membership

1. The Mathers Foundation Advisory Committee 2021-
2. The Juvenile Diabetes Research Foundation Peer Review Committee 2020
3. Czech Science Foundation, Peer Review Committee 2020
4. American Society of Virology 2018-2020
5. American Diabetes Association 2018-
6. American Endocrine Society 2018-2019
7. European Association for the Study of Diabetes 2018-2019

Patents

1. Vaccine adjuvants. The invention relates to the field of adjuvants and provides TLR agonists, in particular TLR2 agonists, for use as adjuvants. **Altindis E, D'oro U, Liberatori S, Soldainin E. 2015, WO2015162100 A1**

Guest Editor

Altindis E., Special issue: Vaccinology in 21st century. **Current Topics in Medicinal Chemistry**. Bentham Sciences, October 2013

Relevant Courses

1. **NIDDK K-Awardees' Workshop 2019**, Bethesda, MD, April 11 - 12, 2019
2. **Leadership Strategies for the Researcher** (Harvard Catalyst Education Program, October 18/19, 2018)
3. **Teaching 101: Bringing Effective Teaching Practices to your Classroom** (Harvard Medical School, GENETIC 302QC), February-May 2018
4. **Leadership and Management Skills Training**. Harvard Medical School, Office for Postdoctoral Fellows, 2017, 8 hours. Boston, MA, USA
5. **Strategies and Techniques for Analyzing Microbial Population Structure**, Marine Biological Laboratory, August 5 - August 15, 2015 (72 hours), Woods Hole, MA, USA
6. **Vaccinology Course**, Institute Pasteur, 2010, 5 weeks (170 hours), Paris, France

Awards

1. Travel Award. Imaging the Pancreas in Diabetes, and Benign and Malignant Exocrine Pancreatic Disease. NIH, NIDDK. Jan. 13-14, 2020. Bethesda, MD.
2. Travel Award. 54th EASD Annual Meeting 2018, Berlin, Germany.
3. **ADA Best Presidential Abstract, Travel Award**. 77th American Diabetes Association Scientific Sessions, June 2018, Orlando, FL (co-first authored with Bruna B. Brandao)

4. Best Paper of the Year Award (May 2017-May 2018). Marble Dinner, Joslin Diabetes Center, May 2018, Boston, MA
5. Joslin Diabetes Center, Best Questions at Joslin Seminars, January **2018**, Boston, MA
6. Travel Award. Joslin Fellows Council, , **2017**, Boston, MA.
7. **Registration/ Accommodation Award** German Diabetes School and Insulin Receptor Conference 2017, **2017**, Nice, France.
8. **Travel Award.** International Congress of Immunogenomics and Immunomics Conference, **2006**. Budapest, Hungary.