

José Ordovás-Montañés

Research Scientist, Boston Children's Hospital

Curriculum Vitae

Enders 630

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EDUCATION

Harvard Medical School and Harvard University, Boston, MA

Ph.D. Immunology, 2015

Thesis: "The Regulation of Immunological Processes by Peripheral Neurons"

Advisor: Prof. Ulrich H. von Andrian (Microbiology and Immunobiology)

Tufts University College of Liberal Arts, Medford, MA

B.A. Biology, GPA 3.94/4, Summa Cum Laude, 2010

Advisor: Prof. Harry Bernheim (Biology)

University College London, London, UK

Tufts in London

Integrated Medical BSc in Immunology and Molecular Pathology, 2009

Framingham High School, Framingham, MA

High School Diploma, GPA 4.5/4, 2006

RESEARCH EXPERIENCE

Postdoctoral Fellow

Damon Runyon Cancer Research Foundation HHMI Postdoctoral Fellowship

Prof. Alex K. Shalek

MIT, Broad Institute, and Ragon Institute

2015-2019: Using single-cell approaches to study how inflammation alters the cellular diversity of human barrier tissues in order to observe, understand, and manipulate cellular states and interactions for therapeutic aims.

Graduate Student

Prof. Ulrich H. von Andrian

Department of Microbiology and Immunobiology, Harvard Medical School

2010-2015: Identifying how interactions between the sensory nervous system and the immune system control inflammation in barrier tissues.

Undergraduate Researcher

Prof. Luigi Notarangelo

Division of Allergy and Immunology, Boston Children's Hospital

2009-2010: Building cellular models (induced pluripotent stem cells) to study how genetic mutations (primary immunodeficiencies) affect cell intrinsic human defense to viral infections.

Visiting Undergraduate Student Researcher

Prof. Arne Akbar

University College London

2008-2009: Characterizing the role of membrane lipid microdomains across human T cell subsets in immunosenescence.

Summer Intern

Dr. Marek Honczarenko

Biogen Idec

2007-2008: How targeting of an integrin affects the tissue-residence of T cell subsets.

TEACHING EXPERIENCE**Graduate Level**

Teaching Assistant, Critical Readings in Immunology, Harvard 2012, Prof. Florian Winau
 Teaching Assistant, Transformational Readings in Immunology, Harvard 2016, Prof. Shiv Pillai
 Guest Lectures, Molecular Biology Course, CSIBD, MGH, 2018/9, Prof. Hans-Christian Reinecker

Undergraduate Level

Teaching Fellow, Molecular and Cellular Immunology, Harvard 2012, Prof. Shiv Pillai
 Guest Lectures, Science Communication, Emerson 2015, Prof. Amy Vashlishan Murray
 Guest Lectures, Immunology, Tufts 2017-2018, Prof. Harry Bernheim
 Guest Lectures, Immunology, Ragon Institute 2017, Prof. Sylvie Le Gall

Middle and High School Level

Guest Lectures, AP Biology, Framingham High School 2013, Dr. Robert Langdon
 Guest Lectures, Science Class, Amigos Middle School 2017, Rachel Gesserman

AWARDS AND HONORS

2018 International Cytokine Society Travel Award
 2018 Keystone Travel Award and Session Chair for Regulation and Dysregulation of Innate Immunity
 2018 Cell Press Next Gen Immunology Conference Fellow
 2017 Outstanding Undergraduate Research Opportunities Program Direct Mentor at MIT
 2016-2016 Damon Runyon HHMI Postdoctoral Fellowship
 2016 Cancer Research Institute Irvington Postdoctoral Fellowship (declined)
 2016 Jeffrey Modell Prize in Immunology at Harvard Medical School
 2014 Keystone Travel Award for Emerging Cytokine Networks
 2012-2015 F31 NIH Pre-doctoral Fellowship
 2010 Highest Thesis Honors for Senior Honors Thesis at Tufts University
 2010 Graduated Summa cum Laude at Tufts University
 2009 Goldwater Scholar
 2009 Sessions Prize in Immunology, University College London
 2008 Goldwater Scholarship Honorable Mention
 2007 Churchill Prize for Academic Excellence in Introductory Biology, Tufts University
 2006 Excellence in Mathematics Award at Framingham High School
 2006 Excellence in Science Award at Framingham High School
 2006 Excellence in Science Scholarship presented by Genzyme
 2006 United States of America Biology Olympiad Finalist
 2005 Harvard Book Award

PEER REVIEWED PUBLICATIONS

- Smillie, CS.*, Biton, M.*, **Ordovas-Montanes, J.***, Sullivan, K., Burgin, G., Graham, DB., Herbst, RH., Rogel, N., Slyper, M., Waldman, J., Sud, M., Andrews, EA., Haber, AL., Vickovic, S., Dionne, D., Nguyen, LT., Villani, AC., Hofree, M., Creasey, EA., Huang, H., Rozenblatt-Rosen, O., Garber, JJ., Khalili, H., Desch, AN., Daly, MJ., Ananthakrishnan, AN., Shalek, AK.*, Xavier, RJ.*, Regev, A.*. (2019). Intra- and inter-cellular rewiring of the human colon during ulcerative colitis. *Cell*. 178: 714-730, *first submission at bioRxiv* <https://doi.org/10.1101/455451>
- Pepe-Mooney, BJ., Dill, MT., Alemany, A., **Ordovas-Montanes, J.**, Matsushita, Y., Rao, A., Sen, A., Miyazaki, M., Anakk, S., Dawson, PA., Ono, N., Shalek, AK., van Oudenaarden, A., Camargo, FD. Single-Cell Analysis of the Liver Epithelium Reveals Dynamic Heterogeneity and an Essential Role for YAP in Homeostasis and Regeneration. (2019). *Cell Stem Cell*. 25: 23-38.
- Biton, M., Haber, AL., Beyaz, S., Rogel, N., Smillie, C., Shekhar, K., Chen, Z., Wu, C., **Ordovas-Montanes, J.**, Alvarez, D., Herbst, RH., Tirosh, I., Burgin, G., Dionne, D., Zhang, M., Rozenblatt-Rosen, O., Shi, HN., Kuchroo, V., Yilmaz, O., Regev, A., Xavier, RJ. (2018) T helper cells modulate intestinal stem cell renewal and differentiation. *Cell*. 175: 1307-1320. *first submission at bioRxiv* <https://doi.org/10.1101/217133>

4. **Ordovas-Montanes, J.***, Dwyer, DF.*, Nyquist, SK., Buchheit, KM., Vukovic, M., Deb, C., Wadsworth, MH., Hughes, TK., Kazer, SW., Yoshimoto, E., Bhattacharyya, N., Cahill, KN., Katz, HR., Laidlaw, TM., Boyce, JA., Barrett, NA*, Shalek, AK*. (2018) Allergic inflammatory memory in human respiratory epithelial progenitor cells. *Nature*. 560: 649-654, *first submission at bioRxiv* <https://doi.org/10.1101/218958>
5. Mead, BE.*, **Ordovas-Montanes, J.***, Braun, AP., Levy, L., Szucs, MJ, MacMullan, M., Ammendolia, D., Zheng, Y., Bhargava, P., Yin, X., Hughes, TK., Wadsworth III, MH., Ahmad, R., Rakoff-Nahoum, S., Carr, S., Langer, R., Collins JJ., Shalek, AK., Karp, JM. (2018) Harnessing single-cell genomics to improve the physiological fidelity of organoid-derived cell types. *BMC Biology*. 16(1):62.
6. Martin-Gayo, E., Cole, M., Kolb, KE., Ouyang, Z., Cronin, J., Kazer, SW., **Ordovas-Montanes, J.**, Lichterfeld, M., Walker, BD., Yosef, N., Shalek, AK., Yu, XG. (2018). A Reproducibility-Based Computational Framework Identifies an Inducible, Enhanced Antiviral State in Dendritic Cells from HIV-1 Elite Controllers. *Genome Biology*. DOI: 10.1186/s13059-017-1385-x.
7. Nandin, IS., Fong, C., Deantonio, C., Torreno-Pina, JA., Pecetta, S., Maldonado, P., Gasparrini, F., **Ordovas-Montanes, J.**, Kazer, SW., Kjaer, S., Borley, DW., Nair, U., Coleman, JA., Lingwood, D., Shalek, AK., Meffre, E., Poignard, P., Burton, DR., Batista, FD. (2017). Novel in vitro booster vaccination to rapidly generate antigen-specific fully human monoclonal antibodies from healthy individuals. *Journal of Experimental Medicine*. DOI: 10.1084/jem.20170633.
8. Mar, FA., **Ordovas-Montanes, J.**, Oksenberg, N., Olson, AM. (2016). The Whiteboard Revolution: Illuminating Science Communication in the Digital Age. *Trends in Immunology*. (Invited Commentary)
9. **Ordovas-Montanes, J.**, Rakoff-Nahoum, S., Huang, S., Riol-Blanco, L., Barreiro, O., von Andrian, UH. (2015) The regulation of immunological processes by peripheral neurons in homeostasis and disease. *Trends in Immunology*. 36: 578-604. (Invited Feature Review)
10. Riol-Blanco, L.*, **Ordovas-Montanes, J.***, Perro, M., Naval, E., Thiriot, A., Paust, S., Wood, JN., von Andrian, UH. (2014) Nociceptive sensory neurons drive interleukin-23 mediated psoriasisiform skin inflammation. *Nature*. 510: 157-161.
11. Lafaille, FG., Pessach, IM., Zhang, SY., Ciancanelli, M., Herman, M., Mostoslavsky, G., **Ordovas-Montanes, J.**, Jouanguy, E., Plancoulaine, S., Tu, E., Elkabetz, Y., Schlaeger, TM., Daley, GQ., Tardieu, M., Abel, L., Casanova, JL., Studer, L., Notarangelo, LD. (2012). Impaired intrinsic immunity to HSV-1 in human iPSC-derived TLR3-deficient CNS cells. *Nature*. 491: 769-773.
12. Pessach, IM., **Ordovas-Montanes, J.**, Zhang, SY., Casanova, JL., Giliani, S., Genery, AR., Al-Herz, W., Manos, PD., Schlaeger, TM., Park, IH., Rucci, F., Agarwal, S., Mostoslavsky, G., Daley, GQ., Notarangelo, LD. (2011). Induced pluripotent stem cells: a novel frontier in the study of human primary immunodeficiencies. *Journal of Allergy and Clinical Immunology*. 127: 1400-1407.
13. **Ordovas-Montanes, J.**, and Ordovas, JM. (2011). Cholesterol, Inflammasomes, and Atherogenesis. *Current Cardiovascular Risk Reports*. 6: 45-52.

MANUSCRIPTS

1. Hughes, TK.*, Wadsworth, MH.*, Gierahn, TM., Do, T., Weiss, D., Andrade PR., Ma, F., de Andrade Silva, BJ., Shao, S., Tsoi, LC., **Ordovas-Montanes, J.**, Gudjonsson, JE., Modlin, RL., Love, JC.*, Shalek, AK.* Highly efficient, massively-parallel single-cell RNA-Seq reveals cellular states and molecular features of human skin pathology. *Submitted and bioRxiv* <https://doi.org/10.1101/689273>
2. Kazer, SW., Aicher, TP., Muema, DM., Carroll, SL., Ziegler, CGK., **Ordovas-Montanes, J.**, Nyquist, SK., Cole, M.B., Kummerlowe, C., Moodly, A., Dong, K., Yosef, N., Ndhlovu, ZM., Ndung'u T., Walker, BD., Shalek, AK. Integrated Single-Cell Analysis of Multicellular Immune Dynamics during Hyper-Acute HIV-I Infection. *Submitted and bioRxiv* <https://doi.org/10.1101/654814>
3. Buchheit, KM., Dwyer, DF., **Ordovas-Montanes, J.**, Katz, H., Lewis, E., Lai, J., Bhattacharyya, N., Shalek, AK., Barrett, NA., Boyce, JA., Laidlaw, TM. The role of IL-5Ra in nasal polyp production of IgE and IgG4 in aspirin-exacerbated respiratory disease. *Submitted and bioRxiv* <https://doi.org/10.1101/527762>
4. Dwyer, DF.*, **Ordovas-Montanes, J.***, Buchheit, KM., Lai, J., Bhattacharyya, N., Katz, HR., Shalek, AK., Laidlaw, TM., Boyce, JA., Barrett, NA. Unlocking mast cell diversity in human nasal polyps. *In preparation*.
5. **Ordovas-Montanes, J.**, Beyaz, S., Rakoff-Nahoum S., Shalek, AK. The distribution and storage of inflammatory memory in barrier tissues. *In preparation for Nature Reviews Immunology*.
6. Elmariah, SB., Luo, T., Azimi, E., **Ordovas-Montanes, J.**, von Andrian, UH., Kang, D., Lerner, EA. Neural recruitment and activity are required for the development of cutaneous allergic sensitization and eczema. *In*

Revision.

7. Huang, S.*, Ziegler, CGK.*, **Ordovas-Montanes, J.**, Shalek, A.K., von Andrian, UH. Lymph node innervating nociceptors regulate immune and stromal cell states. *In preparation.*
8. **Ordovas-Montanes, J.**; Mead, BE., Mandel, A., Vukovic, M., Spencer, D., Scholz, R., Shalek, AK., Rakoff-Nahoum, S. Microbial public goods induce intestinal host cell adaptation. *In Preparation.*

PRESENTATIONS

1. Champalimaud Centre for the Unknown, Special Seminar, 2019
2. European Academy of Allergy and Clinical Immunology, Invited Speaker, 2019
3. Chan Zuckerberg Initiative, Inflammation Workshop, Invited Speaker, 2019
4. Stanford University Medical School, Allergy and Pathology, Special Seminar, 2019
5. Benaroya Research Institute, Seattle, Special Seminar, 2019
6. Washington University St. Louis, Pathology and Immunology, Special Seminar, 2019
7. Harvard University Stem Cell and Regenerative Medicine, Seminar Series, 2019
8. Gordon Research Conference, Mucus and Cilia, Invited Speaker, 2019
9. Memorial Sloan Kettering Cancer Center Immunology Program, Special Seminar, 2019
10. Boston Children's Hospital Gastroenterology, Special Seminar, 2019
11. Whitehead Institute and MIT Biology, Special Seminar, 2019
12. Boston University Biological Design Center, Special Seminar, 2019
13. Boston University Medical Center, Pulmonary Seminar Series, 2018
14. UMASS Medical School, Microbiology and Physiological Systems Seminar Series, 2018
15. International Cytokine Society Conference, 2018
16. Gordon Research Conference, Tissue Niches and Resident Stem Cells, 2018
17. MGH Center for Study of Inflammatory Bowel Disease Summer Course, 2018
18. Broad Food Allergy Science Initiative, 2018
19. Boston Children's Hospital Lung Buds Meeting, 2018
20. Ragon Institute Research Progress Talk, 2018
21. Keystone Symposium Regulation and Dysregulation of Innate Immunity, 2018
22. Broad Institute Klarman Cell Observatory Retreat, 2018
23. Broad Food Allergy Science Initiative, 2017
24. NIAID/DMID Workshop Single Cell Technologies for Infectious Diseases, 2017
25. Ragon Institute Research Progress Talk, 2017
26. Ragon Institute Macrophage Infection by HIV, 2017
27. MIT Center for Microbiome Informatics and Therapeutics, 2016
28. MIT Institute for Medical Engineering and Science Research Seminar, 2016
29. MIT Chemistry Student Seminar Series, 2016
30. AARDA, Neuropsychiatric Manifestations of Autoimmune Disease, 2015
31. Harvard Division of Immunology Research Progress Talk, 2015
32. ESMI, Imaging Inflammation, 2015
33. Biogen Idec, Research Seminar, 2014
34. Keystone Symposium Emerging Cytokine Networks, 2014
35. Harvard Division of Immunology Research Progress Talk, 2014
36. Harvard Immunology Graduate Retreat, 2014

PATENTS

1. Shalek, A.K., Ordovas-Montanes, J., Mead, B.E., and Karp, J, "Single-Cell Genomic Methods To Generate Ex Vivo Cell Systems That Recapitulate In Vivo Biology With Improved Fidelity," US Patent Pending (2017).
2. Regev, A., Xavier, R., Shalek, A.K., Ordovas-Montanes, J., Biton, M., Herbst, R.H. and Smillie, C., "Cell Atlas Of The Healthy And Ulcerative Colitis Human Colon," US Provisional Patent Pending (2017).
3. Shalek, A.K., Ordovas-Montanes, J., "Cell Atlas Of Healthy And Diseased Barrier Tissues," US Provisional Patent Pending (2017).

MENTORSHIP

Postdoctoral Fellow in Shalek Lab

Ben Doran, Research Associate, MIT 2018-
Michelle Ramseier, Graduate Student, MIT 2018-
Marko Vukovic, Undergraduate (now Research Associate), Tufts University 2017-
Abigail Mandel, Undergraduate, Tufts University 2018-
Sarah Nyquist, Graduate Student, MIT 2016-
Sam Allon, Graduate Student, MIT 2016-
Ben Mead, Graduate Student (now Postdoc), HST at MIT/Harvard 2016-
Marc Wadsworth, Graduate Student, MIT 2015-
Sam Kazer, Graduate Student, MIT 2015-
Christopher Xavier, High School Student 2016
Shaina Carroll, Research Associate, MIT 2016-2018
Chaarushena Deb, Undergraduate Student, MIT 2016-2017
Sophia Liu, Undergraduate Student, MIT 2015-2017

Graduate Student in von Andrian Lab

Alexandra Mulligan, Undergraduate, Emmanuel College, 2015
Kelsey Goodwin, Undergraduate, Bowdoin College, 2014
Emily Savage, Undergraduate, Harvard University, 2013
Elena Naval, Undergraduate, Spain, 2012-2013

REFERENCES

Alex K. Shalek
Pfizer Laubach Career Development Assistant Professor
Department of Chemistry, MIT
Email: shalek@mit.edu

Ulrich H. von Andrian
Mallinckrodt Professor of Immunopathology
Microbiology and Immunobiology, Harvard Medical School
Email: uva@hms.harvard.edu

Bruce D. Walker
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Harvard Medical School, MIT, and HHMI
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Amy J. Wagers
Forst Family Professor and Co-Chair of Stem Cell and Regenerative Biology
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