**CURRICULUM VITAE**

**Esen Sefik, PhD**

**Proposed for:** Appointment to Assistant Professor, Department of Immunobiology, Traditional Track

**Term:** 07/01/24 - 06/30/2027

**School:** Yale School of Medicine

**Education:**

08/2005-05/2009 BA, Molecular Cellular and Developmental Biology (MCDB), Yale University, New Haven, CT

08/2009-11/2015 PhD, Immunology, Harvard University, Boston, MA

**Career/Academic Appointments:**

11/2015-01/2017 Postdoctoral Research Fellow, Harvard Medical School, Boston, MA

03/2017-02/2018 Postdoctoral Research Associate, Yale School of Medicine, New Haven, CT

02/2018-03/2022 Howard Hughes Medical Institute (HHMI) Fellow of the Damon Runyon Cancer Research

Foundation, Yale School of Medicine, New Haven, CT

03/2022-present Associate Research Scientist, Yale School of Medicine, New Haven, CT

**Professional Honors & Recognition:**

***International/National/Regional***

2012 Boehringer Ingelheim Fonds PhD Fellowship Award, Harvard University, Boston, MA

2018 Howard Medical Institute (HHMI)-Damon Runyon Cancer Research Foundation

Postdoctoral Fellowship Award, Yale School of Medicine, New Haven, CT

2018 Prof. Dr. Işıl Berat Barlan Female Scientist Award

2023 Celiac Disease Foundation-Takeda Early Career Research Award

***University***

2006 Science Technology and Research Scholars (STARS) Summer Research

2007 Yale-Howard Hughes Medical Institute (HHMI) Future Scientist Summer Research

Fellowship Award

2008 Yale-Howard Hughes Medical Institute (HHMI) Future Scientist Summer Research

Fellowship Award

2016 Jeffrey Modell Prize for outstanding graduate student thesis, Harvard University

# Invited Speaking Engagements, Presentations, Symposia & Workshops Not Affiliated with Yale:

***International/National***

1. Regeneron’s Workshop on Humanized Immune System Mice, invited speaker, Tarrytown, NY, 2018
2. Damon Runyon- William Raveis Charitable Fund Event, invited speaker, Shelton CT, 2019
3. Damon Runyon Fellows’ Virtual Symposium, invited speaker, 2022
4. Immunai Science Club, Virtual, invited speaker, 2022
5. 5th ImCORE Scientific Summit, invited speaker, Amsterdam, Netherlands, 2022.
6. Gene Expression & Signaling in the Immune System Meeting, invited speaker, Cold Spring Harbor, NY, 2022
7. 6th ImCORE Scientific Summit, invited speaker, Amsterdam, Netherlands, 2024.
8. FOCIS 2024 Annual Meeting, San Francisco, CA, 2024.

**Professional Service**

***Journals:***

Editor

Special issue editor for Frontiers in Immunology, 2021

Reviewer

Immunity, Inflammation and Disease, Journal of Virology, Mucosal Immunology, PLOS Pathogens

**Bibliography:**

***Peer-Reviewed Original Research***

1. Odell ID, Agrawal K, **Sefik E**, Odell AV, Caves E, Kirkiles-Smith NC, Horsley V, Hinchcliff M, Pober JS, Kluger Y, Flavell RA. IL-6 trans-signaling in a humanized mouse model of scleroderma. Proc Natl Acad Sci U S A. 2023 Sep 12;120(37):e2306965120. doi: 10.1073/pnas.2306965120. PubMed PMID: 37669366; PubMed Central PMCID: PMC10500188.
2. Kaffe E, Roulis M, Zhao J, Qu R, **Sefik E**, Mirza H, Zhou J, Zheng Y, Charkoftaki G, Vasiliou V, Vatner DF, Mehal WZ, Yuval Kluger, Flavell RA. Humanized mouse liver reveals endothelial control of essential hepatic metabolic functions. Cell. 2023 Aug 31;186(18):3793-3809.e26. doi: 10.1016/j.cell.2023.07.017.. PubMed PMID: 37562401.
3. Ding C\*, Yu Z\*, **Sefik E\***, Zhou J\*, Kaffe E, Wang G, Li B , Hu W, Flavell RA, Ye Y, Li H. A T(reg)-specific long noncoding RNA maintains immune-metabolic homeostasis in aging liver. Nat Aging. 2023 Jul;3(7):813-828. doi: 10.1038/s43587-023-00428-8. Epub 2023 Jun 5. PubMed PMID: 37277640.Nature Aging. \*Authors contributed equally.
4. Zheng Y\*, **SefikE**\*, Astle J, KaratepeK, Öz H, Solis A, Jackson R, Luo H, BrusciaE, HaleneS, ShanL, FlavellRA. [Human neutrophil development and functionality are enabled in a humanized mouse model.](https://www.pnas.org/doi/10.1073/pnas.2121077119) Proc Natl Acad Sci U S A 119, e2121077119, doi:10.1073/pnas.2121077119 (2022).\* Authors contributed equally.
5. Ding C, Xu H, Yu Z, Roulis M, Qu R, Zhou J, Oh J, Crawford J, Gao Y, Jackson R, **Sefik E**, Li S, Wei Z, Skadow M, Yin Z, Ouyang X, Wang L, Zou Q, Su B, Hu W, Flavell RA, Li HB. [RNA m6A demethylase ALKBH5 regulates the development of γδ T cells.](https://www.ncbi.nlm.nih.gov/pubmed/35939687/)Proc Natl Acad Sci U S A. 2022 Aug 16;119(33):e2203318119. doi: 10.1073/pnas.2203318119. PubMed PMID: 35939687; PubMed Central PMCID: PMC9388086.
6. **Sefik E**, Qu R, Junqueira C, Kaffe E, Mirza H, Zhao J, Brewer JR, Han A, Steach HR, Israelow B, Blackburn HN, Velazquez SE, Chen YG, Halene S, Iwasaki A, Meffre E, Nussenzweig M, Lieberman J, Wilen CB, Kluger Y, Flavell RA. [Inflammasome activation in infected macrophages drives COVID-19 pathology.](https://www.ncbi.nlm.nih.gov/pubmed/35483404/)Nature. 2022 Jun;606(7914):585-593. doi: 10.1038/s41586-022-04802-1. Epub 2022 Apr 28. PubMed PMID: 35483404; PubMed Central PMCID: PMC928824
7. **Sefik E**, Israelow B, Mirza H, Zhao J, Qu R, Kaffe E, Song E, Halene S, Meffre E, Kluger Y, Nussenzweig M, Wilen CB, Iwasaki A, Flavell RA. [A humanized mouse model of chronic COVID-19.](https://www.ncbi.nlm.nih.gov/pubmed/34921308/)Nat Biotechnol. 2022 Jun;40(6):906-920. doi: 10.1038/s41587-021-01155-4. Epub 2021 Dec 17. PubMed PMID: 34921308; PubMed Central PMCID: PMC9203605.
8. Zhao J, Jaffe A, Li H, Lindenbaum O, **Sefik E**, Jackson R, Cheng X, Flavell RA, Kluger Y. [Detection of differentially abundant cell subpopulations in scRNA-seq data.](https://www.ncbi.nlm.nih.gov/pubmed/34001664/)Proc Natl Acad Sci U S A. 2021 Jun 1;118(22). doi: 10.1073/pnas.2100293118. PubMed PMID: 34001664; PubMed Central PMCID: PMC8179149.
9. Low JS, Farsakoglu Y, Amezcua Vesely MC, **Sefik E**, Kelly JB, Harman CCD, Jackson R, Shyer JA, Jiang X, Cauley LS, Flavell RA, Kaech SM. [Tissue-resident memory T cell reactivation by diverse antigen-presenting cells imparts distinct functional responses.](https://www.ncbi.nlm.nih.gov/pubmed/32525985/)J Exp Med. 2020 Aug 3;217(8). doi: 10.1084/jem.20192291. PubMed PMID: 32525985; PubMed Central PMCID: PMC7398161.
10. Ramanan D, **Sefik E**, Galván-Peña S, Wu M, Yang L, Yang Z, Kostic A, Golovkina TV, Kasper DL, Mathis D, Benoist C. [An Immunologic Mode of Multigenerational Transmission Governs a Gut Treg Setpoint.](https://www.ncbi.nlm.nih.gov/pubmed/32402238/)Cell. 2020 Jun 11;181(6):1276-1290.e13. doi: 10.1016/j.cell.2020.04.030. Epub 2020 May 12. PubMed PMID: 32402238; PubMed Central PMCID: PMC7393667.
11. Hwang SS, Lim J, Yu Z, Kong P, **Sefik E**, Xu H, Harman CCD, Kim LK, Lee GR, Li HB, Flavell RA. [mRNA destabilization by BTG1 and BTG2 maintains T cell quiescence.](https://www.ncbi.nlm.nih.gov/pubmed/32165587/)Science. 2020 Mar 13;367(6483):1255-1260. doi: 10.1126/science.aax0194. PubMed PMID: 32165587.
12. Jarret A, Jackson R, Duizer C, Healy ME, Zhao J, Rone JM, Bielecki P, **Sefik E**, Roulis M, Rice T, Sivanathan KN, Zhou T, Solis AG, Honcharova-Biletska H, Vélez K, Hartner S, Low JS, Qu R, de Zoete MR, Palm NW, Ring AM, Weber A, Moor AE, Kluger Y, Nowarski R, Flavell RA. [Enteric Nervous System-Derived IL-18 Orchestrates Mucosal Barrier Immunity.](https://www.ncbi.nlm.nih.gov/pubmed/31923399/)Cell. 2020 Jan 9;180(1):50-63.e12. doi: 10.1016/j.cell.2019.12.016. PubMed PMID: 31923399; PubMed Central PMCID: PMC7339937.
13. Tong J, Cao G, Zhang T, **Sefik E**, Amezcua Vesely MC, Broughton JP, Zhu S, Li H, Li B, Chen L, Chang HY, Su B, Flavell RA, Li HB. [m6A mRNA methylation sustains Treg suppressive functions.](https://www.ncbi.nlm.nih.gov/pubmed/29303144/)Cell Res. 2018 Feb;28(2):253-256. doi: 10.1038/cr.2018.7. PubMed PMID: 29303144; PubMed Central PMCID: PMC5799823.
14. Geva-Zatorsky N\*, **Sefik E\*,** Kua L, Pasman L, Tan TG, Ortiz-Lopez A, Yanortsang TB, Yang L, Jupp R, Mathis D, Benoist C, Kasper DL.[Mining the Human Gut Microbiota for Immunomodulatory Organisms.](https://www.ncbi.nlm.nih.gov/pubmed/28215708/)Cell. 2017 Feb 23;168(5):928-943.e11. doi: 10.1016/j.cell.2017.01.022. Epub 2017 Feb 16. PubMed PMID: 28215708; PubMed Central PMCID: PMC7774263. \*Authors contributed equally.
15. Tan TG, **Sefik E**, Geva-Zatorsky N, Kua L, Naskar D, Teng F, Pasman L, Ortiz-Lopez A, Jupp R, Wu HJ, Kasper DL, Benoist C, Mathis D. [Identifying species of symbiont bacteria from the human gut that, alone, can induce intestinal Th17 cells in mice.](https://www.ncbi.nlm.nih.gov/pubmed/27911839/)Proc Natl Acad Sci U S A. 2016 Dec 13;113(50):E8141-E8150. doi: 10.1073/pnas.1617460113. PubMed PMID: 27911839; PubMed Central PMCID: PMC5167147.
16. Charbonnier LM, Wang S, Georgiev P, **Sefik E**, Chatila TA. [Control of peripheral tolerance by regulatory T cell-intrinsic Notch signaling.](https://www.ncbi.nlm.nih.gov/pubmed/26437242/)Nat Immunol. 2015 Nov;16(11):1162-73. doi: 10.1038/ni.3288. Epub 2015 Oct 5. PubMed PMID: 26437242; PubMed Central PMCID: PMC4618075.
17. **Sefik E**, Geva-Zatorsky N, Oh S, Konnikova L, Zemmour D, McGuire AM, Burzyn D, Ortiz-Lopez A, Lobera M, Yang J, Ghosh S, Earl A, Snapper SB, Jupp R, Kasper D, Mathis D, Benoist C. [MUCOSAL IMMUNOLOGY. Individual intestinal symbionts induce a distinct population of RORγ⁺ regulatory T cells.](https://www.ncbi.nlm.nih.gov/pubmed/26272906/)Science. 2015 Aug 28;349(6251):993-7. doi: 10.1126/science.aaa9420. PubMed PMID: 26272906; PubMed Central PMCID: PMC4700932.
18. Morton AM, **Sefik E**, Upadhyay R, Weissleder R, Benoist C, Mathis D. [Endoscopic photoconversion reveals unexpectedly broad leukocyte trafficking to and from the gut.](https://www.ncbi.nlm.nih.gov/pubmed/24753589/)Proc Natl Acad Sci U S A. 2014 May 6;111(18):6696-701. doi: 10.1073/pnas.1405634111. PubMed PMID: 24753589; PubMed Central PMCID: PMC4020091.
19. Kriegel MA, **Sefik E**, Hill JA, Wu HJ, Benoist C, Mathis D. [Naturally transmitted segmented filamentous bacteria segregate with diabetes protection in nonobese diabetic mice.](https://www.ncbi.nlm.nih.gov/pubmed/21709219/)Proc Natl Acad Sci U S A. 2011 Jul 12;108(28):11548-53. doi: 10.1073/pnas.1108924108. Epub 2011 Jun 27. PubMed PMID: 21709219; PubMed Central PMCID: PMC3136249.
20. Hand TW, Cui W, Jung YW, **Sefik E**, Joshi NS, Chandele A, Liu Y, Kaech SM. [Differential effects of STAT5 and PI3K/AKT signaling on effector and memory CD8 T-cell survival.](https://www.ncbi.nlm.nih.gov/pubmed/20823247/)Proc Natl Acad Sci U S A. 2010 Sep 21;107(38):16601-6. doi: 10.1073/pnas.1003457107. Epub 2010 Sep 7. PubMed PMID: 20823247; PubMed Central PMCID: PMC2944719.

***Peer-Reviewed Reviews, Practice Guidelines, Standards, and Consensus Statements***

1. **Sefik E**. and O'Connor K. C. [EBVerified TCRs and multiple sclerosis](https://www.science.org/doi/10.1126/sciimmunol.adf0763?url_ver=Z39.88-2003&rfr_id=ori:rid:crossref.org&rfr_dat=cr_pub%20%200pubmed). *Sci Immunol* 7, eadf0763, doi:10.1126/sciimmunol.adf0763 (2022).
2. **Sefik E**, Hori S, Vasanthakumar A. [Editorial: Regulatory T Cell Heterogeneity: Canonical and Non-Canonical Functions.](https://www.ncbi.nlm.nih.gov/pubmed/34630397/)Front Immunol.2021;12:722563. doi: 10.3389/fimmu.2021.722563. eCollection 2021. PubMed PMID: 34630397; PubMed Central PMCID: PMC8492903.
3. Ramanan D, Pratama A, Zhu Y, Venezia O, Sassone-Corsi M, Chowdhary K, Galván-Peña S, **Sefik E,** Brown C, Gélineau A, Mathis D, Benoist C. Regulatory T cells in the face of the intestinal microbiota. Nat Rev Immunol. 2023 Jun 14;. doi: 10.1038/s41577-023-00890-w. Review. PubMed PMID: 37316560.

Complete list of my published work: <https://www.ncbi.nlm.nih.gov/myncbi/esen.sefik.1/bibliography/public/>