Curriculum Vitae

Eran Halperin

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Affiliation:

Senior Vice President of AI and Machine Learning, Optum Labs, United HealthGroup
Professor, Departments of Computer Science, Anesthesiology, Computational Medicine, and Human Genetics, UCLA

Research areas:

Computational Medicine (machine learning in medical imaging, physiological waveforms, electronic medical records), Statistical Genomics (microbiome, epigenomics, genetics, single-cell techniques), Algorithms (graphs, approximation, combinatorial).

Education:

1997-01 **Ph.D. in Computer Science**, Tel-Aviv University.
Thesis: *Approximation algorithms for optimization problems.*
Advisor: Prof. Uri Zwick.

1993-96 **M.Sc. in Computer Science**, Tel-Aviv University (Summa Cum Laude).
Thesis: *Bipartite subgraphs of integer weighted graphs.*
Advisor: Prof. Noga Alon.

1990-93 **B.Sc. in Mathematics and Computer Science**, Tel-Aviv University (Summa Cum Laude),

Experience

Academic Research Positions:

2018-now **Professor**, Department of Computational Medicine, University of California, Los Angeles (**UCLA**)

2017-now **Professor**, Department of Human Genetics, University of California, Los Angeles (**UCLA**)

2016-now **Professor**, Departments of Computer Science , University of California, Los Angeles (**UCLA**)

2016-now **Professor**, Departments of Anesthesiology, University of California, Los Angeles (**UCLA**)

2017-2021 **Associate Director, Informatics**, The Institute of Precision Health, **UCLA**.

2011-2016 **Associate Professor**, Blavatnik School of Computer Science, and the Department of Molecular Microbiology and Biotechnology, **Tel-Aviv University**.

2004-2016 **Senior Research Scientist** at the International Computer Science Institute (**ICSI, Berkeley**).

2008-2011 **Senior Lecturer**, Blavatnik School of Computer Science, and the Department of Molecular Microbiology and Biotechnology, **Tel-Aviv University**.

2003-2004 **Research Associate** at the Computer Science department of **Princeton** University.

2001-03 **Post doc** at the Computer Science department of the University of California in **Berkeley**, and at the International Computer Science Institute (**ICSI**).
Hosts: Richard Karp, Christos Papadimitriou, Satish Rao, Alistair Sinclair.

July-August 2000 **Summer intern** in **AT&T research labs**, Florham Park, New Jersey.
Mentor: Edith Cohen.

Positions in the industry:

08/21-now **Senior Vice President of AI/ML** in **Optum Labs (United Health Group)**

05/12-05/2020 **Computational Advisory Board** in **DNA Nexus**

07/11-12/2016 **Scientific Advisory Board** in **Genia Technologies** (nanopores sequencing technologies)

10/12-10/13 **Scientific Advisory Board** in **Gene by Gene**

07/07-12/08 **Director of Bioinformatics** in **Navigenics, Inc.** (genetic testing)

06/97-02/00 **Bioinformatics Scientist at the Algorithms group** in **Compugen LTD.**

1993-96 Programmer in the Israeli Defense Forces.

Consulting in the past for: **Intel**, **Ultima Genomics**, **Invitae**, **Occam Law** , **Evogene**, **Micromedic**, **KHealth**.

Funding

1. Computational Genomics Summer Institute and Mentoring Network, **NIH-NIGMS** 1R25GM135043-01, (co-PI), Eleazar Eskin (PI), $1,554,615$, 05/2020-04/2025.

2. Polygenic risk scores for diverse populations - bridging research and clinical care, **NIH-NHLBI** 1R01HL151152-01A1 (Sub-contract), Charles Kooperberg (PI), $47,106$, 8/2020-07/2021.

3. Biomedical Informatics Tools for Applied Perioperative Physiology, **NIH- NIBIB** 1R01EB029751-01A1 (co-I), Maxime Cannesson (PI), $66,536$, 5/2020-01/2024.

4. Methods for Genomic Analysis in Heterogeneous Tissues, **NIH-NHGRI** HG010505 (PI), $2,613,950$, 9/.2019-6/2023.

5. Replication studies for high dimensional data: Insights into confounding and heterogeneity, **NSF** 1705197 (co-PI), Eleazar Eskin (PI), $499,995$, 8/2019-7/2022.

6. Epigenetics of Socio-Environmental Effects on Asthma in Minorities, **NIH** 1R56MD013312-01 (co-I), Esteban Burchard (PI), Noah Zaitlen (PI). $458,438$.

7. Machine Learning Models for the Prediction of Adverse Outcomes after Surgery using EMR and Genetic Data, David Geffen School of Medicine Seed Grant, $250,000$, 9/1/2018-9/30/19.

8. Developing a pathway from genetic locus to gene for complex traits in rodents, **NIH-NIMH** 1R01MH115979 (co-I), Jonathan Flint (PI), 6/2018-2/2023.

9. III: Medium: Detecting Low Dimensional Structures in Genomic Data, **NSF** award number 1705197 (PI) , Eleazar Eskin (co-PI), and Jae-Hoon Sul (co-PI). Total award: $\$1,199,663$, 08/15/2017-8/15/2021.

10. Computational Methods for the Analysis of Methylation Data, **Blavatnik Research Fund**, $50,000, period: 10/2015-10/2016.

11. Analytical method development for investigating the role of the X chromosome in population genetics and disease, **NIH** (Subcontract from Alon Keinan, Cornell). Total award: $\$63,358$, 2014-2016.

12. Methods for the Analysis of Rare Variants in Disease DNA-Sequencing Studies, **ISF** (Leading PI). Total award: $\$264,000$, 2013-2017.

13. Methods for preprocessing population sequence data, Binational Science Foundation, **BSF** and the **Gilbert Foundation** (Leading PI with Eleazar Eskin). Total award: $\$197,600$, 2013-2017.

14. Reqsequencing and Functional Studies, **NIH** (subcontract). Total subcontract award: $303,780, period: 10/2011-9/2015.

15. Combinatorial Optimization Methods for Problems in Molecular Biology and Genetics, **NSF**: Award no. 1217615, $497,380, period: 9/1/2012 - 8/31/2014.

16. Integrated Analysis of Novel Molecular Diagnostic Markers for Type 2 Diabetes, German Israeli Foundation, **GIF** (leading PI with Thomas Illig). Total award: 199,800 Euros, period: 1/2012-12/2014.

17. Open Collaborative Research. **IBM** (PI, together with Ron Shamir and Saharon Rosset). Total award: $132,000, period: 10/2010-10/2012.

18. Efficient Design and Analysis of Disease Association Studies, Israeli Science Foundation, **ISF**. Total award: $223, 640, period: 10/2008-10/2012.

19. Genome-wide Association Study of Non-Hodgkin's Lymphoma, **NIH**: R01 (subcontract). Leading PI: Christine Skibola (UC Berkeley). Total subcontract award: $127,704., period: 08/01/2006-07/31/2011

20. Estimating Haplotype Frequencies, **NSF**: IIS-0513599 (leading PI). Total award: $603,773, period: 09/15/2005-08/31/2008.

21. Population Stratification Methods, **NSF**: IIS-0713254 (leading PI). Total award: $449,962, period: 08/15/2007-07/31/2009.

Awards and Honors:

2021 The **ISCB Fellow**

2014 The **Juludan Research Fund Prize**

2012 Chosen by The Marker Magazine (Israeli business magazine) as one of the **40 promising Israelis younger than 40**.

2010 The Raymond and Beverly Sackler **Career Development Chair**.

2010 The **Krill** prize for excellence in scientific research.

2001 The **Rothschild** fellowship (for post-doc).

2000 The **Intel** prize (for Ph.D.), Tel-Aviv University.

2000 The **Checkpoint** prize (for Ph.D.), Tel-Aviv University.

1999 The **Maus** prize (for Ph.D.), Tel-Aviv University.

1993 24th in the **Putnum** mathematics competition.

1991-92 Prize of excellence in the 32nd and in the 33rd Grossman mathematics Olympics of the Israel Institute of Technology, the Technion.

Academic Activities:

1. **Scientific committees (Past 5 years):**

   - Co-director and organizer, Computational Genomics Summer Institute (CGSI), 2016-now
   - Organizer: Bertinoro Computational Biology, 2014,2018.
   - Steering Committee, RECOMB-SEQ, 2013-now.
   - Program Committee, RECOMB, 2016
   - Program Committee, RECOMB-Genetics, 2016

2. **Invited speaker (selected from past 5 years)**

   2022 Invited Speaker, Simons Institute, UC Berkeley
   2022 Panel moderator at IAAI-22
   2022 Keynote speaker, 6th International Workshop on Health Intelligence (co-occuring with AAAI).
   2022 Invited speaker, Department of Biostatistics and Bioinformatics, Duke University
   2022 Invited speaker, CTSI, UCLA
   2021 Invited speaker, Institute of Mathematics and Applications, University of Minnesota
   2021 Invited speaker, Hadassah Eye & Vision Innovation Forum in Jerusalem
   2020 Invited speaker, AI for COVID-19 in LA Symposium, University of Souther California (virtual)
   2020 Invited speaker, The Doheny-UCLA International Retina Symposium, Pasadena, CA
   2019 Invited speaker, Annual meeting of the American Society of Anesthesiology, Orlando.
   2019 Invited speaker and panelist, UC-wide AI in Biomedicine.
   2019 Invited speaker, Bioinformatics seminar series, UCSD.

2018 Invited speaker, IPM Seminar series, Mount Sinai.
2018 Invited speaker, CS Colloquium Series, University of Indiana
2017 Invited speaker, Banff International Research Station, Oaxaca, Mexico.
2017 Keynote speaker, NIPS workshop on Machine Learning in Computational Biology.
2017 Keynote speaker, 2nd QCB Symposium, UCLA.
2017 Invited speaker, department of Electrical Engineering, UCLA.
2016 Invited speaker, Computer Science colloquium, The Hebrew University.
2016 Invited speaker, The Technion Machine Learning seminar.
2016 Invited speaker, Computer Science colloquium, Ben-Gurion University.
2016 Invited speaker, Life Sciences colloquium, Ben-Gurion University.
2016 Invited speaker at the biostatistics seminar, Stanford University.
2016 Invited speaker at the Annual meeting of the Israeli Statistical Association
2016 Invited speaker at the Waterman Symposium, Los Angeles.

Students:

Clinical mentees

2021-now Dr. Ira Hofer, Anesthesiology, UCLA. "Use of Machine Learning on Integrated Electronic Medical Record, Genetic and Waveform Data to Predict Perioperative Cardiorespiratory Instability", NIH -1K01HL150318-01A1.

Post-docs

2021-now Dr. Oren Avram, UCLA

2019-2020 Dr. Misagh Kordi, post-doc, UCLA.

2018-2020 Dr. Igor Mandric, post-doc, UCLA.

2014-2016 Dr. Yedael Waldman, Post-doc, Tel-Aviv University,

2009-2009 Dr. Noah Zaitlen, Post-doc, Tel-Aviv University. (currently an associate professor at UCLA).

2008-2009 Dr. Bogdan Pasaniuc, Post-doc, International Computer Science Institute, Berkeley (currently an assocaite professor at UCLA).

2007-2008 Dr. Lucia Conde, Post-doc, International Computer Science Institute, Berkeley (currently at University College London)

2006-2008 Dr. Gad Kimmel, Post-doc, International Computer Science Institute, Berkeley.

PhD

2021-now Berkin Durmus, PhD candidate, Computer Science, UCLA

2020-now Ella Petter, PhD candidate, Computer Science, UCLA.

2019-now Ulzee An, PhD candidate, Computer Science, UCLA.

2019-now Zeuyan Chen, PhD candidate, Computer Science, UCLA

2018-now Leah Briscoe, PhD candidate, Bioinformatics, UCLA

2020-2022 Nadav Rakocz, PhD candidate, Computer Science, UCLA.

2018-2022 Mike Thompson PhD candidate, Bioinformatics, UCLA

2018-2021 Brandon Jew, PhD candidate, Bioinformatics, UCLA

2018-2021 Brian Hill, PhD candidate, Computer Science, UCLA

2016-2020 Elior Rahmani, PhD candidate, Computer Science, UCLA

2016-2020 Liat Shenhav, PhD candidate, Computer Science, UCLA

2013-2018 Regev Schweiger, PhD candidate, Computer Science, Tel-Aviv University (currently at MyHeritage).

2011-2018 Roye Rozov Ph.D, Computer Science, Tel-Aviv University (joint supervision with Prof. Ron Shamir).

2012-2016 Yael Baran, PhD , Computer Science, Tel-Aviv University (currently post-doc at Weizmann Institute)

MSC

2015-2017 Gal Hayms (joint supervision with Dr. Itay Mayrose), MSc candidate, Life Sciences, Tel-Aviv University.

2013-2016 Goor Sasson, (joint supervision with Prof. Itzhak Mizrahi, Volcani), MSc candidate, Life Sciences, Tel-Aviv University

2013-2016 Elior Rahmani, MSc candidate, Computer Science, Tel-Aviv University.

2012-2014 Doron Shem-Tov, MSc, Computer Science, Tel-Aviv University.

2011-2013 Itamar Eskin , (joint supervision with Dr. Yoel Shkolnisky), M.Sc., Applied Math, Tel-Aviv University

2011-2014 Yaara Arkin, M.Sc., Bioinformatics track, Computer Science, Tel-Aviv University

2011-2015 Yaron Margalit, M.Sc. , Computer Science, Tel-Aviv University

2010-2013 Noam Mamet (joint supervision with Prof. Uri Gophna), M.Sc., Mathematical Biology track, Life Sciences, Tel-Aviv University

2009-2012 Tal Efros, M.Sc., Computer Science, Tel-Aviv University

2009-2012 Oron Navon, M.Sc., Bioinformatics track, Life Sciences, Tel-Aviv University

2009-2012 Yael Baran, MSc., Bioinformatics track, Computer Science, Tel-Aviv University

Teaching (last five years):

2021 Machine Learning in Medicine (CS229), UCLA.

2021 Machine Learning in Genetics (CM124), UCLA.

2020 Machine Learning in Genetics (CM124), UCLA.

2019 Computational Genetics (CM124), UCLA.

2018 Computational Genetics (CM124), UCLA.

2017 Computational Genetics (CM124), UCLA.

Publication List

Journal papers:

1. Briscoe L, Balliu B, Sankararaman S, Halperin E, Garud NR. *Evaluating supervised and unsupervised background noise correction in human gut microbiome data.* **PLoS Comput Biol**. 2022 Feb 7;18(2):e1009838. doi: 10.1371/journal.pcbi.1009838. PMID: 35130266; PMCID: PMC8853548.

2. Hill BL, Rakocz N, Rudas Á, Chiang JN, Wang S, Hofer I, Cannesson M, Halperin E. *Imputation of the continuous arterial line blood pressure waveform from non-invasive measurements using deep learning.* **Scientific Reports** 2021 Aug 3;11(1):15755. doi: 10.1038/s41598-021-94913-y. PMID: 34344934; PMCID: PMC8333060.

3. Klinger D, Hill BL, Barda N, Halperin E, Gofrit ON, Greenblatt CL, Rappoport N, Linial M, Bercovier H. *Bladder Cancer Immunotherapy by BCG Is Associated with a Significantly Reduced Risk of Alzheimer's Disease and Parkinson's Disease.* **Vaccines** (Basel). 2021 May 11;9(5):491. doi: 10.3390/vaccines9050491. PMID: 34064775; PMCID: PMC8151667.

4. Rakocz N, Chiang JN, Nittala MG, Corradetti G, Tiosano L, Velaga S, Thompson M, Hill BL, Sankararaman S, Haines JL, Pericak-Vance MA, Stambolian D, Sadda SR, Halperin E. *Automated identification of clinical features from sparsely annotated 3-dimensional medical imaging*, **Nature Digital Medicine**, 2021 Mar 8;4(1):44. doi: 10.1038/s41746-021-00411-w. PMID: 33686212; PMCID: PMC7940637.

5. Saab FG, Chiang JN, Brook R, Adamson PC, Fulcher JA, Halperin E, Manuel V, Goodman-Meza D. *Discharge Clinical Characteristics and Post-Discharge Events in Patients with Severe COVID-19: A Descriptive Case Series.* **Journal of General Internal Medicine** 2021 Apr;36(4):1017-1022. doi: 10.1007/s11606-020-06494-7. Epub 2021 Feb 2. PMID: 33532963; PMCID: PMC7853705.

6. MandricI,SchwarzT,MajumdarA,HouK,BriscoeL,PerezR,SubramaniamM,Hafemeister C, Satija R, Ye CJ, Pasaniuc B, Halperin E. *Optimized design of single-cell RNA sequenc- ing experiments for cell-type-specific eQTL analysis.* ,**Nature Communications**, 2020 Oct 30;11(1):5504. doi: 10.1038/s41467-020-19365-w. PMID: 33127880; PMCID: PMC7599215.

7. Goodman-Meza D, Rudas A, Chiang JN, Adamson PC, Ebinger J, Sun N, Botting P, Fulcher JA, Saab FG, Brook R, Eskin E, An U, Kordi M, Jew B, Balliu B, Chen Z, Hill BL, Rahmani E, Halperin E, Manuel V, *A machine learning algorithm to increase COVID-19 inpatient diagnostic capacity.* **PLoS One**. 2020 Sep 22;15(9):e0239474. doi: 10.1371/journal.pone.0239474. PMID: 32960917.

8. Miao Z, Alvarez M, Ko A, Bhagat Y, Rahmani E, Jew B, Heinonen S, Muñoz-Hernandez LL, Herrera-Hernandez M, Aguilar-Salinas C, Tusie-Luna T, Mohlke KL, Laakso M, Pietiläinen KH, Halperin E, Pajukanta P. *The causal effect of obesity on prediabetes and insulin resistance reveals the important role of adipose tissue in insulin resistance.* **PLoS Genetics** 2020 Sep 14;16(9):e1009018. doi: 10.1371/journal.pgen.1009018. PMID: 32925908.

9. Martino C, Shenhav L, Marotz CA, Armstrong G, McDonald D, Vázquez-Baeza Y, Morton JT, Jiang L, Dominguez-Bello MG, Swafford AD, Halperin E, Knight R. *Context-aware dimensionality reduction deconvolutes gut microbial community dynamics.* **Nature Biotechnology**. 2020 Aug 31. doi: 10.1038/s41587-020-0660-7. Epub ahead of print. PMID: 32868914.

10. Alvarez M, Rahmani E, Jew B, Garske KM, Miao Z, Benhammou JN, Ye CJ, Pisegna JR, Pietiläinen KH, Halperin E, Pajukanta P. *Enhancing droplet-based single-nucleus RNA-seq resolution using the semi-supervised machine learning classifier DIEM.* **Scientific reports**. 2020 Jul 3;10(1):11019. doi: 10.1038/s41598-020-67513-5. PMID: 32620816; PMCID: PMC7335186.

11. Mandric I, Hill BL, Freund MK, Thompson M, Halperin E. *BATMAN: Fast and Accurate Integration of Single-Cell RNA-Seq Datasets via Minimum-Weight Matching.* **iScience**. 2020 Jun 26;23(6):101185. doi: 10.1016/j.isci.2020.101185. Epub 2020 May 20. PMID: 32504875; PMCID: PMC7276436.

12. Agrawal A, Chiu AM, Le M, Halperin E, Sankararaman S. *Scalable probabilistic PCA for large-scale genetic variation data.* **PLoS Genetics** 2020 May 29;16(5):e1008773. doi: 10.1371/journal.pgen.1008773. PMID: 32469896; PMCID: PMC7286535.

13. Joseph TA, Shenhav L, Xavier JB, Halperin E, Pe'er I. *Compositional Lotka-Volterra describes microbial dynamics in the simplex.* **PLoS Computational Biology** 2020 May 29;16(5):e1007917. doi: 10.1371/journal.pcbi.1007917. PMID: 32469867; PMCID: PMC7325845.

14. Jew B, Alvarez M, Rahmani E, Miao Z, Ko A, Garske KM, Sul JH, Pietiläinen KH, Pajukanta P, Halperin E. *Accurate estimation of cell composition in bulk expression through robust integration of single-cell information.* **Nature Communications** 2020 Apr 24;11(1):1971. doi: 10.1038/s41467-020-15816-6. Erratum in: Nat Commun. 2020 Jun 3;11(1):2891. PMID: 32332754; PMCID: PMC7181686.

15. Furman O, Shenhav L, Sasson G, Kokou F, Honig H, Jacoby S, Hertz T, Cordero OX, Halperin E, Mizrahi I. *Stochasticity constrained by deterministic effects of diet and age drive rumen microbiome assembly dynamics.* **Nature Communications**. 2020 Apr 20;11(1):1904. doi: 10.1038/s41467-020-15652-8. PMID: 32312972; PMCID: PMC7170844.

16. Grunin M, Beykin G, Rahmani E, Schweiger R, Barel G, Hagbi-Levi S, Elbaz-Hayoun S, Rinsky B, Ganiel M, Carmi S, Halperin E, Chowers I. *Association of a Variant in VWA3A with Response to Anti-Vascular Endothelial Growth Factor Treatment in Neovascular AMD.* **nvestigative ophthalmology & visual science** 2020 Feb 7;61(2):48. doi: 10.1167/iovs.61.2.48. PMID: 32106291; PMCID: PMC7329947.

17. Brown Kav A, Rozov R, Bogumil D, Sørensen SJ, Hansen LH, Benhar I, Halperin E, Shamir R, Mizrahi I. *Unravelling plasmidome distribution and interaction with its hosting microbiome.* **Environmental microbiology** 2020 Jan;22(1):32-44. doi: 10.1111/1462-2920.14813. Epub 2019 Dec 15. PMID: 31602783.

18. Shenhav, Liat, Mike Thompson, Tyler A. Joseph, Leah Briscoe, Ori Furman, David Bogumil, Itzhak Mizrahi, Itsik Pe'er, and Eran Halperin. *FEAST: fast expectation-maximization for microbial source tracking.*, **Nature methods** (2019): 1.

19. Rahmani, E., Schweiger, R., Rhead, B., Criswell, L.A., Barcellos, L.F., Eskin, E., Rosset, S., Sankararaman, S. and Halperin, E. , *Cell-type-specific resolution epigenetics without the need for cell sorting or single-cell biology*, **Nature Communications**, Jul 31;10(1):3417, 2019.

20. Thompson, M., Chen, Z.J., Rahmani, E. and Halperin, E., *CONFINED: distinguishing biological from technical sources of variation by leveraging multiple methylation datasets.* **Genome biology,** 20(1), p.138, 2019.

21. Hill, B.L., Brown, R., Gabel, E., Rakocz, N., Lee, C., Cannesson, M., Baldi, P., Loohuis, L.O., Johnson, R., Jew, B. and Maoz, U., *An automated machine learning-based model predicts postoperative mortality using readily-extractable preoperative electronic health record data.* **British Journal of Anaesthesia**, 123(6), pp.877-886 (2019)

22. Fisher, Eyal, Rafael Y. Brzezinski, Michal Ehrenwald, Itzhak Shapira, David Zeltser, Shlomo Berliner, Yonit Marcus et al. *Increase of body mass index and waist circumference predicts development of metabolic syndrome criteria in apparently healthy individuals with 2 and 5 years follow-up.*, **International Journal of Obesity** 43, no. 4 (2019): 800.

23. Shenhav, Liat, Ori Furman, Leah Briscoe, Mike Thompson, Justin D. Silverman, Itzhak Mizrahi, and Eran Halperin. *Modeling the temporal dynamics of the gut microbial community in adults and infants.* **PLOS Computational Biology** 15, no. 6 (2019): e1006960.

24. Kav, A.B., Rozov, R., Bogumil, D., Sørensen, S.J., Hansen, L.H., Benhar, I., Halperin, E., Shamir, R. and Mizrahi, I., *Unravelling plasmidome distribution and interaction with its hosting microbiome*, **Environmental microbiology.** (2019).

25. Wallace, R. John, Goor Sasson, Philip C. Garnsworthy, Ilma Tapio, Emma Gregson, Paolo Bani, Pekka Huhtanen et al. *A heritable subset of the core rumen microbiome dictates dairy cow productivity and emissions.*, **Science advances** 5, no. 7 (2019): eaav8391.

26. Schweiger, Regev, Eyal Fisher, Omer Weissbrod, Elior Rahmani, Martina Müller-Nurasyid, Sonja Kunze, Christian Gieger, Melanie Waldenberger, Saharon Rosset, and Eran Halperin, *Detecting heritable phenotypes without a model using fast permutation testing for heritability and set-tests.*, **Nature communications** 9, no. 1 (2018): 4919.

27. Rahmani, Elior, Regev Schweiger, Liat Shenhav, Theodora Wingert, Ira Hofer, Eilon Gabel, Eleazar Eskin, and Eran Halperin, *BayesCCE: a Bayesian framework for estimating cell-type composition from DNA methylation without the need for methylation reference.*, **Genome biology** 19, no. 1 (2018): 141.

28. Hofer, Ira S., Eran Halperin, and Maxime Cannesson. *Opening the Black Box: Understanding the Science Behind Big Data and Predictive Analytics.*, **Anesthesia & Analgesia** 127, no. 5 (2018): 1139-1143.

29. Schweiger, Regev, Eyal Fisher, Elior Rahmani, Liat Shenhav, Saharon Rosset, and Eran Halperin, *Using Stochastic Approximation Techniques to Efficiently Construct Confidence Intervals for Heritability*, **Journal of Computational Biology** 25, no. 7 (2018): 794-808.

30. Hyams, Gal, Shiran Abadi, Shlomtzion Lahav, Adi Avni, Eran Halperin, Eilon Shani, and Itay Mayrose, *CRISPys: Optimal sgRNA design for editing multiple members of a gene family using the CRISPR system.*, **Journal of molecular biology**, (2018).

31. Park, Danny S., Itamar Eskin, Eun Yong Kang, Eric R. Gamazon, Celeste Eng, Christopher R. Gignoux, Joshua M. Galanter, Esteban Burchard Chun J. Ye Hugues Aschard Eleazar Eskin Eran Halperin and Noah Zaitlen *An ancestry-based approach for detecting interactions*, **Genetic epidemiology** 42, no. 1 (2018): 49-63.

32. Galpaz, Navot, Itay Gonda, Doron Shem-Tov, Omer Barad, Galil Tzuri, Shery Lev, Zhangjun Fei et al., *Deciphering genetic factors that determine melon fruit-quality traits using Rna-seq-based high-resolution Qtl and eqtl mapping.*, **The Plant Journal** 94, no. 1 (2018): 169-191.

33. Elior Rahmani, Noah Zaitlen, Yael Baran, Celeste Eng, Donglei Hu, Joshua Galanter, Sam Oh, Esteban G. Burchard, Eleazar Eskin, James Zou, and Eran Halperin, *Correcting for cell-type heterogeneity in DNA methylation: a comprehensive evaluation*, **Nature Methods**, 14(3), pp.218-219, 2017.

34. Schweiger, Regev, Omer Weissbrod, Elior Rahmani, Martina Müller-Nurasyid, Sonja Kunze, Christian Gieger, Melanie Waldenberger, Saharon Rosset, and Eran Halperin, *RL-SKAT: An exact and efficient score test for heritability and set tests*, **Genetics** 207, no. 4 (2017): 1275-1283.

35. Weissbrod, Omer, Elior Rahmani, Regev Schweiger, Saharon Rosset, and Eran Halperin, *Association testing of bisulfite-sequencing methylation data via a Laplace approximation,* **Bioinformatics** 33, no. 14 (2017): i325-i332 (special issue of **ISMB, 2017**).

36. Elior Rahmani Reut Yedidim Liat Shenhav Regev Schweiger Omer Weissbrod Noah Zaitlen and Eran Halperin, *GLINT: a user-friendly toolset for the analysis of high-throughput DNA-methylation array data*, Bioinformatics (2017): btx059.

37. Noah Zaitlen, Scott Huntsman, Donglei Hu, Melissa Spear, Celeste Eng, Sam S. Oh, Marquitta J. White, Angel Mak, Adam Davis, Kelly Meade, Emerita Brigino-Buenaventura, Michael A. LeNoir, Kirsten Bibbins-Domingo, Esteban G. Burchard and Eran Halperin, *The Effects of Migration and Assortative Mating on Admixture Linkage Disequilibrium*, **Genetics**, 205.1 (2017): 375-383.

38. Elior Rahmani, Liat Shenhav, Regev Schweiger, Paul Yousefi, Karen Huen, Brenda Eskenazi, Celeste Eng, Scott Huntsman, Donglei Hu, Joshua Galanter, Sam S. Oh, Melanie Waldenberger, Konstantin Strauch, Harald Grallert, Thomas Meitinger, Christian Gieger, Nina Holland, Esteban G. Burchard, Noah Zaitlen and Eran Halperin, *Genome-wide methylation data mirror ancestry information*, **Epigenetics & Chromatin**, 205.1 (2017): 375-383.

39. Rozov, Roye, Gil Goldshlager, Eran Halperin, and Ron Shamir, *Faucet: streaming de novo assembly graph construction*, **Bioinformatics** 34, no. 1 (2017): 147-154.

40. Sasson, Goor, Sheerli Kruger Ben-Shabat, Eyal Seroussi, Adi Doron-Faigenboim, Naama Shterzer, Shamay Yaacoby, Margret E. Berg Miller, Bryan A. White, Eran Halperin, and Itzhak Mizrahi, *Heritable Bovine Rumen Bacteria Are Phylogenetically Related and Correlated with the Cow?s Capacity To Harvest Energy from Its Feed.* **mBio** 8, no. 4 (2017): e00703-17.

41. Rozov, Roye, Aya Kav Brown, David Bogumil, Eran Halperin, Itzhak Mizrahi, and Ron Shamir, *Recycler: an algorithm for detecting plasmids from de novo assembly graphs*, **Bioinformatics** 33.4 (2017): 475-482.

42. Rhead, Brooke, et al. *Rheumatoid arthritis T cells share hypermethylation sites with synoviocytes.*, **Arthritis & Rheumatology** (2016).

43. Waldman, Yedael Y., Arjun Biddanda, Maya Dubrovsky, Christopher L. Campbell, Carole Oddoux, Eitan Friedman, Gil Atzmon, Eran Halperin, Harry Ostrer, and Alon Keinan. *The genetic history of Cochin Jews from India.* **Human Genetics** 135, no. 10 (2016): 1127-1143

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