

Eric Van Nostrand, Ph.D.

Assistant Professor and CPRIT Scholar, Baylor College of Medicine

Dept. of Biochemistry and Molecular Biology

Core member, Therapeutic Innovation Center (THINC@BCM)

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Education

Stanford University, <i>Stanford, CA</i>	2006–2012
Doctor of Philosophy in Genetics (Stuart Kim laboratory) (degree conferral date 9/27/12)	
Stanford University Graduate School of Business, <i>Stanford, CA</i>	2012
Stanford Ignite Certificate Program in Entrepreneurship	
Massachusetts Institute of Technology, <i>Cambridge, MA</i>	2001–2005
Bachelors of Science, Biology	

Positions

Baylor College of Medicine, <i>Houston, TX</i>	April 2020 – present
Assistant Professor and CPRIT Scholar, Baylor College of Medicine Dept. of Biochemistry and Molecular Biology Core member, Therapeutic Innovation Center (THINC@BCM)	
Eclipse BioInnovations Inc. <i>San Diego, CA</i>	June 2017 – present
Co-founder, scientific advisory board member, executive board member, consultant, equity holder	
University of California, San Diego, <i>La Jolla, CA</i>	February 2013 – March 2020
NIH Pathway to Independence (K99) Postdoctoral Fellow	May 2017 – March 2020
Merck Fellow of the Damon Runyon Cancer Research Foundation <i>with Dr. Gene Yeo</i>	July 2013 – April 2017
Stanford University, <i>Stanford CA</i>	September 2006 – January 2013
Doctoral student	September 2006 – September 2012
Postdoctoral fellow <i>with Dr. Stuart Kim</i>	October 2012 – January 2013
Salk Institute for Biological Studies, <i>La Jolla, CA</i>	October 2005 – August 2006
<i>with Dr. Gene Yeo</i>	
Massachusetts Institute of Technology, <i>Cambridge, MA</i>	July 2002 – August 2005
<i>with Dr. Chris Burge</i>	
Cold Spring Harbor Laboratory, <i>Cold Spring Harbor, NY</i>	October 2000 – March 2001
<i>with Dr. Wentian Li</i>	
Rockefeller University Summer Outreach Research Program, <i>New York, NY</i>	June – August 2000
<i>with Dr. Lincoln Stein</i>	
Mathematics Research Program, <i>Schreiber H.S., Port Washington, NY</i>	September 1999 – June 2001

Publications

First and corresponding author research publications

1. **Van Nostrand EL***, Freese P*, Pratt GA*, Wang X*, Wei X*, Xiao R*, Blue SM, Chen JY, Cody NAL, Dominguez D, Olson S, Sundararaman B, Zhan L, Bazile C, Bouvrette LPB, Bergalet J, Duff MO, Garcia KE, Gelboin-Burkhart C, Hochman M, Lambert NJ, Li H, Nguyen TB, Palden T, Rabano I, Sathe S, Stanton R, Su A, Wang R, Yee BA, Zhou B, Louie AL, Aigner S, Fu XD, Lécuyer E, Burge CB, Graveley BR, Yeo GW. A Large-Scale Binding and Functional Map of Human RNA Binding Proteins. doi: /10.1101/179648. **Nature**. 2020 Jul;583(7818):711-719. PMID: 32728246 (*Joint first authors)

2. Van Nostrand EL, Pratt GA, Yee BA, Wheeler EC, Blue SM, Mueller J, Park SS, Garcia KE, Gelboin-Burkhart C, Nguyen TB, Rabano I, Stanton R, Sundararaman B, Wang R, Fu XD, Graveley BR, Yeo GW. Principles of RNA processing from analysis of enhanced CLIP maps for 150 RNA binding proteins. **Genome Biology**. 2020 Apr 6;21(1):90. PMID: 32252787; PMCID: PMC7137325
3. Van Nostrand EL*, Barnhill SA*, Shishkin AA, Nelles DA, Wang E, Gianneschi NC, Yeo GW. Unbiased identification of nanoparticle uptake mechanisms through improved CRISPR/Cas9 pooled screens. *Manuscript in preparation* (*Joint first authors)
4. Yee BA, Pratt GA, Graveley BR, Van Nostrand EL†, Yeo GW†. RBP-Maps enables robust generation of splicing regulatory maps. **RNA**. 2019 Feb;25(2):193-204. PMID: 30413564. (†Co-corresponding authors)
5. Van Nostrand EL, Shishkin AA, Pratt GA, Nguyen TB, Yeo GW. Variation in single-nucleotide sensitivity of eCLIP derived from reverse transcription conditions. **Methods**. 2017 Aug 5. pii: S1046-2023(16)30441-8. PMID: 28790018.
6. Van Nostrand EL*, Nguyen TB*, Gelboin-Burkhart C, Wang R, Blue SM, Pratt GA, Louie AL, Yeo GW. Robust, Cost-Effective Profiling of RNA Binding Protein Targets with Single-end Enhanced Crosslinking and Immunoprecipitation (seCLIP). **Methods Mol Biol**. 2017;1648:177-200. PMID: 28766298. (*Joint first authors)
7. Van Nostrand EL*, Gelboin-Burkhart C*, Wang R, Pratt GA, Blue SM, Yeo GW. CRISPR/Cas9-mediated integration enables TAG-eCLIP of endogenously tagged RNA binding proteins. **Methods**. 2016 Dec 18. pii: S1046-2023(16)30481-9. PMID: 28003131. (*Joint first authors)
8. Van Nostrand EL, Pratt GA, Shishkin AA, Gelboin-Burkhart C, Fang MY, Sundararaman B, Blue SM, Nguyen TB, Surka C, Elkins K, Stanton R, Rigo F, Guttman M, Yeo GW. Robust transcriptome-wide discovery of RNA-binding protein binding sites with enhanced CLIP (eCLIP). **Nature Methods**. 2016 Jun;13(6):508-14. PMID: 27018577.
9. Conway AE*, Van Nostrand EL*, Pratt GA, Aigner S, Wilbert ML, Sundararaman B, Freese P, Lambert NJ, Sathe S, Liang TY, Essex A, Landais S, Burge CB, Jones DL, Yeo GW. Enhanced CLIP Uncovers IMP Protein-RNA Targets in Human Pluripotent Stem Cells Important for Cell Adhesion and Survival. **Cell Reports**. 2016 Apr 19;15(3):666-79. PMID: 27068461. (*Joint first authors)
10. Van Nostrand EL, Sánchez-Blanco A, Wu B, Nguyen A, Kim SK. Roles of the developmental regulator unc-62/Homothorax in limiting longevity in *Caenorhabditis elegans*. **PLoS Genetics**. 2013;9(2):e1003325. PMID: 23468654.
11. Van Nostrand EL, Kim SK. Integrative analysis of *C. elegans* modENCODE ChIP-seq data sets to infer gene regulatory interactions. **Genome Research**. 2013 Jun;23(6):941-53. PMID: 23531767.
12. Gerstein MB*, Lu ZJ*, Van Nostrand EL*, Cheng C*, Arshinoff BI*, Liu T*, Yip KY*, Robilotto R*, Rechtsteiner A*, Ikegami K*, Alves P*, Chateigner A*, Perry M*, Morris M*, Auerbach RK*, Feng X*, Leng J*, Vielle A*, Niu W*, Rhrissorakkrai K*, *et al.* Integrative analysis of the *Caenorhabditis elegans* genome by the modENCODE project. **Science**. 2010 Dec 24;330(6012):1775-87. PMID: 21177976. (*Joint first authors)

Other research publications

13. Lin J, Conlon DM, Wang X, Van Nostrand EL, Rabano I, Park YS, Strong A, Radmanesh B, Barash Y, Rager DJ, Yeo GW, Musunuru K. RNA-binding protein A1CF modulates plasma triglyceride levels through posttranscriptional regulation of stress-induced VLDL secretion. *Manuscript submitted* (preprint available at <https://www.biorxiv.org/content/early/2018/08/22/397554>).
14. ENCODE Project Consortium, Moore JE*, Purcaro MJ*, Pratt HE*, Epstein CB*, Shores N*, Adrian J*, Kawli T*, Davis CA*, Dobin A*, Kaul R*, Halow J*, Van Nostrand EL*, Freese P*, Gorkin DU*, Shen Y*, He Y*, Mackiewicz M*, Pauli-Behn F*, Williams BA, Mortazavi A, Keller CA, Zhang XO, Elhajjajy SI, Huey J, Dickel DE, Snetkova V, Wei X, Wang X, Rivera-Mulia JC, Rozowsky J, Zhang J, Chhetri SB, Zhang J, Victorsen A, White KP, Visel A, Yeo GW, Burge CB, Lécuyer E, Gilbert DM, Dekker J, Rinn J, Mendenhall EM, Ecker JR, Kellis M, Klein RJ, Noble WS, Kundaje A, Guigó R, Farnham PJ, Cherry JM, Myers RM, Ren B, Graveley BR, Gerstein MB, Pennacchio LA, Snyder MP, Bernstein BE, Wold B, Hardison RC, Gingeras TR, Stamatoyannopoulos JA, Weng Z. Expanded encyclopaedias of DNA elements in the human and mouse genomes. **Nature**. 2020 Jul;583(7818):699-710. doi: 10.1038/s41586-020-2493-4. PMID: 32728249 (*Equal contribution)
15. Wheeler EC, Vu AQ, Einstein JM, DiSalvo M, Ahmed N, Van Nostrand EL, Shishkin AA, Jin W, Allbritton NL, Yeo GW. Pooled CRISPR screens with imaging on microrarray reveals stress granule-regulatory factors. **Nat Methods**. 2020 May 11. PMID: 32393832
16. Bajaj J, Hamilton M, Shima Y, Chambers K, Spinler K, Van Nostrand EL, Yee BA, Blue S, Chen M, Rizzeri D, Chuah C, Oehler VG, Broome HE, Sasik R, Scott-Browne J, Rao A, Yeo GW, Reya T. An In Vivo Genome-Wide CRISPR Screen

Identifies the RNA-Binding Protein Stauf2 as a Key Regulator of Myeloid Leukemia. **Nat Cancer**. 2020. 1, 410–422. <https://doi.org/10.1038/s43018-020-0054-2>

17. Kaiser RW, Ignarski M, [Van Nostrand EL](#), Frese CK, Jain M, Cukoski S, Heinen H, Schaechter M, Seufert L, Bunte K, Frommolt P, Keller P, Helm M, Bohl K, Höhne M, Schermer B, Benzing T, Höpker K, Dieterich C, Yeo GW, Müller RU, Fabretti F. A protein-RNA interaction atlas of the ribosome biogenesis factor AATF. **Scientific Reports**. 2019 Jul 30;9(1):11071. PMID: 31363146.

18. Yang EW, Bahn JH, Hsiao EY, Tan BX, Sun Y, Fu T, Zhou B, [Van Nostrand EL](#), Pratt GA, Freese P, Wei X, Quinones-Valdez G, Urban AE, Graveley BR, Burge CB, Yeo GW, Xiao X. Allele-specific binding of RNA-binding proteins reveals functional genetic variants in the RNA. **Nature Communications**. 2019 Mar 22;10(1):1338. PMID: 30902979

19. Quinones-Valdez G, Tran SS, Jun HI, Bahn JH, Yang EW, Zhan L, Brummer A, Wei X, [Van Nostrand EL](#), Pratt GA, Yeo GW, Graveley BR, Xiao X. Regulation of RNA editing by RNA-binding proteins in human cells. **Communications Biology**. 2019 Jan 14;2:19. PMID: 30652130.

20. Tran S, Jun HI, Bahn JH, Azghadi A, Ramaswami G, [Van Nostrand EL](#), Nguyen TB, Hsiao YE, Lee C, Pratt GA, Martínez-Cerdeño V, Hagerman RJ, Yeo GW, Geschwind DH, Xiao X. Widespread RNA editing dysregulation in Autism Spectrum Disorders. **Nature Neuroscience**. 2019 Jan;22(1):25-36. PMID: 30559470.

21. Dominguez D, Freese P, Alexis MS, Su A, Hochman M, Palden T, Bazile C, Lambert NJ, [Van Nostrand EL](#), Pratt GA, Yeo GW, Graveley BR, Burge CB. Sequence, Structure, and Context Preferences of Human RNA Binding Proteins. **Molecular Cell**. 2018 Jun 7;70(5):854-867.e9. PMID: 29883606.

22. Scott DD, Trahan C, Zindy PJ, Aguilar LC, Delubac MY, [Van Nostrand EL](#), Adivarahan S, Wei KE, Yeo GW, Zenklusen D, Oeffinger M. Nol12 is a multifunctional RNA binding protein at the nexus of RNA and DNA metabolism. **Nucleic Acids Research**. 2017 Oct 23. PMID: 29069457.

23. Carter H, Marty R, Hofree M, Gross AM, Jensen J, Fisch KM, Wu X, DeBoever C, [Van Nostrand EL](#), Song Y, Wheeler E, Kreisberg JF, Lippman SM, Yeo GW, Gutkind JS, Ideker T. Interaction Landscape of Inherited Polymorphisms with Somatic Events in Cancer. **Cancer Discovery**. 2017 Apr;7(4):410-423. PMID: 28188128

24. Lardelli RM, Schaffer AE, Eggen VR, Zaki MS, Grainger S, Sathe S, [Van Nostrand EL](#), Schlachetzki Z, Rosti B, Akizu N, Scott E, Silhavy JL, Heckman LD, Rosti RO, Dikoglu E, Gregor A, Guemez-Gamboa A, Musaev D, Mande R, Widjaja A, Shaw TL, Markmiller S, Marin-Valencia I, Davies JH, de Meirleir L, Kayserili H, Altunoglu U, Freckmann ML, Warwick L, Chitayat D, Blaser S, Çağlayan AO, Bilguvar K, Per H, Fagerberg C, Christesen HT, Kibaek M, Aldinger KA, Manchester D, Matsumoto N, Muramatsu K, Saitsu H, Shiina M, Ogata K, Foulds N, Dobyns WB, Chi NC, Traver D, Spaccini L, Bova SM, Gabriel SB, Gunel M, Valente EM, Nassogne MC, Bennett EJ, Yeo GW, Baas F, Lykke-Andersen J, Gleeson JG. Biallelic mutations in the 3' exonuclease TOE1 cause pontocerebellar hypoplasia and uncover a role in snRNA processing. **Nature Genetics**. 2017 Mar;49(3):457-464. PMID: 28092684

25. Martinez FJ, Pratt GA, [Van Nostrand EL](#), Batra R, Huelga SC, Kapeli K, Freese P, Chun SJ, Ling K, Gelboin-Burkhart C, Fijany L, Wang HC, Nussbacher JK, Broski SM, Kim HJ, Lardelli R, Sundararaman B, Donohue JP, Javaherian A, Lykke-Andersen J, Finkbeiner S, Bennett CF, Ares M Jr, Burge CB, Taylor JP, Rigo F, Yeo GW. Protein-RNA Networks Regulated by Normal and ALS-Associated Mutant HNRNPA2B1 in the Nervous System. **Neuron**. 2016 Nov 23;92(4):780-795. PMID: 27773581.

26. Brannan KW, Jin W, Huelga SC, Banks CA, Gilmore JM, Florens L, Washburn MP, [Van Nostrand EL](#), Pratt GA, Schwinn MK, Daniels DL, Yeo GW. SONAR Discovers RNA-Binding Proteins from Analysis of Large-Scale Protein-Protein Interactomes. **Molecular Cell**. 2016 Oct 4. pii: S1097-2765(16)30520-2. PMID: 27720645.

27. Mann FG, [Van Nostrand EL](#), Friedland AE, Liu X, Kim SK. Deactivation of the GATA Transcription Factor ELT-2 Is a Major Driver of Normal Aging in *C. elegans*. **PLoS Genetics**. 2016 Apr;12(4):e1005956. PMID: 27070429.

28. Sundararaman B, Zhan L, Blue SM, Stanton R, Elkins K, Olson S, Wei X, [Van Nostrand EL](#), Pratt GA, Huelga SC, Smalec BM, Wang X, Hong EL, Davidson JM, Lécuyer E, Graveley BR, Yeo GW. Resources for the Comprehensive Discovery of Functional RNA Elements. **Molecular Cell**. 2016 Mar 17;61(6):903-13. PMID: 26990993.

29. O'Brown ZK, [Van Nostrand EL](#), Higgins JP, Kim SK. The Inflammatory Transcription Factors NF κ B, STAT1 and STAT3 Drive Age-Associated Transcriptional Changes in the Human Kidney. **PLoS Genetics**. 2015 Dec;11(12):e1005734. PMID: 26678048.

30. Zeitz MJ, Lerner PP, Ay F, [Van Nostrand E](#), Heidmann JD, Noble WS, Hoffman AR. Implications of COMT long-range interactions on the phenotypic variability of 22q11.2 deletion syndrome. **Nucleus**. 2013 Dec 5;4(6). PMID: 24448439

31. Yeo GW, [Van Nostrand EL](#), Liang TY. Discovery and analysis of evolutionarily conserved intronic splicing regulatory elements. **PLoS Genetics**. 2007 May 25;3(5):e85. PMID: 17530930.

32. Wang Z, Xiao X, Van Nostrand E, Burge CB. General and specific functions of exonic splicing silencers in splicing control. **Molecular Cell**. 2006 Jul 7;23(1):61-70. PMID: 16797197.
33. Yeo GW, Van Nostrand E, Holste D, Poggio T, Burge CB. Identification and analysis of alternative splicing events conserved in human and mouse. **Proceedings of the National Academy of Sciences, USA**. 2005 Feb 22;102(8):2850-5. PMID: 15708978.

Review and preview publications

1. Wheeler EC, Van Nostrand EL, Yeo GW. Advances and challenges in the detection of transcriptome-wide protein-RNA interactions. **Wiley Interdiscip Rev RNA**. 2018 Jan;9(1). PMID: 28853213.
2. Van Nostrand EL. Isolation versus Enrichment: dCLIP Enables Stringent Profiling of RNA-Binding Sites. **Cell Systems**. 2017 Oct 25;5(4):312-314. PMID: 29073369.
3. Van Nostrand EL, Huelga SC, Yeo GW. Experimental and Computational Considerations in the Study of RNA-Binding Protein-RNA Interactions. **Advances in Experimental Medicine and Biology**. 2016;907:1-28. PMID: 27256380.
4. Van Nostrand EL, Kim SK. Seeing elegance in gene regulatory networks of the worm. **Current Opinion in Genetics & Development**. 2011 Dec;21(6):776-86. PMID: 21963133.
5. Van Nostrand EL, Yeo GW. Evolutionarily Conserved Intronic Splicing Regulatory Elements in the Human Genome. (Jul 2008) In: **eLS. John Wiley & Sons Ltd, Chichester**. <http://www.els.net> [doi: 10.1002/9780470015902.a0021005]

Teaching

Certificate with distinction: “*An Introduction to Evidence-Based Undergraduate STEM Teaching*”, Center for the Integration of Research Teaching and Learning (CIRTL) (Fall 2016)
 CRISPR Screening Workshop (UCSD): Lecture on library preparation (12/6/17)
 BIOM200 (UCSD): Lecture on genomics data integration (10/3/17)
 CRISPR Screening Workshop (UCSD): Lecture on library preparation (10/20/16)
 BGGN220 (UCSD): Lecture on RNA genomics (11/2/15)
 BIOM201 (UCSD): Introductory seminar on specialized ribosomes (10/23/15)
 GENE203 (Stanford): Teaching Assistant to Graduate-level Advanced Genetics (Fall 2007)

Oral Presentations

International Plant & Animal Genome Conference, San Diego, CA (1/11/20)
 Invited Seminar, Baylor College of Medicine, Houston, TX (11/7/19)
 Seminar, University of California Santa Cruz, Santa Cruz, CA (10/30/19)
 Seminar, Stanford University, Stanford, CA (10/29/19)
 Seminar, Sanford Burnham, La Jolla, CA (10/1/19)
 Seminar, Salk Institute, La Jolla, CA (9/30/19)
 ENCODE User Group Meeting, Seattle, WA (7/8/19-7/10/19)
 Invited Seminar, University of Connecticut Health, Farmington, CT (2/6/19)
 Invited Seminar, Boston University, Boston, MA (12/6/18)
 Guest Seminar, University of Pennsylvania, Philadelphia, PA (10/29/18)
 ENCODE Data Utilization Workshop, San Diego, CA (10/16/18)
 NGS Data Analysis & Informatics Conference, San Diego, CA (2/8/18-2/9/18)
 Keystone Symposia (Protein-RNA Interactions), Banff, Canada (2/5/17-2/9/17)
 SingaRNA conference, Singapore (7/4/16)
 International RNA Society meeting, Kyoto, Japan (6/28/16-7/2/16)
 ENCODE User Group meeting, Stanford University, Stanford, CA (6/8/16-6/10/16)
 Eukaryotic mRNA Processing, Cold Spring Harbor Labs, Cold Spring Harbor, NY (8/18/15-8/22/15)
 Cellular & Molecular Medicine Spring Symposium, La Jolla, CA (4/10/15)
 ENCODE RNA subgroup annual meeting, La Jolla, CA (1/30/15)
 Sanford Consortia for Regenerative Medicine seminar (invited speaker), UCSD, La Jolla, CA (9/17/14)
 International C. elegans Meeting, UCLA, CA (6/22/11-6/26/11)
 ENCODE/modENCODE Consortium Meeting, Crystal City, VA (5/23/11-5/25/11)
 Bay Area Aging Club, Berkeley, CA (5/8/11)
 Annual Stanford Symposium for Genomics & Personalized medicine, Stanford, CA (4/23/10)

Honors

NIH Pathway to Independence (K99) Fellow (5/2017-3/2020)
Poster Award: Gordon Research Seminar: Post-Transcriptional Gene Regulation (7/14/18)
Poster Award: International RNA Society annual meeting (06/2018)
Best Poster Award: First Prize (ENCODE consortium annual meeting (6/15/16-6/17/16)
Merck Fellow of the Damon Runyon Cancer Research Foundation (2013-2017)
Smith Fellowship for graduate studies at Stanford (2006-2008)
Merck Prize for bioinformatics/biophysics research at MIT (2005)
Selected associate member of the Sigma Xi Scientific Research Society (2005)

Professional

Active reviewer for Genome Research, Genome Biology, BMC Genomics, Nucleic Acids Research, Cell Systems, Jove, GigaScience, Genomics Proteomics and Bioinformatics

Patents

Efficient Screening Library Preparation (Provisional Patent filed 10/18/17, UCSD)
Methods of Profiling Translation Rate (Provisional Patent filed 3/31/20, UCSD)