Richard Edward Green (Ed)

Assistant Professor, Biomolecular Engineering
University of California, Santa Cruz
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Education

University of Georgia, Athens	Genetics	BS 1997
University of California, Berkeley	Molecular & Cell Biology	PhD 2005
	Designated emphasis in Computational and Genomic Biology	

Academic appointments

Assistant Professor, Dept. of Biomolecular Engineering
University of California, Santa Cruz
Post-doctoral scientist (Aug 2005-Jan 2010), NSF fellow
lab of Svante Pääbo, Max Planck Institute for Evolutionary Anthropology, Leipzig, Germany
Post-doctoral scientist (May 2005-July 2005)
lab of Don Rio, UC, Berkeley
Graduate student (Sept 1999-May 2005)
lab of Steven Brenner, UC Berkeley
Research specialist (July 1998-July 1999)
lab of David Pallas, Emory Univ.
Undergraduate research student (1996-June 1997)
lab of Michael Bender, Univ. of Georgia

Other professional appointments

President – Dovetail Genomics, Inc. (2013-)
Scientific Advisory Board – Maverix Biomics (2012-)
Peer Review Board – Journal of Visualized Experiments (2012-)

Publications

Kistler L, Montenegro A, Smith BD, Gifford JA, **Green RE**, Newsom LA, Shapiro B.
Transoceanic drift and the domestication of African bottle gourds in the Americas
Proc Natl Acad Sci USA 2014 111(8):2937-41

Prüfer K, Racimo F, Patterson N, Jay F, Sankararaman S, Sawyer S, Heinze A, Renaud G, Sudmant PH, de Filippo C, Li H, Mallick S, Dannemann M, Fu Q, Kircher M, Kuhlwilm M, Lachmann M, Meyer M, Ongyerth M, Siebauer M, Theunert C, Tandon A, Moorjani P, Pickrell J, Mullikin JC, Vohr SH, **Green RE**, Hellmann I, Johnson PL, Blanche H, Cann H, Kitzman JO, Shendure J, Eichler EE, Lein ES, Bakken TE, Golovanova LV, Doronichev VB, Shunkov MV, Derevianko AP, Viola B, Slatkin M, Reich D, Kelso J, Pääbo S.
The complete genome sequence of a Neanderthal from the Altai Mountains
Nature 2014 505(7481):43-49

Thalmann O, Shapiro B, Cui P, Schuenemann VJ, Sawyer SK, Greenfield DL, Germonpré MB, Sablin MV, López-Giráldez F, Domingo-Roura X, Napierala H, Uerpmann HP, Loponte DM, Acosta AA, Giemsch L, Schmitz RW, Worthington B, Buikstra JE, Druzhkova A, Graphodatsky AS, Ovodov ND, Wahlberg N, Freedman AH, Schweizer RM, Koepfli KP, Leonard JA, Meyer M, Krause J, Pääbo S, **Green RE**, Wayne RK.
Complete mitochondrial genomes of ancient canids suggest a European origin of domestic dogs
Science 2013 342(6160):871:4

Green RE, Shapiro B.
Human evolution: turning back the clock
Current Biology 2013 23(7):R268-8

Abramyan J, Badenhorst D, Biggar KK, Borchert GM, Botka CW, Bowden RM, Braun EL, Bronikowski AM, Bruneau BG, Buck LT, Capel B, Castoe TA, Czerwinski M, Delehaunty KD, Edwards SV, Fronick CC, Fujita MK, Fulton L, Graves TA, **Green RE**, Haerty W, Hariharan R, Hillier LH, Holloway AK, Janes D, Janzen FJ, Kandoth C, Kong L, de Koning J, Li Y, Literman R, Mardis ER, McGaugh SE, Minx P, Mork L, O 8217 Laughlin M, Paitz RT, Pollock DD, Ponting CP, Radhakrishnan S, Raney BJ, Richman JM, St John J, Schwartz T, Sethuraman A, Shaffer B, Shedlock AM, Spinks PQ, Storey KB, Thane N, Thomson RC, Valenzuela N, Vinar T, Warren DE, Warren WC, Wilson RK, Zimmerman LM, Hernandez O, Amemiya CT.
The western painted turtle genome, a model for the evolution of extreme physiological adaptations in a slowly evolving lineage
Genome Biology 2013 14(3):R28

Cahill JA, **Green RE**, Fulton TL, Stiller M, Jay F, Ovsyanikov N, Salamzade R, St John J, Stirling I, Slatkin M, Shapiro B.
Genomic evidence for island population conversion resolves conflicting theories of polar bear evolution
PloS Genetics 2013 9(3):e1003345

Vohr SH, **Green RE.**
A mouse following in the footsteps of human prehistory
Cell 2013 152(4):667-8

Good JM, Wiebe V, Albert FW, Burbano HA, Kircher M, **Green RE**, Halbwax M, André C, Atencia R, Fischer A, Pääbo S.
Comparative population genomics of the ejaculate in humans and the great apes
Molecular Biology and Evolution 2013 30(4):964-76

Meyer M, Kircher M, Gansauge MT, Li H, Racimo F, Mallick S, Schraiber JG, Jay F, Prüfer K, de Filippo C, Sudmant PH, Alkan C, Fu Q, Do R, Rohland N, Tandon A, Siebauer M, **Green RE**, Bryc K, Briggs AW, Stenzel U, Dabney J, Shendure J, Kitzman J, Hammer MF, Shunkov MV, Derevianko AP, Patterson N, Andrés AM, Eichler EE, Slatkin M, Reich D, Kelso J, Pääbo S.
A high-coverage genome sequence from an archaic Denisovan individual
Science 2012 338(6104):222-6

Burbano HA, **Green RE**, Maricic T, Lalueza-Fox C, de la Rasilla M, Rosas A, Kelso J, Pollard KS, Lachmann M, Pääbo S.
Analysis of human accelerated DNA regions using archic hominin genomes
PLoS One 2012 7(3):e32877

St John JA, Braun EL, Isberg SR, Miles LG, Chong AY, Gongora J, Dalzell P, Moran C, Bed'hom B, Abzhanov A, Burgess SC, Cooksey AM, Castoe TA, Crawford NG, Densmore LD, Drew JC, Edwards SV, Faircloth BC, Fujita MK, Greenwold MJ, Hoffmann FG, Howard JM, Iguchi T, Janes DE, Khan SY, Kohno S, de Koning AJ, Lance SL, McCarthy FM, McCormack JE, Merchant ME, Peterson DG, Pollock DD, Pourmand N, Raney BJ, Roessler KA, Sanford JR, Sawyer RH, Schmidt CJ, Triplett EW, Tuberville TD, Venegas-Anaya M, Howard JT, Jarvis ED, Guillette LJ Jr, Glenn TC, **Green RE**, Ray DA.
Sequencing three crocodilian genomes to illuminate the evolution of archosaurs and amniotes
Genome Biology 2012 13(1):415

Earl D, Bradnam K, St John J, Darling A, Lin D, Fass J, Yu HO, Buffalo V, Zerbino DR, Diekhans M, Nguyen N, Ariyaratne PN, Sung WK, Ning Z, Haimel M, Simpson JT, Fonseca NA, Birol İ, Docking TR, Ho IY, Rokhsar DS, Chikhi R, Lavenier D, Chapuis G, Naquin D, Maillet N, Schatz MC, Kelley DR, Phillippy AM, Koren S, Yang SP, Wu W, Chou WC, Srivastava A, Shaw TI, Ruby JG, Skewes-Cox P, Betegon M, Dimon MT, Solovyev V, Seledtsov I, Kosarev P, Vorobyev D, Ramirez-Gonzalez R, Leggett R, MacLean D, Xia F, Luo R, Li Z, Xie Y, Liu B, Gnerre S, MacCallum I, Przybylski D, Ribeiro FJ, Yin S, Sharpe T, Hall G, Kersey PJ, Durbin R, Jackman SD, Chapman JA, Huang X, DeRisi JL, Caccamo M, Li Y, Jaffe DB, **Green RE**, Haussler D, Korf I, Paten B.
Assemblathon 1: a competitive assessment of de novo short read assembly methods
Genome Research 2011 21(12);2224-41

Abi-Rached L, Jobin MJ, Kulkarni S, McWhinnie A, Dalva K, Gragert L, Babrzadeh F, Gharizadeh B, Luo M, Plummer FA, Kimani J, Carrington M, Middleton D, Rajalingam R, Beksac M, Marsh SG, Maiers M, Guethlein LA, Tavoularis S, Little AM, **Green RE**, Norman PJ, Parham P.
The shaping of modern human immune systems by multiregional admixture with archaic humans
Science 2011 334(6052):89-94

Taliaferro JM, Alvarez N, **Green RE**, Blanchette M, Rio DC.
Evolution of a tissue-specific splicing network
Genes and Development 2011 25:608-620

Albert FW, Hodges E, Jensen JD, Bensier F, Xuan Z, Rooks M, Bhattacharjee A, Brizuela L, Good JM, **Green RE,** Burbano HA, Plyusnina IZ, Trut L, Andersson L, Schöneberg T, Carlborg O, Hannon GJ, Pääbo S.
Targeted resequencing of a genomic region influencing tameness and aggression reveals multiple signals of positive selection
Heredity 2011 Feb 9

Graveley BR, [25 others], **Green RE**, [19 others], Celniker SE
The developmental transcriptome of *Drosophila melanogaster*
Nature 2011 Mar 24; 471(7339):473-9

Reich D, **Green RE***, [25 others], Pääbo S (*** co-first author)**
Genetic history of an archaic hominin group from Denisova cave in Siberia
Nature 2010 Dec 23; 468(7327):1053-60

Rohland N, Reich D, Mallick S, Meyer M, **Green RE**, Georgiadis NJ, Roca AL, Hofreiter M.
Genomic DNA sequences from mastodon and woolly mammoth reveal deep speciation of forest and savanna elephants
PLoS Biol. 2010 Dec 21; 8(12):e1000564

Green RE, [55 others], Pääbo S.
A draft sequence of the Neandertal genome
Science 2010 May 7; 328(5970):710-22

Prüfer K, Stenzel U, Hofreiter, Pääbo S, Kelso J, **Green RE**.
Computational challenges in the analysis of ancient DNA
Genome Biology 2010;11(5):R47

Burbano HA, Hodges E, **Green RE**, Briggs AW, Krause J, Meyer M, Good JM, Maricic T, Johnson PLF, Xuan Z, Rooks M, Bhattacharjee A, Brizuela L, Albert FW, de la Rasilla M, Fortea J, Rosas A, Lachmann M, Hannon GJ, and Pääbo S.
Targeted investigation of the Neandertal genome by array-based capture
Science 2010 May 7; 328(5979):723-5

Green RE, Briggs AW, Krause J, Prüfer K, Burbano HA, Siebauer M, Lachmann M, Pääbo S.
The Neandertal genome and ancient DNA authenticity
EMBO J 2009 Sep 2; 28(17):2494-502.

Briggs AW, Good JM, **Green RE**, Krause J, Maricic T, Stenzel U, Lalueza-Fox C, Rudan P, Brajkovic D, Kucan Z, Gusic I, Schmitz R, Doronichev VB, Golovanova LV, de la Rasilla M, Fortea J, Rosas A, Pääbo S.
Targeted retrieval and analysis of five Neandertal mtDNA genomes
Science 2009 Jul 17;325(5938):318-21.

Hansen KD, Lareau LF, Blanchette M, **Green RE**, Meng Q, Rehwinkel J, Gallusser FL, Izaurralde E, Rio DC, Dudoit S, Brenner SE
Genome-wide identificaiton of alternative splice forms down-regulated by nonsense-mediated mRNA decay in Drosophila
PLoS Genetics. 2009 Jun;5(6):e1000525. Epub 2009 Jun 19.

Blanchette M, **Green RE**, MacArthur S, Brooks AN, Brenner SE, Eisen MB, Rio DC
Genome-wide analysi sof alternative pre-mRNA splicing and RNA-binding specificities of the Drosophila hnRNA A/B family members
Molecular Cell 2009 Feb 27;33(4):438-49.

Green RE, Malaspinas AS, Krause J, Briggs AW, Johnson PL, Uhler C, Meyer M, Good JM, Maricic T, Stenzel U, Prüfer K, Siebauer M, Burbano HA, Ronan M, Rothberg JM, Egholm M, Rudan P, Brajković D, Kućan Z, Gusić I, Wikström M, Laakkonen L, Kelso J, Slatkin M, Pääbo S
A complete Neandertal mitochondrial genome sequence determined by high-throughput sequencing
Cell 2008 Aug 8;134(3):416-26

Prüfer K, Stenzel U, Dannemann M, **Green RE**, Lachmann M, Kelso J
PatMaN: rapid alignment of short sequences to large databases
Bioinformatics 2008 Jul 1;24(13):1530-1

Myles S, Tang K, Somel M, **Green RE**, Kelso J, Stoneking M
Identification and analysis of genomic regions with large between-population differentiation in humans
Ann Hum Genet 2008 Jan;72(Pt 1):99-110

Krause J, Lalueza-Fox C, Orlando L, Enard W, **Green RE**, Burbano HA, Hublin JJ, Hänni C, Fortea J, de la Rasilla M, Bertranpetit J, Rosas A, Pääbo S.
The derived FOXP2 variant of modern humans was shared with Neandertals
Current Biology 2007 Nov 6;17(21):1908-12

Briggs AW, Stenzel U, Johnson PL, **Green RE**, Kelso J, Prüfer K, Meyer M, Krause J, Ronan MT, Lachmann M, Pääbo S.
Patterns of damage in genomic DNA sequences from a Neandertal
Proceedings of the National Academy of Science U S A. 2007 Sep 11;104(37):14616-21

Chen H, **Green RE**, Pääbo S, Slatkin M.
The joint allele-frequency spectrum in closely related species
Genetics 2007 Sep;177(1):387-98

Lareau LF, Inada M, **Green RE**, Wengrod JC, Brenner SE
Unproductive splicing of SR genes associated with highly conserved and ultraconserved DNA elements
Nature 2007 Apr 19;446(7138):926-9

Green RE, Krause J, Ptak SE, Briggs AW, Ronan MT, Simons JF, Du L, Egholm M, Rothberg JM, Paunovic M, Pääbo S
Analysis of one million base pairs of Neanderthal DNA
Nature 2006 Nov 16;444(7117):330-6

Khaitovich P, Kelso J, Franz H, Visagie J, Giger T, Joerchel S, Petzold E, **Green RE**, Lachmann M, Pääbo S
Functionality of intergenic transcription: an evolutionary comparison
PLoS Genetics 2006 Oct 13;2(10):e171

Stiller M, **Green RE,** Ronan M, Simons JF, Du L, He W, Egholm M, Rothberg JM, Keates SG, Ovodov ND, Antipina EE, Baryshnikov GF, Kuzmin YV, Vasilevski AA, Wuenschell GE, Termini J, Hofreiter M, Jaenicke-Despres V, Pääbo S
Patterns of nucleotide misincorporations during enzymatic amplification and direct large-scale sequencing of ancient DNA
Proceedings of the National Academy of Science U S A. 2006 Oct 3;103(40):14977.

Carninci P, [53 others], **Green RE**, [139 others], Hayashizaki Y.
The transcriptional landscape of the mammalian genome
Science 2005 Sep 2; 309(5740):1559-63

Crooks GE*, **Green RE***, Brenner SE (*** co-first author**)
Pairwise alignment incorporating dipeptide covariation
Bioinformatics 2005 Oct 1; 21(19)3704-10

Price GA, Crooks GE, **Green RE**, Brenner SE.
Statistical evaluation of pairwise protein sequence comparison with the Bayesian bootstrap
Bioinformatics 2005 Dec 1; 21(23):4318

Blanchette M*, **Green RE***, Brenner SE, Rio DC. (*** co-first author**)
Global analysis of positive and negative pre-mRNA splicing regulators in Drosophila
Genes and Development 2005 Jun 1;19(11):1306-14.

Blanchette M, Labourier E, **Green RE**, Brenner SE, Rio DC.
Genome-wide analysis reveals an unexpected function for the Drosophila splicing factor U2AF50 in the nuclear export of intronless mRNAs
Molecular Cell 2004 Jun 18;14(6):775-86.

Lareau LF, **Green RE**, Bhatnagar RS, Brenner SE.
The evolving roles of alternative splicing
Current Opinion in Structural Biology 2004 Jun;14(3):273-82. Review.

Hillman RT*, **Green RE***, Brenner SE. (*** co-first author**)
An unappreciated role for RNA surveillance
Genome Biology 2004;5(2):R8.

Green RE, Lewis BP, Hillman RT, Blanchette M, Lareau LF, Garnett AT, Rio DC, Brenner SE.
Widespread predicted nonsense-mediated mRNA decay of alternatively-spliced transcripts of human normal and disease genes
Bioinformatics 2003;19 Suppl 1:i118-21.

Lewis BP*, **Green RE***, Brenner SE. (*** co-first author**)
Evidence for the widespread coupling of alternative splicing and nonsense-mediated mRNA decay in humans
Proceedings of the National Academy of Science U S A. 2003 Jan 7;100(1):189-92.

Mougous JD, **Green RE**, Williams SJ, Brenner SE, Bertozzi CR.
Sulfotransferases and sulfatases in mycobacteria
Chemistry and Biology 2002 Jul;9(7):767-76. Review.

Yu XX, Du X, Moreno CS, **Green RE**, Ogris E, Feng Q, Chou L, McQuoid MJ, Pallas DC.
Methylation of the protein phosphatase 2A catalytic subunit is essential for association of Balpha regulatory subunit but not SG2NA, striatin, or polyomavirus middle tumor antigen
Molecular Biology of the Cell 2001 Jan;12(1):185-99.

Awards, patents, invited presentations, misc.
April 2014: Invited Lecture, UCSC Alumni Weekend Teach-In (Santa Cruz, CA)
April 2014: Invited Lecture, Arizona State University (Tempe, AZ)
Feb 2014: Invited Lecture, Program In Genetics and Genomics, Duke (Durham, NC)

Oct 2013: Invited Lecture, Eijkman Insitute (Jakarta, Indonesia)
Jun 2013: Cafe Scientifique Silicon Valley invited speaker (Menlo Park, CA)
May 2013: CARTA Invited Lecturer – Behaviorally Modern Humans: The Orign of Us (San Diego, CA)
Apr 2013: Univ. of Georgia Bioinformatics symposium, invited speaker (Athens, GA)
Mar 2013: UC Merced School of Natural Science invited seminar (Merced, CA)

July 2012: Kavli Indonesia/American Frontiers of Science organizer and participant (Solo, Indonesia)
Jun 2012: IGC Portugal NGS Workshop invited presenter (Lisbon, Portugal)
Jun 2012: World Science Festival: “Why we prevailed” invited speaker (New York, NY)
May 2012: Univ. of Pennsylvania Human Genetics department invited seminar (Philadelphia, PA)
Apr 2012: Linda Hall Library invited lecture (Kansas City, MO)
Feb 2012: NC State Anthropology Department invited lecture (Raleigh, NC)
Feb 2012: Cal Academy of Science invited lecture (San Francisco, CA)
Feb 2012: Wonder of Science invited lecture, Fromm Institute (San Francisco, CA)

Dec 2011: Modesto Area Partners in Science invited talk (Modesto, CA)
Dec 2011: USC Molecular and Computational Biology Department invited seminar (Los Angeles, CA)
Nov 2011: Alligator Workshop invited talk (Kennedy Space Center, FL)
Nov 2011: Exploratorium invited talk (San Francisco, CA)
Oct 2011: Evolution|Revolution invited speaker: UCSC fundraiser (San Jose, CA)
Oct 2011: RECOMB Comparative Genomics meeting invited keynote speaker (Galway, Ireland)
Sept 2011: Center for Genome Research & Biocomputing Retreat invited speaker (Corvalis, OR)
July 2011: American Genetic Association Meeting, invited speaker (Guanajuato, Mexico)
July 2011: Indonesia-American Frontiers of Science invited participant (Bogor, Indonesia)
May 2011: Dominican Oaks retirement community invited lecture (Santa Cruz, CA)
May 2011: Cabrillo College ACCESS invited Lecture (Aptos, CA)
Apr 2011: Invited speaker, CARTA Symposium: The Genetics of Humanness (San Diego, CA)
Apr 2011: Searle Scholar
Mar 2011: Invited plenary speaker, *Population-level genetic diversity symposium* (Santa Fe, NM)
Feb 2011: Sloan Foundation Research Fellow
Feb 2011: Invited speaker, Human Molecular Genetics, Northwestern Univeristy (Chicago, IL)

Feb 2011: AAAS Newcomb Cleveland Prize
Feb 2011: Invited speaker, AGBT meeting (Marco Island, FL)
Jan 2011: Invited speaker, Texas A&M Dept. of Biology (College Station, TX)
Jan 2011: Tracy and Ruth Storer Lectureship in Life Sciences (Davis, CA)
Jan 2011: Invited speaker, Comparative Genomics Workship (Lyon, France)
Jan 2011: Invited plenary speaker, *Plant and Animal Genomes XIX Conference* (San Diego, CA)

Dec 2010: Invited speaker, Cell & Genome Sciences Inaugural Symposium, Univ. of Conn. (Farmington, CT)
Sep 2010: Invited Speaker, Univ. of Georgia Ecology of Infectious Diseases Lecture Series (Athens, GA)
July 2010: Invited Speaker, SMBE (Lyon, France)
June 2010: Keynote Lecture, 2010 Life Sciences Symposium (Delft, Netherlands)
Feb 2010: Morrison Institute Colloquium Invited Lecturer (Stanford University)
Jan 2010: Profiled in *Genome Technology* "PIs of Tomorrow"

July 2009: Invited speaker, ISMB 2009 Highlights Track (Stockholm, Sweden)
June 2009: Invited speaker for German-American Kavli Frontiers of Science Conference (Irvine, USA)
May 2009: Invited speaker for Transitions from Archaic to Modern: Quantitative Approaches Symposium (Leipzig, Germany)
May 2009: 2nd place poster prize; Biology of Genome meeting at Cold Spring Harbor
May 2009: Invited speaker for Next Generation Sequencing Bioinformatics conference (Cambridge, UK)
Jan 2009: Invited lecturer for Computational Issues in Next-Generation Sequencing workshop (Uppsala, Sweden)
Jan 2009: Invited lecturer for European Course in Comparative Genomics (Lyon, France)

Jul 2008: Invited co-chair of comparative genomics session of ICG 2008 (Berlin, Germany)
Jan 2008: Invited lecturer for European Course in Comparative Genomics (Lyon, France)

Oct 2007: Roche Diagnostics Forum, invited speaker (Johannesburg, South Africa)
Jul 2007: School of Biology seminar invited speaker (Georgia Tech)
Jul 2007: Biochemistry Dept. seminar invited speaker (Emory Univ.)
Apr 2007: Zoology Dept. seminar invited speaker (Univ. Bern, Switzerland)
Jan 2007: Genetics Dept. seminar invited speaker (Univ. of Georgia)

Dec 2006: US Patent 7,149,631 B2 issued: Alternative splicing and nonsense-mediated mRNA decay: computational methods and gene-regulation
Nov 2006: Genetics Dept. seminar invited speaker (Harvard)
Feb 2006: Invited speaker for Darwin day seminar (Rome, Italy)

Sep, 2005: NSF postdoctoral fellowship awarded in Biological informatics
Apr 2005, 2nd place poster prize in UC Berkeley Computational Biology retreat

2003: ISMB invited abstract for oral presentation (Brisbane, Australia)

1997-1998: Peace Corps volunteer (Barentu, Eritrea)