Rachel Green
Curriculum Vitae

December 2021

DEMOGRAPHIC AND PERSONAL INFORMATION

Bloomberg Distinguished Professor
Johns Hopkins University
Joint Appointment in the School of Medicine and the Krieger School of Arts and Sciences
Department of Molecular Biology & Genetics and Biology

Investigator
Howard Hughes Medical Institute

725 N. Wolfe Street / 714A PCTB
Baltimore, MD 21205-2185
Tel: 410-614-4922
Fax: 410-955-9124
ragreen@jhmi.edu

EDUCATION AND TRAINING

Year	Degree	Institution	Discipline
1986	B.S.	University of Michigan	Chemistry
1992	Ph.D.	Harvard University	Biological Chemistry
1998	Post-doc	UC Santa Cruz	Biochemistry

Professional Experience

1998-2003	Assistant Professor Department of Molecular Biology and Genetics, Johns Hopkins University, School of Medicine, Baltimore, MD
2000-2005	Assistant Investigator, Howard Hughes Medical Institute, Johns Hopkins University, School of Medicine, Baltimore, MD
2003-2007	Associate Professor Department of Molecular Biology & Genetics, Johns Hopkins University, School of Medicine, Baltimore, MD
2005-present	Investigator, Howard Hughes Medical Institute, Johns Hopkins University, School of Medicine, Baltimore, MD

2007-2017	Professor Department of Molecular Biology & Genetics, Johns Hopkins University, School of Medicine, Baltimore, MD
2017-present	Bloomberg Distinguished Professor Joint Appointment in the Department of Molecular Biology & Genetics and Biology, Johns Hopkins University School of Medicine and Krieger School of Arts and Sciences, Baltimore, MD
2018-present	Director of Biochemistry, Cellular and Molecular Biology (BCMB) Program, Johns Hopkins University, School of Medicine, Baltimore, MD

RESEARCH ACTIVITIES

Current bioRxiv submissions

Veltri AJ, D'Orazio KN, Lessen LN, Loll-Krippleber R, Brown GW, Green R. (2021) Distinct ribosome states trigger diverse mRNA quality control pathways. bioRxiv 2021.12.01.470814; doi: https://doi.org/10.1101/2021.12.01.470814.

Saito K, Kratzat H, Campbell A, Buschauer R, Maxwell Burroughs A, Berninghausen O, Aravind L, Beckmann R, Green R, Buskirk AR. (2021) Ribosome collisions in bacteria promote ribosome rescue by triggering mRNA cleavage by SmrB. bioRxiv 2021.08.16.456513; doi: https://doi.org/10.1101/2021.08.16.456513.

D'Orazio KN, Lessen LN, Veltri AJ, Neiman Z, Pacheco M, Loll-Krippleber R, Brown GW, Green R. (2021) Genetic screens identify connections between ribosome recycling and nonsense mediated decay. bioRxiv 2021.08.03.454884; doi: https://doi.org/10.1101/2021.08.03.454884.

Peer-reviewed scientific articles

Zinshteyn B, Sinha NK, Enam SU, Koleske B, Green R. (2021) Translational repression of NMD targets by GIGYF2 and EIF4E2. PLoS Genet. 2021 Oct 19;17(10):e1009813. doi: 10.1371/journal.pgen.1009813.

Lawson MR, Lessen LN, Wang J, Prabhakar A, Corsepius NC, Green R, Puglisi JD. (2021) Mechanisms that ensure speed and fidelity in eukaryotic translation termination. Science. 2021 Aug 20;373(6557):876-882. doi: 10.1126/science.abi7801.

Sharma J, Du M, Wong E, Mutyam V, Li Y, Chen J, Wangen J, Thrasher K, Fu L, Peng N, Tang L, Liu K, Mathew B, Bostwick RJ, Augelli-Szafran CE, Bihler H, Liang F, Mahiou J, Saltz J, Rab A, Hong J, Sorscher EJ, Mendenhall EM, Coppola CJ, Keeling KM, Green R, Mense M, Suto MJ, Rowe SM, Bedwell DM. (2021) A small molecule that induces translational readthrough of CFTR nonsense mutations by eRF1 depletion. Nat Commun. 2021 Jul 16;12(1):4358. doi: 10.1038/s41467-021-24575-x.

Goldman DH, Livingston NM, Movsik J, Wu B, Green R. (2021) Live-cell imaging reveals kinetic determinants of quality control triggered by ribosome stalling. Mol Cell. 2021 Apr 15;81(8):1830-1840.e8. doi: 10.1016/j.molcel.2021.01.029.

Ranjan N, Pochopien AA, Chih-Chien Wu C, Beckert B, Blanchet S, Green R, V Rodnina M, Wilson DN. (2021) Yeast translation elongation factor eEF3 promotes late stages of tRNA translocation. EMBO J. 2021 Mar 15;40(6):e106449. doi: 10.15252/embj.2020106449.

Limbrick EM, Graf M, Derewacz DK, Nguyen F, Spraggins JM, Wieland M, Ynigez-Gutierrez AE, Reisman BJ, Zinshteyn B, McCulloch KM, Iverson TM, Green R, Wilson DN, Bachmann BO. (2020) Bifunctional Nitrone-Conjugated Secondary Metabolite Targeting the Ribosome. J Am Chem Soc. 2020 Oct 28;142(43):18369-18377. doi: 10.1021/jacs.0c04675.

Saito K, Green R, Buskirk AR. (2020) Ribosome recycling is not critical for translational coupling in *Escherichia coli*. Elife. 2020 Sep 23;9:e59974. doi: 10.7554/eLife.59974.

Hickey KL, Dickson K, Cogan JZ, Replogle JM, Schoof M, D'Orazio KN, Sinha NK, Hussmann JA, Jost M, Frost A, Green R, Weissman JS, Kostova KK. (2020) GIGYF2 and 4EHP Inhibit Translation Initiation of Defective Messenger RNAs to Assist Ribosome-Associated Quality Control. Mol Cell. 2020 Sep 17;79(6):950-962.e6. doi: 10.1016/j.molcel.2020.07.007.

Enam SU, Zinshteyn B, Goldman DH, Cassani M, Livingston NM, Seydoux G, Green R. (2020) Puromycin reactivity does not accurately localize translation at the subcellular level. Elife. 2020 Aug 26;9:e60303. doi: 10.7554/eLife.60303.

Sinha NK, Ordureau A, Best K, Saba JA, Zinshteyn B, Sundaramoorthy E, Fulzele A, Garshott DM, Denk T, Thoms M, Paulo JA, Harper JW, Bennett EJ, Beckmann R, Green R. (2020) EDF1 coordinates cellular responses to ribosome collisions. Elife. 2020 Aug 3;9:e58828. doi: 10.7554/eLife.58828.

Wu CC, Peterson A, Zinshteyn B, Regot S, Green R. (2020) Ribosome Collisions Trigger General Stress Responses to Regulate Cell Fate. Cell. 2020 Jul 23;182(2):404-416.e14. doi: 10.1016/j.cell.2020.06.006.

Zinshteyn B, Wangen JR, Hua B, Green R. (2020) Nuclease-mediated depletion biases in ribosome footprint profiling libraries. RNA. 2020 Jun 5;. doi: 10.1261/rna.075523.120.

Saito K, Green R, Buskirk AR. (2020) Translational initiation in *E. coli* occurs at the correct sites genome-wide in the absence of mRNA-rRNA base-pairing. Elife. 2020 Feb 17;9. doi: 10.7554/eLife.55002.

Wangen JR & Green R. (2020) Stop Codon Context Influences Genome-Wide Stimulation of Termination Codon Readthrough by Aminoglycosides. Elife. 2020 Jan 23;9. pii: e52611. doi: 10.7554/eLife.52611.

Tesina P, Lessen LN, Buschauer R, Cheng J, Wu CC, Berninghausen O, Buskirk AR, Becker T, Beckmann R, Green R. (2020) Molecular mechanism of translational stalling by inhibitory codon combinations and poly(A) tracts. The EMBO journal. e103365. doi:10.15252/embj.2019103365

Kearse MG, Goldman DH, Choi J, Nwaezeapu C, Liang D, Green KM, Goldstrohm AC, Todd PK, Green R, Wilusz JE. (2019) Ribosome queuing enables non-AUG translation to be resistant to multiple protein synthesis inhibitors. Genes Dev. 2019 Jul 1;33(13-14):871-885. doi: 10.1101/gad.324715.119.

D'Orazio KN, Wu CC, Sinha N, Loll-Krippleber R, Brown GW, Green R. (2019) The endonuclease Cue2 cleaves mRNAs at stalled ribosomes during No Go Decay. Elife. 2019 Jun 20;8. doi: 10.7554/eLife.49117.

Wu CC, Zinshteyn B, Wehner KA, Green R. (2019) High-Resolution Ribosome Profiling Defines Discrete Ribosome Elongation States and Translational Regulation during Cellular Stress. Mol Cell. 2019 Mar 7;73(5):959-970.e5. doi: 10.1016/j.molcel.2018.12.009.

Weaver J, Mohammad F, Buskirk AR, Storz G. (2019) Identifying Small Proteins by Ribosome Profiling with Stalled Initiation Complexes. MBio. 2019 Mar 5;10(2). doi: 10.1128/mBio.02819-18.

Mohammad F, Green R, Buskirk AR. (2019) A systematically-revised ribosome profiling method for bacteria reveals pauses at single-codon resolution. Elife. 2019 Feb 6;8. pii: e42591. doi: 10.7554/eLife.42591.

Wu CC, Zinshteyn B, Wehner KA, Green R. (2019) High-Resolution Ribosome Profiling Defines Discrete Ribosome Elongation States and Translational Regulation during Cellular Stress. Mol Cell. 2019 Jan 11. pii: S1097-2765(18)31063-3. doi: 10.1016/j.molcel.2018.12.009.

Zinshteyn B, Chan D, England W, Feng C, Green R, Spitale RC. (2018) Assaying RNA structure with LASER-Seq. Nucleic Acids Res. 2018 Nov 22. doi: 10.1093/nar/gky1172.

Liakath-Ali K, Mills EW, Sequeira I, Lichtenberger BM, Pisco AO, Sipilä KH, Mishra A, Yoshikawa H, Wu CC, Ly T, Lamond AI, Adham IM, Green R, Watt FM. (2018) An evolutionarily conserved ribosome-rescue pathway maintains epidermal homeostasis. Nature. 2018 Apr;556(7701):376-380. doi: 10.1038/s41586-018-0032-3.

Schuller AP, Zinshteyn B, Enam SU, Green R. (2017) Directed hydroxyl radical probing reveals Upf1 binding to the 80S ribosomal E site rRNA at the L1 stalk. Nucleic Acids Res. 2017 Dec. doi 10.1093/nar/gkx1263.

Paix A, Folkmann A, Goldman DH, Kulaga H, Grzelak MJ, Rasoloson D, Paidemarry S, Green R, Reed RR, Seydoux G. (2017) Precision genome editing using synthesis-dependent repair of Cas9-induced DNA breaks. Proc Natl Acad Sci U S A. 2017 Dec 12;114(50):E10745-E10754. doi: 10.1073/pnas.1711979114.

Guydosh NR, Kimmig P, Walter P, Green R. (2017) Regulated Ire1-dependent mRNA decay requires no-go mRNA degradation to maintain endoplasmic reticulum homeostasis in *S. pombe*. Elife. 2017 Sep 25;6. pii: e29216. doi: 10.7554/eLife.29216.

McClary B, Zinshteyn B, Meyer M, Jouanneau M, Pellegrino S, Yusupova G, Schuller A, Reyes JCP, Lu J, Guo Z, Ayinde S, Luo C, Dang Y, Romo D, Yusupov M, Green R, Liu JO. (2017) Inhibition of Eukaryotic Translation by the Antitumor Natural Product Agelastatin A. Cell Chem Biol. 2017 May 18;24(5):605-613.e5. doi: 10.1016/j.chembiol.2017.04.006.

Schuller AP, Wu CC, Dever TE, Buskirk AR, Green R. (2017) eIF5A Functions Globally in Translation Elongation and Termination. Mol Cell. 2017 Apr 20;66(2):194-205.e5. http://doi.org/10.1016/j.molcel.2017.03.003

Mills EW, Green R, Ingolia NT. (2017) Slowed decay of mRNAs enhances platelet specific translation. Blood 2017. Apr 27; 129(17): e38-e48. doi: https://doi.org/10.1182/blood-2016-08-736108

Guydosh NR, Green R. (2017) Translation of poly(A) tails leads to precise mRNA cleavage. RNA 2017. 23: 749-761.

Laura L. Arthur, Joyce J. Chung, Preetam Jankirama, Kathryn M. Keefer, Igor Kolotilin, Slavica Pavlovic-Djuranovic, Douglas L. Chalker, Vojislava Grbic, Rachel Green, Rima Menassa, Heather L. True, James B. Skeath & Sergej Djuranovic. (2017) Rapid Generation of Hypomorphic Mutations. Nat Commun. 8, 14112, 2017 Jan 20, doi: 10.1038/ncomms14112.

Mills EW, Wangen J, Green R, Ingolia NT. (2016) Dynamic regulation of a ribosome rescue pathway in erythroid cells and platelets. Cell Reports. 2016 Sep 27;17(1):1-10.

Radhakrishnan A, Chen YH, Martin S, Alhusaini N, Green R, Coller J. (2016) The DEAD-Box Protein Dhh1p Couples mRNA Decay and Translation by Monitoring Codon Optimality. Cell. 167:1-11.

Mohammad F, Woolstenhulme CJ, Green R, Buskirk AR. (2016) Clarifying the Translational Pausing Landscape in Bacteria by Ribosome Profiling. Cell Rep. 2016 Feb 2;14(4):686-94.

Kowalinski E, Schuller A, Green R, Conti E. Saccharomyces cerevisiae Ski7 Is a GTP-Binding Protein Adopting the Characteristic Conformation of Active Translational GTPases. (2015) Structure. 2015 Jul 7;23(7):1336-43.

Arthur L, Pavlovic-Djuranovic S, Smith-Koutmou K, Green R, Szczesny P, Djuranovic S. (2015) Translational control by lysine-encoding A-rich sequences. Sci Adv. 2015 Jul;1(6). pii: e1500154.

Young DJ, Guydosh NR, Zhang F, Hinnebusch AG, Green R. (2015) Rli1/ABCE1 Recycles Terminating Ribosomes and Controls Translation Reinitiation in 3'UTRs In Vivo. Cell. 162(4):872-84.

Woolstenhulme CJ, Guydosh NR, Green R, Buskirk AR. (2015) High-precision analysis of translational pausing by ribosome profiling in bacteria lacking EFP. Cell Rep. 11(1):13-21.

Koutmou KS, Schuller AP, Brunelle JL, Radhakrishnan A, Djuranovic S, Green R. (2015) Ribosomes slide on lysine-encoding homopolymeric A stretches. Elife. 2015 Feb 19;4. doi: 10.7554/eLife.05534.

Petropoulos, AD, McDonald, ME, Green, R, Zaher, HS. (2014) Distinct roles for release factor 1

and release factor 2 in translational quality control. J Biol Chem 289:17589-96.

Preis, A, Heuer, A, Barrio-Garcia, C, Hauser, A, Eyler, DE, Berninghausen, O, Green, R, Becker, T, Beckmann, R. (2014) Cryoelectron microscopic structures of eukaryotic translation termination complexes containing eRF1-eRF3 or eRF1-ABCE1. Cell Rep. 8:59-65.

van den Elzen, AM, Schuller, A, Green, R, Seraphin, B. (2014) Dom34-Hbs1 mediated dissociation of inactive 80S ribosomes promotes restart of translation after stress. EMBO J 33:265-76.

Guydosh, NR and Green, R. (2014) Dom34 rescues ribosomes in 3' untranslated regions. Cell 156:950-62.

Koutmou, KS, McDonald, ME, Brunelle, JL, Green, R. (2014) RF3:GTP promotes rapid dissociation of the class 1 termination factor. RNA 20:609-20.

Eyler, DE, Wehner, KA, Green R. (2013) Eukaryotic Release Factor 3 Is Required for Multiple Turnovers of Peptide Release Catalysis by Eukaryotic Release Factor 1. J Biol Chem 288(41):29530-29538

Hur, JK, Zinchenko, MK, Djuranovic, S, Green, R. (2013) Regulation of Argonaute slicer activity by guide RNA 3' end interactions with the N-terminal lobe. J Biol Chem, 288(11):7829-40.

Shaw, JJ, Trobro, S, He, SL, Aqvist, J, Green, R. (2012) A role for the 2' OH of peptidyl-tRNA substrate in peptide release on the ribosome revealed through RF-mediated rescue. Chem Biol 19:983-93.

Provost, E, Wehner, KA, Zhong, X, Ashar, F, Nguyen, E, Green, R, Parsons, MJ, Leach, SD. (2012) Ribosomal biogenesis genes play an essential and p53-independent role in zebrafish pancreas development. Development 139:3232-41.

Becker T, Franckenberg S, Wickles S, Shoemaker CJ, Anger AM, Armache JP, Sieber H, Ungewickell C, Berninghausen O, Daberkow I, Karcher A, Thomm M, Hopfner KP, Green R, Beckmann R. (2012) Structural basis of highly conserved ribosome recycling in eukaryotes and archaea. Nature 482(7386):501-6.

Petropoulos, AD, Green, R. (2012) Further in vitro exploration fails to support the allosteric three-site model. J Biol Chem 287(15):11642-8.

Agirrezabala X, Liao HY, Schreiner E, Fu J, Ortiz-Meoz RF, Schulten K, Green R, Frank J. (2012) Structural characterization of mRNA-tRNA translocation intermediates. Proc Natl Acad Sci U S A 109(16):6094-9.

Djuranovic, S, Nahvi, A, Green, R. (2012) miRNA-mediated gene silencing by translational repression followed by mRNA deadenylation and decay. Science 336(6078):237-40.

Shoemaker, CJ, Green, R. (2011). Kinetic analysis reveals the ordered coupling of translation termination and ribosome recycling in yeast. Proc Natl Acad Sci USA 108(51):E1392-8.

Zaher, HS, Green, R. (2011). A primary role for release factor 3 in quality control during

translation elongation in Escherichia coli. Cell. 147(2):396-408.

Miller, MR, Liu, Z, Cazier, DJ, Gebhard, GM, Herron, SR, Zaher, HS, Green, R, Buskirk, AR. (2011) The role of SmpB and the ribosomal decoding center in licensing tmRNA entry into stalled ribosomes. RNA 17(9):1727-36.

Dang, Y, Schneider-Poetsch, T, Eyler, DE, Jewett, JC, Bhat, S, Rawal, VH, Green, R, Liu, JO (2011) Inhibition of eukaryotic translation elongation by the antitumor natural product Mycalamide B. RNA 17(8):1578-88.

Ortiz-Meoz, RF, Green, R. (2011) Helix 69 is key for uniformity during substrate selection on the ribosome. J Biol Chem 286(29):25604-10.

Zaher, HS, Shaw, JJ, Strobel, SA, Green, R. (2011) The 2'-OH group of the peptidyl-tRNA stabilizes an active conformation of the ribosomal PTC. EMBO J. 30:2445-53.

Eyler, DE, Green, R. (2011) Distinct response of yeast ribosomes to a miscoding event during translation. RNA 5:925-32.

Djuranovic, S, Nahvi, A, Green, R. (2011) A parsimonious model for gene regulation by miRNAs. Science 331:550-3.

Ortiz-Meoz, RF and Green, R. (2010) Functional elucidation of a key contact between the tRNA and the large ribosomal subunit rRNA during decoding. RNA 16:2002-13.

Zaher, HS and Green, R. (2010) Kinetic basis for global loss of fidelity arising from mismatches in the P-site codon:anticodon helix. RNA 2010 16:1980-9.

Zaher, HS and Green, R. (2010) Hyperaccurate and error-prone ribosomes exploit distinct mechanisms during tRNA selection. Mol Cell 39:110-20.

He, S, and Green, R. (2010) Visualization of codon-dependent conformational rearrangements during translation termination. Nat Struct Mol Biol 17:465-70.

Djuranovic, S, Zinchenko, MS, Hur, JK, Nahvi, A, Brunelle, JL, Rogers, EJ, Green, R. (2010) Allosteric regulation of Argonaute proteins by miRNAs. Nat Struct Mol Biol 17:144-50.

Shoemaker, CJ, Eyler, DE, Green, R. (2009) Dom34:Hbs1 promotes subunit dissociation and peptidyl-tRNA drop-off to initiate no-go decay. Science 330: 369-72.

Saini, P, Eyler DE, Green, R, Dever, TE. (2009) Hypusine-containing protein eIF5A promotes translation elongation. Nature 459:118-21.

Nahvi, A, Shoemaker, CJ, Green, R. (2009) An expanded seed sequence definition accounts for full regulation of the hid 3' UTR by bantam miRNA. RNA 15:814-22.

Schneider-Poetsch, T, Ju, J, Eyler, DE, Dang, Y, Bhat, S, Merrick, WC, Green, R, Shen, B, Liu, JO. (2010) Inhibition of eukaryotic translation elongation by cycloheximide and lactidomycin. Nature Chemical Biology 6:209-17.

Zaher, HS, Green, R. (2009) Quality control by the ribosome following peptide bond formation.

Nature 457 (7226): 161-6.

Li, W, Agirrezabala, X, Lei, L, Bouakaz, L, Brunelle, JL, Ortiz-Meoz, RF, Green, R, Sanyal, S, Ehrenberg, M, Frank, J. (2008) Recognition of aminoacyl-tRNA: a common molecular mechanism revealed by cryo-EM. EMBO J. 27(24): 3322-31.

Agirrezabala, X, Lei, J, Brunelle, JL, Ortiz-Meoz, RF, Green, R, Frank, J. (2008) Visualization of the hybrid state of tRNA binding promoted by spontaneous ratcheting of the ribosome. Mol Cell 32 (2): 190-7.

Brunelle, JL, Shaw, JJ, Youngman, EM, Green, R. (2008) Peptide release on the ribosome depends critically on the 2' OH of the peptidyl-tRNA substrate. RNA 8: 1526-31.

Shaw, JJ, Green, R. (2007) Two distinct components of release factor function uncovered by nucleophile partitioning analysis. Molecular Cell 28(3):458-67.

Sharma, D, Cukras, AR, Southworth, DR, Green, R. (2007) Mutational analysis of S12 protein and implications for the accuracy of decoding by the ribosome. Journal of Molecular Biology 374(4):1065-76.

Youngman, EM, He, SL, Nikstad, LJ, Green, R. (2007) Stop codon recognition by release factors promotes rearrangement in the ribosomal decoding center that is productive for peptide release. Molecular Cell 28(4):533-43.

Cochella, L, Brunelle, J, Green, R. (2007) Mutational analysis reveals two independent molecular requirements during transfer RNA selection on the ribosome. Nat Struct Mol Biol. 14:30-6.

Dorner, S, Lum, L, Kim, M, Paro, R, Beachy, PA, Green, R. (2006) A genomewide screen for components of the RNAi pathway in Drosophila cultured cells. Proc Natl Acad Sci USA. 32: 11880-5.

Dorner, S, Brunelle, JL, Sharma, D, Green, R. (2006) The hybrid state of tRNA binding is an authentic translation elongation intermediate. Nat Struct Mol Biol. 13: 234-41.

Brunelle, JL, Youngman, EM, Sharma, D, Green, R. (2006) The interaction between C75 of tRNA and the A loop of the ribosome stimulates peptidyl transferase activity. RNA 12: 33-9.

Youngman, EM, Green, R. (2005) Affinity purification of in vivo-assembled ribosomes for in vitro biochemical analysis. Methods 36: 305-12.

Cochella, L, Green, R. (2005) An active role for tRNA in decoding beyond codon:anticodon pairing. Science 308: 1178-80.

Cukras, AR, Green, R. (2005) Multiple effects of S13 in modulating the strength of inter subunit interactions in the ribosome during translation. JMB 349: 47-59.

Semrad, K, Green, R, Schroeder, R. (2004) RNA chaperone activity of large ribosomal subunit proteins from Escherichia coli. RNA 12: 1855-60.

Weinger, J.S., Parnell, K.M., Dorner, S., Green, R., Strobel, S.A. Substrate-assisted catalysis of

peptide bond formation by the ribosome. Nat Struct Mol Biol. 2004; 11: 1101-6.

Merryman, C, Green, R. (2004) Transformation of aminoacyl tRNAs for the in vitro selection of “drug-like” molecules. Chemistry & Biology 11: 575-82.

Youngman, EM, Brunelle, JL, Kochaniak, AB, Green, R. (2004) The active site of the ribosome is composed of two layers of conserved nucleotides with distinct roles in peptide bond formation and peptide release. Cell 117: 589-99.

Cochella, L, Green, R. (2004) Isolation of antibiotic resistance mutations in the rRNA by using an in vitro selection system. PNAS 101: 3786-3791.

Sharma, D, Southworth, DR, Green, R. (2004) EF-G-independent reactivity of a pre-translocation state ribosome complex with the aminoacyl tRNA substrate puromycin supports an intermediate (hybrid) state of tRNA binding. RNA 10: 102-113.

Cukras, AR, Southworth, D, Brunelle, JL, Culver, GM, Green, R. (2003) Ribosomal proteins S12 and S13 function as control elements for translocation of the mRNA:tRNA complex. Mol. Cell. 12: 321-8.

Southworth, DR, Brunelle, J, and Green, R. (2002) EF-G independent translocation of the mRNA:tRNA complex is promoted by modification of the ribosome with thiol-specific reagents. JMB 324: 611-623.

Semrad, K and Green, R. (2002) Osmolytes stimulate the reconstitution of functional 50S ribosomes from in vitro transcripts of Escherichia coli 23S rRNA. RNA 8: 401-11.

Thompson, J, Kim, DK, O'Connor, M, Lieberman, KR, Bayfield, MA, Gregory, ST, Green, R, Noller, HF and Dahlberg, AE. (2001) Analysis of mutations at residues A2451 and G2447 of 23S rRNA in the peptidyl transferase active site of the 50S ribosomal subunit. Proc. Natl. Acad. Sci. 98: 9002-7.

Kim, DF and Green, R. (1999) Base-pairing between 23S rRNA and tRNA in the ribosomal A site. Mol. Cell 4: 859-64.

Sardesai, NY, Green, R and Schimmel, P. (1999) Efficient 50S Ribosome-catalyzed peptide bond synthesis with an aminoacyl helix. Biochem. 38: 12080-8.

Khaitovich, P, Tenson, T, Mankin, AS and Green, R. (1999) Peptidyl transferase activity catalyzed by protein-free 23S ribosomal RNA remains elusive. RNA 5: 605-8.

Khaitovich, P, Mankin, AS, Green, R, Lancaster, L and Noller, HF. (1999) Characterization of functionally active subribosomal particles from Thermus aquaticus. Proc. Natl. Acad. Sci. 96: 85-90.

Green, R and Noller, HF. (1999) Reconstitution of functional 50S ribosomes from in vitro transcripts of Bacillus stearothermophilus 23S rRNA. Biochem. 38: 1772-9.

Green, R, Switzer, C and Noller, HF. (1998) Ribosome-catalyzed peptide-bond formation with an A-site substrate covalently linked to 23S rRNA. Science 280: 286-8.

Puglisi, EV, Green, R, Noller, HF and Puglisi, JD. (1997) Structure of a universally conserved hairpin loop in the P site of the 23S ribosomal RNA. Nat. Struct. Biol. 4: 775-8.

von Ahsen, U, Green, R, Schroeder, R and Noller, HF. (1997) Identification of 2'-hydroxyl groups required for interaction of a tRNA anticodon stem-loop with the ribosome. RNA 3: 49-56.

Green, R, Samaha, RR and Noller, HF. (1997) Mutations at nucleotides G2251 and U2585 of 23S rRNA perturb the peptidyl transferase center of the ribosome. J. Mol. Biol. 266: 40-50.

Green, R and Noller, HF. (1996) In vitro complementation analysis localizes 23S rRNA post-transcriptional modifications that are required for E. coli 50S ribosomal subunit assembly and function. RNA 2: 1011-21.

Samaha, RR, Green, R and Noller, HF. (1995) A base pair between tRNA and 23S rRNA in the peptidyl transferase centre of the ribosome. Nature 377: 309-14.

Green, R and Szostak, JW. (1994) In vitro genetic analysis of the hinge region between helical elements P5-P4-P6 and P7-P3-P8 in the sunY group I self-splicing intron. J. Mol. Biol. 235: 140-55.

Kumar, Y, Green, R, Wise, DS, Wotring, LL and Townsend, LB. (1993) Synthesis of 2,4-disubstituted thiazoles and selenazoles as potential antifilarial and antitumor agents. 2. 2-Arylamido and 2-alkylamido derivatives of 2-amino-4-(isothiocyanatomethyl)thiazole and 2-amino-4-(isothiocyanatomethyl)selenazole. J. Med. Chem. 36: 3849-52.

Kumar, Y, Green, R, Wise, DS, Wotring, LL and Townsend, LB. (1993) Synthesis of 2,4-disubstituted thiazoles and selenazoles as potential antifilarial and antitumor agents. 1. Methyl 4-(Isothiocyanatomethyl)thiazole-2-carbamates, -selenazole-2-carbamates, and related derivatives. J. Med. Chem. 36: 3843-8.

Green, R and Szostak, JW. (1992) Selection of a ribozyme that functions as a superior template in a self-copying reaction. Science 258: 1910-5.

Green, R, Szostak, JW, Benner, SA, Rich, A and Usman, N. (1991) Synthesis of RNA containing inosine: analysis of the sequence requirements for the 5' splice site of the Tetrahymena group I intron. Nucl. Acids Res. 19: 4161-6.

Musier-Forsyth, K, Usman, N, Scaringe, S, Doudna, JA, Green, R, and Schimmel, P. (1991) Specificity for aminoacylation of an RNA helix: an unpaired, exocyclic amino group in the minor groove. Science 253: 784-6.

Green, R, Ellington, AD and Szostak, JW. (1990) In vitro genetic analysis of the Tetrahymena self-splicing intron. Nature 347: 406-8.

Couture, S, Ellington, AD, Gerber, AS, Cherry, JM, Doudna, JA, Green, R, Hanna, M, Pace, U, Rajagopal J, and Szostak, JW. (1990) Mutational analysis of conserved nucleotides in a self-splicing group I intron. J. Mol. Biol. 215: 345-58.

Michel, F, Hanna, M, Green, R, Bartel, DP and Szostak, JW. (1989) The guanosine-binding site of the Tetrahymena ribozyme. Nature 342: 391-5.

Reviews and Book Chapters

Saba JA, Liakath-Ali K, Green R, Watt FM. Translational control of stem cell function. (2021) Nat Rev Mol Cell Biol. 2021 Oct;22(10):671-690. doi: 10.1038/s41580-021-00386-2. Epub 2021 Jul 16.

D'Orazio KN, Green R. (2021) Ribosome states signal RNA quality control. Mol Cell. 2021 Apr 1;81(7):1372-1383. doi: 10.1016/j.molcel.2021.02.022.

Veltri AJ, D'Orazio KN, Green R. (2020). Make or break: the ribosome as a regulator of mRNA decay. Cell research, 10.1038/s41422-019-0271-3. doi:10.1038/s41422-019-0271-3.

Craig N, Cohen-Fix O, Green R, Greider C, Storz G, Wolberger C. (2020) *Molecular Biology: Principles of Genome Function* 3rd edition, 2020 Oct 27. Oxford University Press.

Schuller AP, Green R. (2018) Roadblocks and resolutions in eukaryotic translation. Nat Rev Mol Cell Biol. 2018 May 14. doi: 10.1038/s41580-018-0011-4. Review.

Dever TE, Dinman JD, Green R. (2018) Translation Elongation and Recoding in Eukaryotes. Cold Spring Harb Perspect Biol. 2018 Apr 2. pii: a032649. doi: 10.1101/cshperspect.a032649.

Buskirk AR, Green R. (2017) Ribosome pausing, arrest and rescue in bacteria and eukaryotes. Philos Trans R Soc Lond B Biol Sci DOI: 10.1098/rstb.2016.0183.

Mills EW, Green R. (2017) Ribosomopathies: There's strength in numbers. Science. 2017 Nov 3;358(6363). pii: eaan2755. doi: 10.1126/science.aan2755. Review.

Radhakrishnan A, Green R. (2016) Connections Underlying Translation and mRNA Stability. J Mol Biol. 2016 May 31. pii: S0022-2836(16)30194-2. doi: 10.1016/j.jmb.2016.05.025.

Koutmou KS, Radhakrishnan A, Green R. (2015) Synthesis at the Speed of Codons. Trends Biochem Sci. 2015 Dec;40(12):717-8.

Buskirk, AR and Green, R. (2013) Biochemistry. Getting past polyproline pauses. Science 339:38-9.

Shoemaker, CJ and Green, R. (2012) Translation drives mRNA quality control. Nat Struct Mol Biol 19:594-601.

McDonald, ME and Green, R. (2012) Another burst of smoke: atomic resolution structures of RF3 bound to the ribosome. RNA 18(4):605-9.

Dever, TE and Green, R. (2012) The elongation, termination, and recycling phases of translation in eukaryotes. Cold Spring Harb Perspect Biol 4:a013706.

Ortiz-Meoz, RF, He, SL, Zaher, HS, Green, R. (2011) “Sense and nonsense recognition by the ribosome” in : MV Rodnina, W Wintermeyer, R Green (editors) Ribosomes: Structure, Function, and Dynamics, published following the Ribosomes 2010 meeting in Orvieto, Italy. Publishers Springer Wien New York.

Djuranovic, S., Nahvi, A., Green, R. (2011) A parsimonious model for gene regulation by miRNAs. Science 331:550-3.

Zaher, HS, Green, R. (2009) Monitoring fidelity at the molecular level: lessons from protein synthesis. Cell 136:746-62.

Youngman, EM, McDonald, ME, Green, R. (2008) Peptide Release on the Ribosome: Mechanism and Implications for Translational Control. Annu Rev Microbiol 2008; 62: 353-73.

Youngman, EM, Green, R. (2007) Ribosomal Translocation: LepA Does It Backwards. Curr Biol 2007; 4:136-9.

Youngman, EM, Cochella, L, Brunelle, JL, He, S, Green, R. (2006) Two distinct conformations of the conserved RNA-rich decoding center of the small ribosomal subunit are recognized by tRNAs and release factors. Cold Spring Harb Symp Quant Biol 71:545-9.

Green, R, Doudna JA. (2006) RNAs regulate biology. ACS Chem Biol 2006; 6:335-8.

Cochella, L and Green, R. (2005) Fidelity in protein synthesis. Curr Biol 2005; 15: R536-40.

Cochella, L and Green, R. (2005) Wobble during decoding: more than third-position promiscuity. Nat Struct Mol Biol; 11: 1160-2.

Green, R and Lorsch, JR (2002) The path to perdition is paved with protons. Cell 110: 1-4.

Kim, DF, Semrad, K, and Green, R. (2001) Analysis of the active site of the ribosome by site-directed mutagenesis. Cold Spring Harbor Symp. on Quant. Biol 2001 66: 119-126.

Puglisi, JD, Blanchard, SC and Green, R. (2000) Approaching translation at atomic resolution. Nat Struct Biol 2000 7: 855-61.

Green, R. (2000) Ribosomal translocation: EF-G turns the crank. Current Biology 10: R369-373.

Green, R, and Puglisi, JD. (1999) The ribosome revealed. Nat Struct Biol 6: 999-1003.

Green, R and Noller, HF. (1997) Ribosomes and translation. Annu Rev Biochem 66: 679-716.

Noller, H.F., Green, R., Heilek, G., Hoffarth, V., Huttenhofer, A., Joseph, S., Lee, I., Lieberman, K.R., Mankin, A., Merryman, C., Powers, T., Samaha, R.R., and Weiser, B. (1995) "Structure and Function of Ribosomal RNA" in: A. Matheson, J. Davies, P. Dennis and W. Hill (editors) Biochem. Cell. Biol. (Proceedings of frontiers in translation, an international ribosome conference, Victoria, B.C) 997-1009.

Green, R, Ellington, AD, Bartel, DP and Szostak, JW. (1991) In vitro genetic analysis: selection and amplification of rare functional nucleic acids. Methods 2: 75-86.

Ellington, AD and Green, R. (1990) Synthesis of oligonucleotides. Current Protocols in Molecular Biology Unit 2.11.

Patents

Date	Title
4/12/2000	In Vitro Ribosome Evolution US app. no. 09/547,537; ref. no. JHU-3413; patent issued 3/19/2002
3/27/2003	Method for Producing Diverse Libraries of Encoded Polymers US app. no. 11/235,667; ref. no. JHU-4204; pending
6/21/2004	In Vitro Reconstitution of Ribonucleoprotein Complexes, and Methods of Use Thereof; US app. no. 05/22017; ref. no. JHU-4466; pending
12/02/2008	Manipulation of Post Peptidyl Transfer Quality Control for Protein Synthesis; JHU C10563

EXTRAMURAL SPONSORSHIP

Current Grants

Dates/Title: 2000-present
Sponsor: Howard Hughes Medical Institute
Principle Investigator: Rachel Green
Role: PI

Dates/Title: 1999-2024
"Molecular mechanisms of ribosome pausing and the cellular response"
ID# 2R37GM059425
Sponsor: NIH
Principal Investigator: Rachel Green
Role: PI

Dates/Title: 2019-2021
"Molecular definition of nonsense suppression and nonsense mediated decay"
ID# GREEN19G0
Sponsor: Cystic Fibrosis Foundation
Principal Investigator: Rachel Green
Role: PI

Previous Grants

Dates/Title: 2013-2018
"Interactions regulating translation and protein biogenesis in vivo"
ID#: U54GM105816
Sponsor: NIH
Principal Investigator: Patricia Clark
Role: PI

Dates/Title: 2016-2018
"Defining readthrough drug specificity for cystic fibrosis therapeutic development"
ID# 124760 (GREEN16G0)

Sponsor: Cystic Fibrosis Foundation
Principal Investigator: Rachel Green
Role: PI

Dates/Title: 2014-2019
"Molecular mechanisms of ribosome pausing and the cellular response"
ID# 2R01GM059425-14/2R37GM059425-14
Sponsor: NIH
Principal Investigator: Rachel Green
Role: PI

Dates/Title: 2005-2013
"The role played by the rRNAs and tRNAs in translation"
ID #: 2R01GM059425-06A1
Sponsor: NIH
Principle Investigator: Rachel Green
Role: PI

Dates/Title: 1999-2004
"Defining the role played by 23S rRNA in translation"
ID #: 1R01GM059425
Sponsor: NIH

Dates/Title: 1998-2003
"Directed evolution of the catalytic center of the ribosome"
ID #: 98-4403
Sponsor: David and Lucile Packard Fellowship Award

Dates/Title: 1999-2002
"Defining and evolving the peptidyl transferase center of the ribosome"
ID #: 99 B-110
Sponsor: Searle Scholarship Award

Dates/Title: 1998-2002
"Development of an in vitro selection scheme for the isolation of functional ribosomes from heterogeneous populations "
ID #: 2078
Sponsor: Burroughs Wellcome Fund Career Award

EDUCATIONAL ACTIVITIES

Teaching

Course Co-director

Spring 2003	(with J. Corden) RNA structure and function (upper level elective)
Fall 2004-2007	(with J. Boeke) Molecular biology and genomics (BCMB core module)

Course Director

Spring 2007	Topics in RNA biology
2008-present	Molecular Biology and Genomics (BCMB core module)

Lecturer

Fall 1998-present	Molecular biology core graduate course
Fall 2001-present	Molecules and cells (medical school course)
Fall 2001-2002	Computational approaches to RNA structure
Fall 2004	Rockefeller University (graduate course)

Small group instructor

Fall 2002-2003	Molecules and cells (molecular biology)
Fall 2004-present	Molecules and cells (biophysics)

Mentoring

Pre-doctoral students:		*Current position:*
1998-2005	Daniel R. Southworth, Ph.D. *Paul Ehrlich Research Award (2004)*	Associate Professor University of California-San Francisco
2000-2005	Anthony R. Cukras, M.D./Ph.D.	Dermatologist, Harvard Medical Faculty Physician at Beth Israel Deaconess, Boston, MA
2000-2006	Luisa Cochella, Ph.D. *Alicia Showalter Reynolds Award* (2005)	Group Leader Institute of Molecular Pathology Vienna, Austria
2000-2007	Divya Sharma, Ph.D.	Post-doc with Harris Bernstein NIH
2000-2007	Elaine Youngman, Ph.D. (*Alicia Showalter Reynolds Award 2006*)	Assistant Professor Villanova University

2005-2009	Jeffrey Shaw, Ph.D.	Senior Research Scientist Promega
2005-2011	Rodrigo Ortiz-Meoz, Ph.D.	Senior Scientist Janssen Pharmaceutical Companies Johnson & Johnson
2005-2011	Michelle Kim (Zinchenko), Ph.D.	Lead Scientist, Circulomics, Inc.
2006-2012	Daniel Eyler, Ph.D.	Lab Manager, Koutmou Lab University of Michigan
2006-2011	Shan He, Ph.D.	Co-Founder, Chief Business Officer LinkDoc Technology, Beijing, China
2007-2012	Junho Hur, Ph.D.	Assistant Professor Kyung Hee University College of Medicine, Seoul, Korea
2008-2012	Christopher Shoemaker, Ph.D.	Assistant Professor Geisel School of Medicine at Dartmouth
2007-2013	Megan McDonald Gilmore, Ph.D.	Life Sciences Consultant Accenture
2011-2018	Anthony Schuller, Ph.D.	Post-doc with Thomas Schwartz MIT, Helen Hay Whitney Fellow
2011-2017	Aditya Radakrishnan, Ph.D.	Scientist Cellgene, Seattle, WA
2011-2015	Eric Mills, M.D., Ph.D. (co-advisor with Nick Ingolia)	Resident at Mass. Gen. Hospital
2013-2019	Laura Lessen, Ph.D.	Post-doc with Rachel Green, Johns Hopkins University Vaccines, Glaxo Smith Kline
2013-2019	Jamie Wangen, Ph.D.	Post-doc with Rachel Green, Johns Hopkins University Post-doc with Mitch Guttman, Caltech
2015-2020	Karole D'Orazio, Ph.D.	Post-doc with Rachel Green, Johns Hopkins University

		Post-doc with Danesh Moazed Harvard Medical School
2015-2019	Fuad Mohammad (BCMB student)	Post-doc with Cynthia Sears, Johns Hopkins University
2016-	Anthony Veltri (PMB student)	
2019-	Miguel Pacheco (BCMB student)	
2019-	James (Jake) Saba (M.D./Ph.D. student)	
2020-	Annie Campbell (BCMB student)	
2020-	Esther Park (PMB student)	
2021-	Jeff Li (SPH-BMB student)	
2021-	Vienna Huso (BCMB student)	

Post-doctoral fellows:		*Current position:*
1999-2002	Katharina Semrad, Ph.D. Austrian Funds	Senior instructor IMP, Vienna
2002-2005	Charles (Chuck) Merryman, Ph.D.	Senior Scientist J. Craig Venter Institute
2002-2006	Silke Dorner, Ph.D. Austrian Funds	Group Leader Max Perutz Laboratories, Vienna
2005-2010	Ali Nahvi, Ph.D. LSRF (2006-2008), HHMI	Discovery Research Lead Spark Therapeutics, Philadelphia, PA
2007-2012	Sergej Djuranovic, Ph.D.	Associate Professor Washington University
2007-2012	Hani Zaher, Ph.D. NSERC fellowship (2007-2009) NIH K99 award	Associate Professor Washington University
2009-2012	Alexandros Petropoulos, Ph.D.	Research Associate, NCSR Demokritos, Athens, Greece
2009-2015	Nicholas Guydosh, Ph.D.	Stadtman Tenure-Track Investigator

	Damon-Runyon post-doc fellow	NIDDK, NIH
2012-2016	Kristin Smith-Koutmou, Ph.D. NIH-funded post-doc	Assistant Professor University of Michigan
2010-2015	Karen Wehner, Ph.D. BSI-funded post doc HHMI	Associate Director Research Integrity Johns Hopkins University
2013-2020	Chih-Chien (Colin) Wu, Ph.D. HHMI	Stadtman Investigator, RNA Biology Lab, NIH-NCI Frederick, MD
2014-2015	Chris Woostenhulme, Ph.D. NIH U54 funded post-doc	Research Associate, Johns Hopkins University Cytiva
2015-	Kazuki Saito, Ph.D.	
2015-2021	Boris Zinshteyn, Ph.D. Damon-Runyon post-doc fellow NIH K99 award	Senior Scientist, Panorama Medicine, Philadelphia, PA
2016-2021	Daniel Goldman, Ph.D. Damon-Runyon post-doc fellow	Senior Scientist, Sana Biotechnology, Inc., Cambridge, MA
2018-	Niladri Sinha, Ph.D. HHMI-Jane Coffin Childs post-doc fellow	
2019-	Boyang (Frank) Hua, Ph.D.	
2020-	Marco Catipovic, Ph.D. Damon-Runyon post-doc fellow	

Sabbatical visitors:

2011-2013	Allen Buskirk, Ph.D., BYU Professor
2013-2014	Martine Collart, Ph.D., Universite de Geneve

EDITORIAL ACTIVITIES

Member of RNA journal editorial board (2007)
Member of Molecular Cell editorial board (2007)
Member of Journal of Biology journal editorial board (2008)
Member of Chemistry and Biology journal editorial board (2009)
RNA Society Board of Directors (effective Jan 1, 2010)

Damon Runyon-Rachleff Innovation Award Selection Committee (effective Oct 22, 2009)
RNA associate editor (2011)
NAS editor (2012-present)

Journal peer review *eLife, Cell, Molecular Cell, Nature Structural Biology, Journal of Molecular Biology, PNAS, Biochemistry, RNA, Science, Nature, J. Biological Chemistry*

ORGANIZATIONAL ACTIVITIES

Institutional Administrative Appointments

2000-2004	BCMB rotation committee
2004, 2006	Chair of MBG job search
2018-present	Director of BMCB Program

Professional Society

Membership in RNA society since 1998
Membership in National Academy of Sciences since 2012
Membership in National Academy of Medicine since 2017
Membership in American Academy of Arts & Sciences since 2019

Conference Session Chair

2004	Cold Spring Harbor Laboratory Bacterial Genetics (Cold Spring Harbor, NY)
2005	RNA Society Meeting – Translation session (Banff, Canada)
2005	Japanese-American Frontiers in Science (Tokyo, Japan)
2006	Keystone meeting – Nucleic Acid Enzymes (Taos, NM)
2006	FASEB meeting – Nucleic Acid Enzymes (Saxtons River, VT)
2007	ASBMB meeting (Washington, D.C.)
2007	EMBO Conference (Heidelberg, Germany)

Conference Co-organizer

2007	RNA society annual meeting (Madison, WI) (~1000 participants)
2010	Ribosomes 2010 International ribosome meeting (Orvieto, Italy) 300 participants
2011	Translational Control (Heidelberg, Germany) 400 participants
2012	RNA society annual meeting (Ann Arbor, MI) (~1000 participants)
2013	ASBMB – Section organizer (with Dan Herschlag)
2013	GRC Nucleic Acids (co-organize with Karolin Luger)
2017	RNA Meeting organizer
2017	EMBL organizer
2018	CSH organizer

Scientific review panel

2004	NIH Biochemistry study section, Ad Hoc Reviewer (SRO Mike Sveda)

2006	NIH Microbiology study section, Ad Hoc Reviewer (SRO Diane Stassi)
2007	NIH Biochemistry study section, Ad Hoc Reviewer (SRO Mike Sveda)
2008	NIH Biochemistry study section, Ad Hoc Reviewer (SRO Mike Sveda)
2009-2012	NIH Biochemistry study section, Permanent Reviewer (SRO Mike Sveda)
2009	Science Foundation Ireland –Life Sciences
2009-	Reviewer for Damon Runyon Early Career Rachleff Award
2012	NIH MGA chair (SRO Mike Sveda)
2011	NIH Pioneer award - Reviewer
2012	DFG Review Panel – Berlin
2014	ERC Review Panel - Brussels
2014	Munich SAB panel for interdisciplinary graduate program

Consulting Activities and Science Advisory Boards

2001	Kosan Pharmaceuticals
2004	Legal advisor (Benitec)
2005	AminoArrays
2015-present	Cystic Fibrosis Foundation
2016-present	Moderna SAB
2017-present	Stowers Institute SAB
2019-present	Celgene
2020-present	FL63 now Alltrna
2021-present	Arrakis
2021-present	Foresite Labs
2021-present	Initial Therapeutics
2021-present	Vertex Pharmaceuticals
2021-present	Eclipse Bioinnovations

RECOGNITION

Awards and Honors

1982-86	Undergraduate Academic Scholarships
1987-90	NSF Predoctoral Fellowship
1993-96	Damon Runyon Walter Winchell Postdoctoral Fellowship
1996	American Cancer Society Postdoctoral Fellowship, California Division
1996-01	Burroughs Wellcome Career Award
1999	RPI/RNA Award for Young Scientists
2000	David and Lucile Packard Fellowship Award
1999	Searle Scholarship Award
2005	Graduate Student Teaching Award
2012	Elected to the National Academy of Sciences
2017	Elected to the National Academy of Medicine
2017	Named Bloomberg Distinguished Professor at Johns Hopkins University School of Medicine
2019	Elected to the American Academy of Arts & Sciences

Invited Seminars

1998 NIH Lambda Lunch (hosted by Gisela Storz), MD
1999 University of Maryland, College Park, MD
1999 University of Maryland, Baltimore County, MD
1999 Dept. of Biological Chemistry, JHU-SOM, Baltimore, MD
2000 NIH, Bethesda, MD
2000 Carnegie Institute of Washington, Baltimore, MD
2001 CARB, Rockville, MD
2001 Dept. of Pharmacology, JHU-SOM, Baltimore, MD
2002 Yale University, New Haven CT
2002 State University of New York, Buffalo NY
2002 Case Western Reserve, Cleveland OH
2003 Institute of Molecular Biology at University of Oregon, Eugene OR
2003 University of California at Irvine, Irvine, CA
2003 University of California at Davis, Davis, CA
2004 University of California at San Francisco, San Francisco, CA
2004 Iowa State University, Ames, IA
2004 Harvard University, Boston, MA
2004 Rockefeller University, New York, NY
2005 Johns Hopkins University (Institute of Genetic Medicine)
2005 Pennsylvania State University, Hershey, PA
2005 UT Southwestern Lecture (Paul Srere Lecture)
2005 Thomas Jefferson University, Philadelphia, PA
2005 NIH Lambda Lunch, MD
2006 Columbia University, New York, NY
2006 Stanford University, Frontiers in Science Lecture
2006 Johns Hopkins University (School of Public Health), Baltimore MD
2006 University of Washington, Seattle, WA
2006 University of Chicago, Chicago, IL
2006 North Carolina State University, Durham, NC
2006 University of California, San Diego, CA
2006 Simon Fraser University, Vancouver, BC, Canada
2006 New Jersey Medical School, Newark, NJ
2007 University of Utah, Salt Lake City, UT
2007 Brigham Young University, Provo, UT
2007 Rockefeller University, New York, NY
2007 Harvard University, Boston, MA
2007 Rochester University, Rochester, NY
2007 McMaster University (Canada)
2007 Bryn Mawr College, Philadelphia, PA
2007 Penn State University, State College, PA
2007 UCSF, San Francisco, CA
2007 University of Maryland, College Park, MD
2007 Howard University, Washington, DC
2008 Carleton College (Minnesota)
2008 Cal Tech, Pasadena, CA

2008 University of Illinois, Urbana-Champaign, IL
2008 University of Massachusetts, Worcester, MA
2008 University of Pennsylvania, Philadelphia, PA
2009 Cleveland Clinic Lerner Institute, Cleveland, PA
2009 Yale University, New Haven CT
2009 University of Michigan, Ann Arbor, MI
2009 Harvard University, Boston, MA
2009 University of Miami, Miami, FL
2009 Cleveland Clinic, Post-doctoral lecture, Cleveland, OH
2009 University of Maryland, Baltimore County
2009 Johns Hopkins School of Public Health, Baltimore, MD
2009 Ohio State University, Columbus, OH
2009 Indiana University, Bloomington, IN
2010 University of Arizona, Roy Parker Lab Retreat
2010 Virginia Commonwealth University
2010 University of California, Berkeley
2011 Brown University
2011 Carnegie Institute
2011 Franklin and Marshall College
2011 University of Chicago
2012 Cold Spring Harbor Laboratories
2012 ETH – Zurich
2012 Columbia University
2012 University of California (UCLA)
2012 NIEHS
2012 IMP (Vienna, Austria)
2012 University of Toronto (Toronto, Ontario, Canada)
2012 Rutgers University (New Brunswick, NJ)
2013 Harvard Medical School (Boston, MA)
2013 University of Massachusetts (Worcester, MA)
2013 University of Rochester (Rochester, NY)
2013 UNC Distinguished Lecture (Chapel Hill, NC)
2013 USUHS (Washington, DC)
2013 UCSF (Women's society, San Franciso, CA)
2014 SUNY Albany – Keynote (Albany, NY)
2014 Washington University (St. Louis, MO)
2014 Biocenter of the Goethe University (Frankfurt, Germany)
2014 Aarhus Universitet (Aarhus, Denmark)
2014 Case Western Reserve (Clevaland, OH)
2014 Yale University (New Haven, CT)
2014 MUSC keynote address (Charleston, SC)
2014 Tsinghua University (Bejing, China)
2015 University of Notre Dame (Notre Dame, IN)
2015 University of Michigan (Ann Arbor, MI)
2015 University of Texas Southwestern (Dallas, TX)
2016 University of Colorado (Denver, CO)

2017 Salk Symposium
2017 Cornell University
2017 UIC
2017 UMDNJ
2017 St. Judes
2017 Tel Aviv University
2017 Weizmann Institute
2017 University of Maryland
2018 Max Planck Institute -(Munich, Germany)
2018 WEHI (Melbourne, Australia)
2018 NYU Special Lecture – Nudler
2018 Arizona – Ross Buchan
2018 UCSD – Sue Ackerman
2018 OSU Symposium keynote
2018 Northwestern Symposium keynote
2018 IMP Vienna
2018 Princeton University
2018 Columbia University
2019 Rockefeller University
2019 Columbia University
2019 University of Toronto
2019 University of Michigan keynote
2019 NIH – post-doc invitation
2019 University of Texas Austin
2019 Villanova
2019 Stanford
2019 University of North Carolina- Duke Keynote
2020 Harvard University (Boston, MA)
2020 University of Pennsylvania School of Medicine
2020 Yale University (New Haven, CT)
2020 University of Washington Keynote
2020 Memorial Sloan Kettering Institute
2020 University of Alabama, Birmingham
2021 University of California, San Diego
2021

Invited lectures at meetings

1998 Translational Control (Cold Spring Harbor, NY)
1998 Gordon Research Conference - Nucleic Acids (Newport, RI)
1999 The Ribosome Helsingor Conference (Denmark)
2001 Biophysical Society Annual Meeting (Boston, MA)
2001 CSH Symposium – Ribosome (Cold Spring Harbor, NY)
2001 Gordon Research Conference – Nucleic Acids (Newport, RI)
2001 Gordon Research Conference – QSAR (Tilton, NH)
2001 Wesleyan Symposium on Translation (Middletown, CN)
2001 American Chemical Society Meeting (Chicago, IL)

2002 Ribosome Meeting (Queenstown, New Zealand)
2003 RNA Horizon Symposia (Portland, ME)
2003 Gordon Research Conference - Nucleic Acids (Newport, RI)
2004 Gordon Research Conference - Coenzymes & Metabolic Pathways (Meridan, NH)
2005 Biophysical Society Annual Meeting (Long Beach, CA)
2006 ASBMB (San Francisco, CA)
2006 Gordon Research Conference – Nucleic Acids (declined)
2006 CSH Symposium - Regulatory RNAs (Cold Spring Harbor, NY)
2006 Gordon Research Conference - Molecular Cell Biology (Tilton, NH)
2006 FASEB Summer Research Conference – Nucleic Acid Enzymes (Saxons River, VT)
2006 RNA Society (Seattle, WA)
2007 ASBMB Meeting (Washington, DC)
2007 RNA Annual Society Meeting (Madison, WI)
2007 International Ribosome Conference (MA)
2007 Symposium of Protein Society
2007 ACS Meeting, Yonath Symposium (Boston)
2007 EMBO Conference (Heidelberg, Germany)
2007 Keystone Symposium (Coeur D'Alene, Idaho)
2008 ASBMB Meeting (San Diego, CA)
2008 RiboWest Conference – Keynote Speaker (Lethbridge, Canada)
2008 RNA Annual Society Meeting (Berlin, Germany)
2009 Gordon Research Conference – Nucleic Acids (Portland, ME)
2009 Protein Society Conference (Boston, MA)
2009 Neurons meeting at Janelia Farms
2010 Cologne Spring Meeting (Germany)
2010 International Ribosome Meeting (Orvieto, Italy)
2010 GRC – Post transcriptional Gene Regulation (Providence, RI)
2010 CSH Translational Control
2010 Max Planck Horizons Seminar (Goettingen)
2011 ASBMB (Washington DC)
2011 Keystone RNA silencing meeting (Monterey, CA)
2011 GRC – Nucleic Acids (New Biddeford, ME)
2011 RNA Society Meeting (Kyoto, Japan)
2012 Hutchinson symposium (Seattle, WA)
2012 GRC – Post transcriptional Gene Regulation (Providence, RI)
2012 EMBL – protein quality control
2012 EMBL – life of an RNA
2013 Cell meeting (Sitges, Spain)
2013 Biophysical Society (Philadelphia, PA)
2013 ASBMB (Boston, MA)
2013 FEBS meeting – St. Petersburg, Russia
2013 International Ribosome Meeting (Marin County, CA)
2014 Berlin Molecules and Membranes (Berlin, Germany)
2014 Mosbach Spring Meeting (Mosbach, Germany)
2014 FASEB meeting on mRNA decay (Big Sky, MT)
2014 GRC – Post transcriptional Gene Regulation (Providence, RI)

2014 CSH Asia meeting on RNA biology (Shanghai, China)
2015 ASBMB Special Symposium (St. Louis, MO)
2016 MSTP Presentation (NIH)
2016 Translational Control Meeting (CSHL)
2016 Complex Life of mRNA (Heidelberg, Germany)
2017 UC Steitz Lectures
2017 ASBMB (Chicago)
2017 NIH RNA Symposium
2017 EMBO Protein Quality Control (Spain)
2017 Genetics Meeting (Lausanne, Switzerland)
2017 FEBS (Israel)
2018 Lorne Conference (Australia)
2018 Cologne keynote
2018 Chicheley Hall Profiling Conference (UK)
2018 GRC Post-transcriptional
2018 CSH translational control
2018 ASCB Quality Control Meeting – plenary lecture
2019 Ribosome Meeting (Mexico)
2019 Cystic Fibrosis Foundation (Washington D.C.)
2019 GRC Galveston Translation/Disease keynote
2019 RNA Therapeutics Symposium (Worcester, MA)
2019 Rosalind Franklin Board Meeting (Philadelphia, PA)
2019 EMBO Protein Synthesis & Translational Control (Heidelberg, Germany)
2019 MBSJ Workshop (Fukuoka, Japan)
2020 Max Planck Horizons in Molecular Biology (Gottingen, Germany- Virtual)
2020 Rustbelt RNA (RRM- Virtual)
2020 8th International mRNA Health Conference (Virtual)
2021 Stowers Institute, Scientific Advisory Board
2021 University of Toronto keynote (Virtual)
2021 UT Southwestern Medical Center (Virtual)
2021 Colorado State University (Ft. Collins, CO)
2021 Colorado University, Boulder (Boulder, CO)
2021 University of Chicago (Chicago, IL)

Corporate Visits (Invited Seminar Speaker)
1998 Phylos Inc., Lexington MA
1998 Dupont Chemical Corporation (Wilmington, DE)
2000 Cumbre (Dallas, TX)
2000 Pharmacia-Upjohn (Kalamazoo, MI)
2001 Kosan Biosciences (San Francisco, CA)
2002 Vertex Pharmaceuticals (Boston, MA)
2004 GlaxoSmithKline (Collegeville, PA)
2005 Venter Institute (Rockville, MD)
2009 New England Bio Labs (Boston, MA)
2012 Ra Pharmaceuticals (Boston, MA)
2013 Moderna (Boston, MA)

2013 Novartis (Boston, MA)
2015 Moderna (Boston, MA)
2016 Moderna (Boston, MA)
2017 Moderna (Boston, MA)
2017 Merck (Philadelphia, PA)
2018 Moderna (Boston, MA)
2018 Arrakis Therapeutics (Boston, MA)
2018 ELOXX (Boston, MA)
2018 Celgene (Chicago, IL)
2019 Moderna (Boston, MA)
2019 Cystic Fibrosis Foundation (Bethesda, MD)
2020 FL63 (virtual-Cambridge, MA)
2020 Moderna (virtual, Boston, MA)
2021 Moderna (virtual, Boston, MA)
2021 Moderna (on-site, Boston, MA)
2021 Moderna SAB (Boston, MA)

Invited Panel

2000 Harvard University Graduate Advisory Panel – Dept. of Genetics
2010 Harvard Medical School – former student symposium
2016 University of Rochester student invitation
2017 UCI – student invitation
2018 UCSF – student invitation
2020 HHMI Hanna H. Gray Fellowship Review Panel