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Current Appointment

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Education and Training

1990	B.A.	Swarthmore College (Chemistry with Honors)
1995	Ph.D.	Harvard University (Biochemistry)
1995-1999	Fellowship	Stanford University (Biochemistry)

Professional Experience

1989-1990	Honors Thesis, Swarthmore College Advisors: Judith Voet, Ph.D. and Nancy Hamlett, Ph.D. Thesis: Enzymology of mercuric reductase from a novel bacterium, <i>C. iridescens</i>
1990-1995	Ph.D., Harvard University Department of Molecular and Cellular Biology Advisor: Jack W. Szostak, Ph.D. Thesis: <i>In vitro</i> selection of novel functional RNAs
1993	Graduate Teaching Fellow, Harvard University
1994	Head Graduate Teaching Fellow, Harvard University
1995-1999	Post-doctoral Fellow, Stanford University Department of Biochemistry Advisor: Daniel Herschlag, Ph.D.
1999-2005	Assistant Professor
2005-2009	Associate Professor
2009-2013	Professor Department of Biophysics and Biophysical Chemistry Johns Hopkins University School of Medicine
2013-2014	Adjunct Investigator, <i>Eunice Kennedy Shriver</i> National Institute of Child Health and Human Development
2013-present	Director, National Institute of General Medical Sciences
2014-present	Senior Investigator, <i>Eunice Kennedy Shriver</i> National Institute of Child Health and Human Development

RESEARCH ACTIVITIES

Peer-Reviewed Original Research Articles

1. Ruprecht, R.M., **Lorsch, J.R.** and Trites, D.H. "Analysis of suramin plasma levels by ionpair high-performance liquid chromatography under isocratic conditions." *Journal of Chromatography* (1986) **378**:498-502.
2. **Lorsch, J.R.** and Szostak, J.W. "In vitro selection of RNA aptamers specific for cyanocobalamin." *Biochemistry* (1994) **33**:973-82.
3. **Lorsch, J.R.** and Szostak, J.W. "In vitro evolution of new ribozymes with polynucleotide kinase activity." *Nature* (1994) **371**:31-6.
4. **Lorsch, J.R.**, Bartel, D.P. and Szostak, J.W. "Reverse transcriptase reads through a 2'-5' linkage and a 2'-thiophosphate in a template." *Nucleic Acids Research* (1995) **23**:2811-14.
5. **Lorsch, J.R.** and Szostak, J.W. "Kinetic and thermodynamic characterization of the reaction catalyzed by a polynucleotide kinase ribozyme." *Biochemistry* (1995) **34**:15315-27.
6. **Lorsch, J.R.** and Herschlag, D. "The DEAD Box Protein eIF4A. 1. A minimal kinetic and thermodynamic framework reveals coupled binding of RNA and nucleotide." *Biochemistry* (1998) **37**:2180-93.
7. **Lorsch, J.R.** and Herschlag, D. "The DEAD box protein eIF4A. 2. A cycle of nucleotide and RNA-dependent conformational changes." *Biochemistry* (1998) **37**:2194-2206.
8. **Lorsch, J.R.** and Herschlag, D. "Kinetic dissection of fundamental processes of eukaryotic translation initiation *in vitro*." *EMBO J.* (1999) **18**:6705-17.
9. Algire, M.A., Maag, D., Savio, P., Acker, M.G., Tarun, S.Z., Sachs, A.B., Asano, K., Nielsen, K.H., Olsen, D.S., Phan, L., Hinnebusch, A.G. and **Lorsch, J.R.** "Development and characterization of a reconstituted yeast translation initiation system." *RNA* (2002) **8**:382-97.
10. Carriere, M., Vijayabaskar, V., Applefield, D., Harvey, I., Garneau, P., **Lorsch, J.**, Lapidot, A. and Pelletier, J. "Inhibition of protein synthesis by aminoglycoside-arginine conjugates." *RNA* (2002) **8**:1267-79.
11. Shin, B.-S., Maag, D., Roll-Mecak, A., Arefin, M.S., Burley, S.K., **Lorsch, J.R.** and Dever, T.E. "Uncoupling of initiation factor eIF5B/IF2 GTPase and translational activities by mutations that lower ribosome affinity." *Cell* (2002) **111**:1015-25.
12. Maag, D. and **Lorsch, J.R.** "Communication between eukaryotic translation initiation factors 1 and 1A on the yeast small ribosomal subunit." *J. Mol. Biol.* (2003) **330**:917-24.
13. Kapp, L.D. and **Lorsch, J.R.** "GTP-dependent recognition of the methionine moiety on initiator tRNA by translation factor eIF2." *J. Mol. Biol.* (2004) **335**:923-36.

14. Maag, D., Fekete, C.A., Gryczynski, Z. and **Lorsch, J.R.** "A conformational change in the eukaryotic translation pre-initiation complex and release of eIF1 signal recognition of the start codon." *Mol. Cell* (2005) **17**:265-75.
15. Fekete, C.A., Applefield, D.J., Blakely, S.A., Shirokikh, N., Pestova, T., **Lorsch, J.R.**, and Hinnebusch, A.G. "The eIF1A C-terminal domain promotes initiation complex assembly, scanning and AUG selection *in vivo*." *EMBO J.* (2005) **24**:3588-601.
16. Algire, M.A., Maag, D. and **Lorsch, J.R.** "P_i release from eIF2, not GTP hydrolysis, is the step controlled by start-site selection during eukaryotic translation initiation." *Mol. Cell* (2005) **20**:251-62.
17. Maag, D., Algire, M.A. and **Lorsch, J.R.** "Communication between eukaryotic translation initiation factors 5 and 1A within the ribosomal pre-initiation complex plays a role in start site selection." *J. Mol. Biol.* (2006) **356**:724-37.
18. Acker, M.G., Shin, B.-S., Dever, T.E. and **Lorsch, J.R.** "Interaction between eukaryotic initiation factors 1A and 5B is required for efficient ribosomal subunit joining." *J. Biol. Chem.* (2006) **281**:8469-75.
19. Kapp, L.D., Kolitz, S.E. and **Lorsch, J.R.** "Yeast initiator tRNA identity elements cooperate to influence multiple steps of translation initiation." *RNA* (2006) **12**:751-64.
20. Robert, F., Kapp, L.D., Khan, S.N., Acker, M.G., Kolitz, S.E., Kazemi, S., Kaufman, R.J., Merrick, W.C., Koromilas, A.E., **Lorsch, J.R.** and Pelletier, J. "Initiation of protein synthesis by hepatitis C virus is refractory to reduced eIF2•GTP•Met-tRNA_i^{Met} ternary complex availability." *Mol. Biol. Cell* (2006) **17**:4632-44.
21. Shin, B.-S., Acker, M.G., Maag, D., Kim, J.R., **Lorsch, J.R.** and Dever, T.E. "Intragenic suppressor mutations restore GTPase and translation functions of eIF5B switch II mutant." *Mol. Cell. Biol.* (2007) **27**:1677-85.
22. Fringer, J.M., Acker, M.G., Fekete, C.A., **Lorsch, J.R.** and Dever, T.E. "Coupled release of factors eIF5B and eIF1A from 80S ribosomes following subunit joining." *Mol. Cell. Biol.* (2007) **27**:2384-97.
23. Fekete, C.A.* , Mitchell, S.F.* , Cherkasova, V.A., Applefield, D.J., Algire, M.A., Maag, D., Saini, A., **Lorsch, J.R.**‡ and Hinnebusch, A.G.‡ "N- and C-terminal residues of eIF1A have opposing effects on the fidelity of start codon selection." *EMBO J.* (2007) **26**:1602-14.
24. Passmore, L.A., Schmeing, T.M., Maag, D., Applefield, D.J., Acker, M.G., Algire, M.A., **Lorsch, J.R.**‡ and Ramakrishnan, V.‡ "The eukaryotic translation initiation factors eIF1 and eIF1A induce an open conformation of the 40S ribosome." *Mol. Cell* (2007) **26**:41-50.

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25. Cheung, Y.-N., Maag, D., Mitchell, S.F., Fekete, C.A., Algire, M.A., Takacs, J.E., Shirokikh, N., Pestova, T.V., **Lorsch, J.R.**[‡] and Hinnebusch, A.G.[‡] “Dissociation of eIF1 from the 40S ribosomal subunit is a key step in start codon selection *in vivo*.” *Genes and Dev.* (2007) **21**:1217-30.
26. Dong, J., Nanda, J.S., Rahman, H., Pruitt, M.R., Shin, B.-S., Wong, C.-M., **Lorsch, J.R.** and Hinnebusch, A.G. “Genetic identification of yeast 18S rRNA residues required for efficient recruitment of initiator tRNA^{Met} and AUG selection.” *Genes and Dev.* (2008) **22**:2242-55.
27. Acker, M.G., Shin, B.-S., Saini, A.K., Dever, T.E. and **Lorsch, J.R.** “Kinetic analysis of late steps of eukaryotic translation initiation.” *J. Mol. Biol.* (2009) **385**:491-506.
28. Kolitz, S.E., Takacs, J.E. and **Lorsch, J.R.** “Kinetic and thermodynamic analysis of the role of start codon/anticodon base pairing during eukaryotic translation initiation.” *RNA* (2009) **15**:138-52.
29. Shin, B.S., Kim, J.R., Acker, M.G., Maher, K.N., **Lorsch, J.R.** and Dever, T.E. “rRNA suppressor of an eIF5B/IF2 mutant reveals a binding site for translational GTPases on the small ribosomal subunit.” *Mol. Cell Biol.* (2009) **29**:808-21.
30. Saini, A.K., Nanda, J.S., **Lorsch, J.R.** and Hinnebusch, A.G. “Regulatory elements in eIF1A control the fidelity of start codon selection by modulating tRNA(i)(Met) binding to the ribosome.” *Genes Dev.* (2010) **24**(1):97-110.
31. Kurata, D., Nielsen, K.H., Mitchell, S.F., **Lorsch, J.R.**, Kaji, A. and Kaji, H. “Ribosome recycling step in yeast cytoplasmic protein synthesis is catalyzed by eEF3 and ATP.” *Proc. Natl. Acad. Sci. U.S.A.* (2010) **107**(24):10854-9.
32. Mitchell, S.F., Walker, S.E., Algire, M.A., Park, E.H., Hinnebusch, A.G. and **Lorsch, J.R.** “The 5'-7-methylguanosine cap on eukaryotic mRNAs serves both to stimulate canonical translation initiation and to block an alternative pathway.” *Mol. Cell* (2010) **39**(6):950-62.
33. Park, E.H., Walker, S.E., Lee, J.M., Rothenberg, S., **Lorsch, J.R.** and Hinnebusch, A.G. “Multiple elements in the eIF4G1 N-terminus promote assembly of eIF4G1 PABP mRNPs *in vivo*.” *EMBO J.* (2011) **30**(2):302-16.
34. Takacs, J.E., Neary, T.B., Ingolia, N.T., Saini, A.K., Martin-Marcos, P., Pelletier, J., Hinnebusch, A.G. and **Lorsch, J.R.** “Identification of compounds that decrease the fidelity of start codon recognition by the eukaryotic translational machinery.” *RNA* (2011) **17**(3):439-52.
35. Shin, B.S., Acker, M.G., Kim, J.R., Maher, K.N., Arefin, S.M., **Lorsch, J.R.** and Dever, T.E. “Structural integrity of {alpha}-helix H12 in translation initiation factor eIF5B is critical for 80S complex stability.” *RNA* (2011) **17**:687-96.

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36. Shin, B.S., Kim, J.R., Walker, S.E., Dong, J., **Lorsch, J.R.** and Dever, T.E. "Initiation factor eIF2y promotes eIF2-GTP-Met-tRNAⁱ(Met) ternary complex binding to the 40S ribosome." *Nat. Struct. Mol. Biol.* (2011) **18**:1227-34.
37. Rajagopal, V., Park, E.H., Hinnebusch, A.G. and **Lorsch, J.R.** "Specific domains in yeast translation initiation factor eIF4G strongly bias the RNA unwinding activity of the eIF4F complex towards duplexes with 5'-overhangs." *J. Biol. Chem.* (2012) **287**:2030112.
38. Luna R.E., Arthanari H., Hiraishi H., Nanda J., Martin-Marcos P., Markus M.A., Akabayo B., Milbradt A.G., Luna L.E., Seo H.C., Hyberts S.G., Fahmy A., Reibarkh M., Miles D., Hagner P.R., O'Day E.M., Yi T., Marintchev A., Hinnebusch A.G., **Lorsch J.R.**, Asano K. and Wagner G. "The C-Terminal Domain of Eukaryotic Initiation Factor 5 Promotes Start Codon Recognition by Its Dynamic Interplay with eIF1 and eIF2 β ." *Cell Rep.* (2012) **1**:689-702.
39. Allen R.C., Tu Y.K., Nevarez M.J., Bobbs A.S., Friesen J.W., **Lorsch J.R.**, McCauley J.A., Voet J.G. and Hamlett N.V. "The mercury resistance (*mer*) operon in a marine gliding flavobacterium, *Tenacibaculum discolor* 9A5." *FEMS Microbiol. Ecol.* (2013) **83**:135-48.
40. Park, E.-H., Walker, S.E., Zhou, F., Lee, J.M., Rajagopal, V., **Lorsch, J.R.** and Hinnebusch A.G. "Yeast eIF4B enhances eIF4G-eIF4A complex assembly *in vivo*." *J. Biol. Chem.* **288**:2340-54.
41. Walker, S.E.* , Zhou, F.* , Mitchell, S.F., Larson, V.S., Valasek, L., Hinnebusch, A.G.† and **Lorsch, J.R.**‡ "Yeast eIF4B binds to the head of the 40S ribosomal subunit and promotes mRNA recruitment through its N-terminal and internal repeat domains." *RNA* (2013) **19**:191-207.
42. Nanda, J.S., Saini A.K., Muñoz A.M., Hinnebusch, A.G. and **Lorsch, J.R.** "Coordinated movements of eukaryotic translation initiation factors eIF1, eIF1A and eIF5 trigger phosphate release from eIF2 in response to start codon recognition by the ribosomal pre-initiation complex." *J. Biol. Chem.* (2013) **288**:5316-29.
43. Martin-Marcos P., Nanda J., Luna R.E., Wagner G., **Lorsch J.R.**† and Hinnebusch A.G.‡ "β Hairpin loop of eukaryotic initiation factor 1 (eIF1) mediates 40 S ribosome binding to regulate initiator tRNA(Met) recruitment and accuracy of AUG selection *in vivo*." *J. Biol. Chem.* (2013) **288**:27546-62.
44. Fernández I.S.* , Bai X.C.* , Hussain T., Kelley A.C., **Lorsch J.R.**‡, Ramakrishnan V.† and Scheres S.H.‡ "Molecular architecture of a eukaryotic translational initiation complex." *Science* (2013) **342**:1240585.
45. Zhou F.* , Walker S.E.* , Mitchell S.F., **Lorsch J.R.**† and Hinnebusch A.G.‡ "Identification and characterization of functionally critical, conserved motifs in the internal repeats and N-terminal domain of yeast translation initiation factor 4B (yeIF4B)." *J. Biol. Chem.* (2014) **289**:1704-22.

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46. Martin-Marcos P., Nanda J.S., Luna R.E., Zhang F., Saini A.K., Cherkasova V.A., Wagner G., **Lorsch J.R.**[‡] and Hinnebusch A.G.[‡] “Enhanced eIF1 binding to the 40S ribosome impedes conformational rearrangements of the preinitiation complex and elevates initiation accuracy.” *RNA* (2014) **20**:150-67.
47. Dong J.* , Munoz A.* , Kolitz S.E., Saini A.K., Chiu W., Rahman H., **Lorsch J.R.**[‡] and Hinnebusch A.G.[‡] “Conserved residues in yeast initiator tRNA calibrate initiation accuracy by regulating preinitiation complex stability at the start codon.” *Genes Dev.* (2014) **28**:502-20.
48. Hussain T., Llàcer J.L., Fernández I.S., Munoz A., Martin-Marcos P., Savva C.G., **Lorsch J.R.**, Hinnebusch A.G. and Ramakrishnan V. “Structural changes enable start codon recognition by the eukaryotic translation initiation complex.” *Cell* (2014) **159**:597-607.
49. Saini A.K. [‡], Nanda J.S., Martin-Marcos P., Dong J., Zhang F., Bhardwaj M., **Lorsch J.R.** and Hinnebusch A.G. [‡] “Eukaryotic translation initiation factor eIF5 promotes the accuracy of start codon recognition by regulating Pi release and conformational transitions of the preinitiation complex.” *Nucleic Acids Res.* (2014) **42**:9623-40.
50. Llàcer J.L., Hussain T., Marier L., Aitken C.E., Thakur A., **Lorsch J.R.**, Hinnebusch A.G. and Ramakrishnan V. “Conformational Differences between Open and Closed States of the Eukaryotic Translation initiation Complex.” *Mol Cell.* (2015) **59**:399-412.
51. Saini A.K., Nanda J.S., Martin-Marcos P., Dong J., Zhang F., Bhardwaj M., **Lorsch J.R.** and Hinnebusch A.G. “Eukaryotic translation initiation factor eIF5 promotes the accuracy of start codon recognition by regulating Pi release and conformational transitions of the preinitiation complex.” *Nucleic Acids Res.* (2015) **43**:5673-4.
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52. Aitken E.E., Beznosková P., Vlčkova V., Chiu W.L., Zhou F., Valàšek L.S. [‡], Hinnebusch A.G. [‡] and **Lorsch J.R.** [‡] “Eukaryotic translation initiation factor 3 plays distinct roles at the mRNA entry and exit channels of the ribosomal preinitiation complex.” *eLife* (2016) **5**:e20934.
53. Munoz A.M., Yourik P., Rajagopal V., Nanda J.S., **Lorsch J.R.** and Walker S.E. “Active yeast ribosome preparation using monolithic anion exchange chromatography.” *RNA Biol.* (2017) **14**:188-196.
54. Dong J., Aitken C.E., Thakur A., Shin B.S., **Lorsch J.R.** [‡] and Hinnebusch A.G. [‡] “Rps3/uS3 promotes mRNA binding at the 40S ribosome entry channel and stabilizes preinitiation complexes at start condons.” *Proc Natl Acad Sci USA.* (2017) **114**:E2126-E2135.
55. Yourik P., Aitken C.E., Zhou F., Gupta N., Hinnebusch A.G.[‡] **Lorsch J.R.** [‡] “Yeast eIF4A enhances recruitment of mRNAs regardless of their structural complexity.” *eLife* (2017) **6**: e31476

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56. Martin-Marcos P., Zhou F., Karunasiri C., Zhang F., Dong J., Nanda J., Kulkarni S.D., Sen N.D., Tamame M., Zeschnigk M., **Lorsch J.R.**[‡] and Hinnebusch A.G. [‡] “eIF1A residues implicated in cancer stabilize translation preinitiation complexes and favor suboptimal initiation sites in yeast.” *eLife* (2017) **6**: e31250.
57. Gupta N., **Lorsch J.R.**[‡] and Hinnebusch A.G. [‡] “Yeast Ded1 promotes 48S translation pre-initiation complex assembly in an mRNA-specific and eIF4F-dependent manner.” *eLife* (2018) **7**:e38892.
58. Liácer J.L.,* Hussain T.,* Saini A.K.,* Nanda J.S.,* Kaur S., Gordiyenko Y., Kumar R., Hinnebusch A.G.,[‡] **Lorsch J.R.**[‡] and Ramakrishnan V. [‡] “Translation initiation factor eIF5 replaces eIF1 on the 40S ribosomal subunit to promote start-codon recognition.” *eLife* (2018) **7**:e39273.
59. Sen N.D., Gupta N., Archer S.K., Preiss T., **Lorsch J.R.** and Hinnebusch A.G. “Functional interplay between DEAD-box RNA helicases Ded1 and Dbp1 in preinitiation complex attachment and scanning on structured mRNAs in vivo.” *Nucleic Acids Res.* (2019) **47**:8785-8806.
60. Kulkarni S.D., Zhou F., Sen N.D., Zhang H., Hinnebusch A.G. and **Lorsch J.R.** “Temperature-dependent regulation of upstream open reading frame translation in *S. cerevisiae*.” *BMC Biol.* (2019) **17**:101.
61. Zhou F., Zhang H., Sulkarni S.D., **Lorsch J.R.**[‡] and Hinnebusch A.G. [‡] “eIF1 discriminates against suboptimal initiation sites to prevent excessive uORF translation genome-wide.” *RNA* (2020) **26**:419-438.
62. Gulay S., Gupta N., **Lorsch J.R.** and Hinnebusch A.G. “Distinct interactions of eIF4A and eIF4E with RNA helicase Ded1 stimulate translation *in vivo*.” *eLife* (2020) **9**:358243.
63. Zhou F, Bocetti JM, Hou M, Qin D, Hinnebusch AG, **Lorsch JR.** “Transcriptome-wide analysis of the function of Ded1 in translation preinitiation complex assembly in a reconstituted *in vitro* system.” *eLife* (2024) **13**:RP93255.

Review Articles

1. **Lorsch, J.R.** and Szostak, J.W. “Chance and necessity in the selection of nucleic acid catalysts.” *Accounts of Chemical Research* (1996) **29**:103-10.
2. **Lorsch, J.R.** “RNA chaperones exist and DEAD box proteins get a life.” *Cell* (2002) **109**:797-800.
3. Green, R. and **Lorsch, J.R.** “The path to perdition is paved with protons.” *Cell* (2002) **110**:665-8.
4. Kapp, L.D. and **Lorsch, J.R.** “The molecular mechanics of eukaryotic translation.” *Ann. Rev. Biochem.* (2004) **73**:657-704.

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5. Doudna, J.A. and **Lorsch, J.R.** "Ribozyme catalysis: Not different, just worse." *Nat. Struct. Mol. Biol.* (2005) **12**:395-402.
6. Algire, M.A. and **Lorsch, J.R.** "Where to begin? The mechanism of translation initiation codon selection in eukaryotes." *Curr. Opin. Chem. Biol.* (2006) **10**:480-6.
7. Acker, M.G., Kolitz, S.E., Mitchell, S.F., Nanda, J.S. and **Lorsch, J.R.** "Reconstitution of yeast translation initiation." *Methods in Enzymol.* (2007) **430**:111-45.
8. Acker, M.G. and **Lorsch, J.R.** "Mechanism of ribosomal subunit joining during eukaryotic translation initiation." *Biochem. Soc. Trans.* (2008) **36(Pt 4)**:653-7.
9. Mitchell, S.F. and **Lorsch, J.R.** "Should I stay or should I go? Eukaryotic translation initiation factors 1 and 1A control start codon recognition." *J. Biol. Chem.* (2008) **283**:27345-9.
10. Kolitz, S.E. and **Lorsch, J.R.** "Eukaryotic initiator tRNA: finely tuned and ready for action." *FEBS Lett.* (2010) **584(2)**:396-404.
11. **Lorsch, J.R.** and Dever, T.E. "Molecular view of 43 S complex formation and start site selection in eukaryotic translation initiation." *J Biol Chem.* (2010) **285(28)**:21203-7.
12. Aitken, C.E. and **Lorsch, J.R.** "A mechanistic overview of translation initiation in eukaryotes." *Nat Struct Mol Biol.* (2012) **19**:568-76.
13. Hinnebusch, A.G and **Lorsch, J.R.** "The mechanism of eukaryotic translation initiation: New insights and challenges." *Cold Spring Harb Perspect Biol.* (2012) **4**:pii:a011544.
14. Walker, S.E. and **Lorsch, J.R.** "Sanger dideoxy sequencing of DNA." *Methods Enzymol.* (2013) **529**:171-84.
15. Kolitz, S. and **Lorsch, J.R.** "Explanatory chapter: nucleic acid concentration determination." *Methods Enzymol.* (2013) **530**:331-6.
16. Walker, S.E. and **Lorsch, J.R.** "RNA purification--precipitation methods." *Methods Enzymol.* (2013) **530**:337-43.
17. Walker, S.E. and **Lorsch, J.R.** "Reverse transcriptase dideoxy sequencing of RNA." *Methods Enzymol.* (2013) **530**:347-59.
18. Rajagopal, V. and **Lorsch, J.R.** "ATP and GTP hydrolysis assays (TLC)." *Methods Enzymol.* (2013) **533**:325-34.
19. **Lorsch, J.R.** "Practical steady-state enzyme kinetics." *Methods Enzymol.* (2014) **536**:3-15.
20. Nanda, J.S. and **Lorsch, J.R.** "Labeling of a protein with fluorophores using maleimide derivitization." *Methods Enzymol.* (2014) **536**:79-86.

21. Nanda, J.S. and **Lorsch, J.R.** "Labeling a protein with fluorophores using NHS ester derivitization." *Methods Enzymol.* (2014) **536**:87-94.
22. Mitchell, S.F. and **Lorsch, J.R.** "Protein derivitization-expressed protein ligation." *Methods Enzymol.* (2014) **536**:95-108.
23. Mitchell, S.F. and **Lorsch, J.R.** "Standard in vitro assays for protein-nucleic acid interactions—gel shift assays for RNA and DNA binding." *Methods Enzymol.* (2014) **541**:179-96.
24. Kolitz, S. and **Lorsch, J.R.** "Protein filter binding." *Methods Enzymol.* (2014) **541**:197-205.
25. **Lorsch J.R.** "Preface. Laboratory Methods in Enzymology: Protein Part D." *Methods Enzymol.* (2015) **559**:xi.
26. Mitchell S.F. and **Lorsch J.R.** "Protein Affinity Purification using Intein/Chitin Binding Protein Tags." *Methods Enzymol.* (2015) **559**:111-25.

Commentaries and Perspectives

1. **Lorsch, J.R.** and Nichols, D.G. "Organizing graduate life sciences education around nodes and connections." *Cell* (2011) **146**:506-9.
2. **Lorsch, J.R.** "Good outcomes." *ASBMB Today*, August 2012.
3. **Lorsch, J.R.**, Collins F.S. and Lippincott-Schwartz, J.L. "Fixing problems with cell lines." *Science* (2014) **346**:1452-3.
4. **Lorsch J.R.**, Barrett K., Pollock D. and Barman S. "APS leadership meets with NIGMS." *Physiologist* (2014) **57**:157, 191-2.
5. **Lorsch, J.R.** "Maximizing the return on taxpayers' investments in fundamental biomedical research." *Mol Biol Cell* (2015) **26(9)**:1578-82.
6. Bourne PE, **Lorsch J.R.**, Green ED. "Perspective: Sustaining the big-data ecosystem." *Nature.* (2015) **527(7576)**:S16-7.
7. Collins F.S., Anderson J.M., Austin C.P., Battey J.F., Birnbaum L.S., Briggs J.P., Clayton J.A., Cuthbert B., Eisinger R.W., Fauci A.S., Gallin J.I., Gibbons G.H., Glass R.I., Gottesman M.M., Gray P.A., Green E.D., Greider F.B., Hodes R., Hudson K.L., Humphreys B., Katz S.I., Koob G.F., Koroshetz W.J., Lauer M.S., **Lorsch J.R.**, Lowy D.R., McGowan J., Murray D.M., Nakamura R., Norris A., Perez-Stable E.J., Pettigrew R.I., Riley W.T., Rodgers G.P., Sieving P.A., Somerman J.J., Spong C.Y., Tabak L.A., Volkow N.D. and Wilder E.L. "Basic science: Bedrock of progress." *Science* (2016) **351**:1405.
8. Bond M.R., Gammie A.E., **Lorsch J.R.** "Developing a culture of safety in biomedical research training." *Molecular Biology of the Cell* (2020) **31(22)**:2409-2414.

9. Gammie A.E., Dorsey T.F., Epou S.F., Miklos A.C., **Lorsch J.R.** "Increasing clinician-scientist workforce diversity through the National Institute of General Medical Sciences' Medical Scientist Training Program." *ATS Scholar* (2022) **3(3)**:358-378.
10. Bianchi DW, Brennan PF, Chiang MF, Criswell LA, D'Souza RN, Gibbons GH, Gilman JK, Gordon JA, Green ED, Gregurick S, Hodes RJ, Kilmarx PH, Koob GF, Koroshetz WJ, Langevin HM, **Lorsch JR**, Marrazzo JM, Pérez-Stable EJ, Rathmell WK, Rodgers GP, Rutter JL, Simoni JM, Tromberg BJ, Tucci DL, Volkow ND, Woychik R, Zenk SN, Kozlowski E, Peterson RS, Ginsburg GS, Denny JC. "The All of Us research program is an opportunity to enhance the diversity of US biomedical research." *Nature Medicine* (2024) **30(2)**:330-333.
11. **Lorsch JR**, Tabak LA, Bertagnolli MM, "Point of View: Applied research won't flourish without basic science." *eLife* (2024) 13:e102368.

Letter (technical comment)

1. **Lorsch, J.R.** and Berg, J.M. "Mechanism of ribosomal peptide bond formation." *Science* (2001) **291**:203.

Book Chapters

1. **Lorsch, J.R.** and Szostak, J.W. "*In vitro* selection of nucleic acid sequences that bind small molecules" in Combinatorial Libraries: Synthesis, Screening and Application Potential (1995; ed. R. Cortese) Walter de Gruyter & Co., Berlin.
2. Pestova, T.V., **Lorsch, J.R.** and Hellen, C.U.T. "The mechanism of translation initiation in eukaryotes" in Translational Control in Biology and Medicine (2007; eds. M.B. Mathews, N. Sonenberg and J.W.B. Hershey), Cold Spring Harbor Laboratory Press, Cold Spring Harbor.
3. Mitchell, S.F., Walker, S.E., Rajagopal, V., Aitken, C.E. and **Lorsch, J.R.** "Recruiting knotty partners: The roles of translation initiation factors in mRNA recruitment to the eukaryotic ribosome" in Ribosomes: Structure, Function and Dynamics (2011; eds. M.V. Rodnina, W. Wintermeyer and R. Green) Springer, Vienna.

Books Edited

1. *Methods in Enzymology*, Vol. 429, Translation Initiation: Extract Systems and Molecular Genetics (2007; ed. **J.R. Lorsch**), Elsevier, San Diego, CA.
2. *Methods in Enzymology*, Vol. 430, Translation Initiation: Reconstituted Systems and Biophysical Methods (2007; ed. **J.R. Lorsch**), Elsevier, San Diego, CA.
3. *Methods in Enzymology*, Vol. 431, Translation Initiation: Cell Biology, High-Throughput and Chemical-Based Approaches (2007; ed. **J.R. Lorsch**), Elsevier, San Diego, CA.
4. *Methods in Enzymology*, Vol. 529, Laboratory Methods in Enzymology: DNA (2013; ed. **J.R. Lorsch**), Elsevier, San Diego, CA.

5. *Methods in Enzymology*, Vol. 530, Laboratory Methods in Enzymology: RNA (2013; ed. **J.R. Lorsch**), Elsevier, San Diego, CA.
6. *Methods in Enzymology*, Vol. 533, Laboratory Methods in Enzymology: Cell, Lipid and Carbohydrate (2013; ed. **J.R. Lorsch**), Elsevier, San Diego, CA.
7. *Methods in Enzymology*, Vol. 536, Laboratory Methods in Enzymology: Protein Part A (2014; ed. **J.R. Lorsch**), Elsevier, San Diego, CA.

Patents

United States Patent 5,688,670 (November 18, 1997) "Self-modifying RNA molecules and methods of making them"

Inventors: Szostak, Jack W.; **Lorsch, Jon R.**; Wilson, Charles

Assignee: The General Hospital Corporation (Boston, MA)

United States Patent 8,828,976 (September 9, 2014)

"Identification and use of compounds that affect the fidelity of eukaryotic translation initiation codon selection"

Inventors: **Lorsch, Jon R.**; Takacs, Julie Ellen; Neary, Timothy Brian Assignee:

The Johns Hopkins University

Previous Extramural Sponsorship

09/1/2000-08/01/2013	<p>Kinetic Dissection of Eukaryotic Translation Initiation R01 GM62128 NIH/NIGMS \$1,924,241 PI, 20%</p> <p>The major goal of this project was to dissect the molecular mechanics of the steps involved in 43S pre-initiation complex formation and start codon recognition in eukaryotic translation initiation using a reconstituted yeast system.</p>
12/01/2009-11/31/2012	<p>Structural Studies of Yeast Translation Initiation RGP0028/2009-C Human Frontier Science Program \$750,000 PI, 10%; co-PIs: A. Hinnebusch and V. Ramakrishnan</p> <p>The goal of this project was to determine three-dimensional structures of yeast translation initiation complexes.</p>
09/10/2011-08/31/2013	<p>Modulators of the Fidelity of Start Codon Recognition in Eukaryotes 1R03 MH095520-01</p>

	<p>NIH \$25,000 (Yr 1 Direct Cost) The major goal of this project was to perform a high-throughput screen for additional compounds that modulate the fidelity of start codon recognition.</p>
07/01/1998-06/30/2001	<p>Kinetic and Thermodynamic Analysis of Eukaryotic Translation Initiation Career Development Award #3762-99 Leukemia Society of America \$183,000 PI, 50% The goal of this project was to develop a fully reconstituted translation system using yeast components and to use this system to begin to analyze yeast translation initiation.</p>
07/01/2003-06/30/2005	<p>Elucidation of the Molecular Mechanisms Employed by a Central Eukaryotic Translation Initiation Factor, eIF1. Grant-in-Aid American Heart Association \$120,000 PI, 30% The goal of this project was to probe the molecular mechanisms used by the eukaryotic translation initiation factor eIF1 in ensuring the fidelity of initiation codon selection.</p>
07/01/2003-12/31/2007	<p>Mechanism of Action of a Central Translation Factor, eIF5B RSG GMC-105934 American Cancer Society \$600,000 PI, 30% The goal of this project was to elucidate the molecular mechanisms employed by the translation initiation factor eIF5B, a GTPase that facilitates the joining of the ribosomal subunits at the end of translation initiation.</p>

07/01/2005-06/30/2007

The Molecular Mechanics of the Penultimate Steps in Eukaryotic Translation Initiation

Grant-in-Aid

American Heart Association

\$120,000

PI, 20%

The goal of this project was to elucidate the molecular mechanics of the steps following the first committed step in eukaryotic translation initiation, GTP hydrolysis by the factor eIF2, and preceding the final step, joining of the two ribosomal subunits. These penultimate steps may play an important role in proofreading the selection of the translational start site in the mRNA.

06/01/2007- 05/31/2009	<p>Small Molecule Effectors of Eukaryotic Translation Initiation Site Selection R21 DK078633 NIH/NIDDK \$275,000 PI, 20%</p> <p>The goal of this project was to find and begin to characterize small molecules that can modulate the fidelity of start codon recognition in eukaryotes.</p>
06/2007-08/2007	<p>Supplement to Kinetic Dissection of Eukaryotic Translation Initiation 3R01GM062128-07S1 NIH/NIGMS \$4,800 PI, 20%</p> <p>This award provided support under the Research Supplements to Promote Diversity in Health-Related Research Program for Jasmine Hope's summer research.</p>
06/2008-08/2008	<p>Supplement to Kinetic Dissection of Eukaryotic Translation Initiation 3R01GM062128-08S1 NIH/NIGMS \$7,800 PI, 20%</p> <p>This award provided support under the Research Supplements to Promote Diversity in Health-Related Research Program for Jasmine Hope's summer research.</p>
07/2009-03/2010	<p>Supplement to Kinetic Dissection of Eukaryotic Translation Initiation 3R01GM062128-09S1 NIH/NIGMS \$67,841</p> <p>This was an ARRA supplement to the parent grant to provide funds to purchase a new FPLC.</p>
07/2010-06/2012	<p>Supplement to Kinetic Dissection of Eukaryotic Translation Initiation 3R01GM062128-10S1 NIH/NIGMS \$178,886</p> <p>This award provided support under the Research Supplements to Promote Diversity in Health-Related Research Program for Colin Echeverria Aitken's research.</p>
07/2010-06/2012	<p>Supplement to Kinetic Dissection of Eukaryotic Translation Initiation 3R01GM062128-10S2 NIH/NIGMS \$101,702</p> <p>This award provided support under the Research Supplements to Promote Diversity in Health-Related Research Program for Antonio Muñoz's research.</p>

EDUCATIONAL ACTIVITIES

Teaching

2000	Molecules and Cells, Macromolecules block (Section Leader)
2001-2003	Molecules and Cells, Macromolecules block (Lecturer, Section Leader)
2004-2009	Molecules and Cells, Macromolecules block (Director, Lecturer, Section Leader)
2009-2013	Scientific Foundations of Medicine (Director, Lecturer, Section Leader) 2000-2005 Topics in Macromolecular Structure and Function (Course Director, Lecturer)
2001-2002	Biochemistry and Cell Biology (Lecturer)
2001-2004	Bioorganic Chemistry (Lecturer)
2003-2007	Method and Logic (Section Leader)
2003-2013	Biochemical and Biophysical Principles (Lecturer)
2009-2013	Basic Science Scholarly Concentration (Course Director)
2011-2013	Medical Education Elective (Lecturer, Discussion Leader)
2012-2013	Infectious Diseases Translational Intersession (co-leader of the Antibiotics section, with Khalil Ghanem, M.D.)

Mentoring

Graduate Students

2000-2006	Drew Applefield (Ph.D.; BCMB student; currently business and technology development associate, North Carolina Biotechnology Center)
2000-2005	Lee Kapp (Ph.D.; BCMB student; currently lecturer, SUNY Plattsburgh)
2001-2006	Mikkel Algire (Ph.D.; BCMB student; currently oncology assay lab head, Abbvie)
2001-2006	David Maag (Ph.D.; BCMB student; NSF pre-doctoral fellow; 2005; currently associate scientific director, oncology discovery, Abbvie)
2002-2008	Michael Acker (Ph.D.; BCMB student; currently senior investigator, Novartis)
2004-2010	Sarah Kolitz (Ph.D., PMB student; currently vice president, translational medicine, immuneering)
2004-2010	Sarah Mitchell (Ph.D., PMB student; currently assistant professor, Loyola Marymount University)
2005-2011	Julie Takacs (Ph.D., BCMB student; currently instructor, Anne Arundel Community College)
2010-2015	Antonio Muñoz (Ph.D., PMB student; currently consultant, Accenture))
2012-2017	Paul Yourik (Ph.D., BCMB student; currently postdoctoral fellow, New England Biolabs)

Post-doctoral Fellows

2006-2012	Jagpreet Nanda (Ph.D., 2005, IMTECH, Jawaharlal Nehru University, New Delhi; currently Lorsch lab staff scientist)
2008-2015	Sarah Walker (Ph.D., 2008, Ohio State University; American Heart Association Fellow; currently assistant professor, University of Buffalo)
2009-2013	Vaishnavi Rajagopal (Ph.D., 2009, Rutgers University; currently senior scientist, Ra Pharmaceuticals)
2010-present	Colin Aitken (Ph.D., 2010, Stanford University; Leukemia and Lymphoma Society Fellow; currently assistant professor, Vassar College)
2011-2012	Aleksander Todorovic (Ph.D., 2006, University of Florida)

2013-present Shardul Kulkarni

Research Associate/Senior Scientist

2012-present Jagpreet Nanda (Ph.D., 2005, IMTECH, Jawaharlal Nehru University, New Delhi)

Medical, Undergraduate, Post-baccalaureate and High School Students

2000-2003 Clarence Lin (JHU undergraduate; attended NYU Medical School)
2006-2009 Jasmine Hope (Baltimore Polytechnic High School student; Baltimore Scholar, JHU; Teach for America; worked in lab senior year, 2006-2007; Summers 2007, 2008)
2006-2008 Alex Herrera (B.A., UMBC; post-baccalaureate PREP student)
2007-2008 Amy Dusto (JHU undergraduate)
2011-2012 Nirvan Sengupta (JHU undergraduate)
2012-2013 Candice Jennings (Carver Vocational Technical High School student; Biophysics Research for Baltimore Teens program, summers of 2012, 2013)
2012-2013 Nikhil Jiwrajka (medical student)

Thesis Committees and Graduate Board Oral Examinations

2000-2013 Served on 39 thesis committees and over 50 oral examination committees

Training Grant Participation

1999-2013 Member, Biochemistry, Cell and Molecular Biology (BCMB) Graduate Program
1999-2013 Member and Chair of Admissions Committee, Program in Molecular Biophysics (PMB)

Educational Program Building/Leadership

2002-2013 Chair, Admissions Committee, Graduate Program in Molecular Biophysics
2002-2013 Member, Steering Committee, Graduate Program in Molecular Biophysics
2005-2006 Member, Medical Curriculum Reform Committee
2005-2006 Member, "Scientific Foundations of Medicine" Subcommittee, Medical Curriculum Reform Committee
2006-2013 Member, Genes to Society (GtS) Integration Committee
2008-2009 Member, Committee on Graduate Education
2008-2013 Director, Scientific Foundations of Medicine course (GtS curriculum)
2008-2013 Director, Basic Sciences Scholarly Concentration course (GtS curriculum)
2010-2013 Member, Managing Board of the Johns Hopkins Institute for Excellence in Education
2011-2013 Chair, MA/PhD Committee (oversees and coordinates graduate education at the School of Medicine)
2011-2013 Member, Gateway Science Initiative Steering Committee (Provost's Office)
2011-2012 Chair, Gateway Science Initiative Symposium Planning Committee
2012-2013 Director, Biophysics Research for Baltimore Teens Program
2012-2013 Chair, Committee on the Future of Ph.D. Education (Provost's Office)

EDITORIAL ACTIVITIES

2006 Member, *Ad hoc* advisory panel for *Nature Structural and Molecular Biology*

- 2007 Editor of three volumes of *Methods in Enzymology* (Vols. 429-431)
- 2009-2011 Editor, Methods Navigator Protocols for Biomedical Research (Elsevier)
(Subsequently turned into multiple volumes of *Methods in Enzymology*)
- 2013 Member, Editorial Advisory Board, *ASBMB Today*
Reviewer for *Biochemistry, Cell, EMBO Journal, Journal of Biological Chemistry, Journal of Molecular Biology, Molecular Cell, Molecular & Cellular Biology, Nature Structural and Molecular Biology, Proceedings of the National Academy of Sciences, PLOS Biology, RNA, Science, Virology*

ORGANIZATIONAL ACTIVITIES

Institutional Administrative Appointments

Johns Hopkins

- 2000-2001 Co-chair, *Ad hoc* Committee to Reevaluate Oral Examination Procedures, Graduate Program in Biochemistry, Cellular and Molecular Biology
- 2000-2005 Course director, Topics in Macromolecular Structure and Function
- 2001-2005 Member, Admissions Committee, Graduate Program in Biochemistry, Cellular and Molecular Biology
- 2002-2013 Chair, Admissions Committee, Graduate Program in Molecular Biophysics
- 2002-2013 Member, Steering Committee, Graduate Program in Molecular Biophysics
- 2002-2004 Chair, Student Seminar Evaluation Committee, Program in Molecular Biophysics
- 2003, 2012 Member, Curriculum Committee, Program in Molecular Biophysics
- 2003-2006 Member, Medical School Council
- 2004-2013 Member, Professors' Awards Committee
- 2004-2013 Course Director, Macromolecules block of Molecules and Cells
- 2005-2006 Member, Medical Curriculum Reform Committee
- 2005-2006 Member, "Scientific Foundations of Medicine" Subcommittee, Medical Curriculum Reform Committee
- 2005-2006 Participant, Leadership Development Program, Johns Hopkins University School of Medicine
- 2006-2009 Chair, Year 1 Medical Curriculum Committee
- 2006-2013 Member, Educational Policy and Curriculum Committee (EPCC)
- 2006-2013 Member, EPCC Agenda/Executive Committee
- 2006-2013 Member, Student Assessment and Program Evaluation Committee (SAPE)
- 2006-2013 Member, Genes to Society Integration Committee
- 2006-2012 Member, Instructor and Assistant Professor Reappointment Committee
- 2008-2009 Member, Committee on Graduate Education
- 2009-2013 Chair, Foundations of Medicine Curriculum Committee
- 2011-2013 Chair, MA/PhD Committee
- 2011-2013 Member, Gateway Science Initiative Steering Committee (Provost's Office)
- 2011-2012 Chair, Gateway Science Initiative Symposium Planning Committee
- 2012-2013 Co-chair, Committee on the Future of PhD Education (Provost's Office)
- 2012-2013 Provost's Fellow on Graduate Education

NIH (Selected)

2013-present NIH Steering Committee
 2013-present Scientific Data Council (SDC) – Co-Chair, 2016-Present
 Joint DSPC and SDC, co-chair
 2019-present SDC Co-Chairs/ODSS
 2013-2016 BD2K Multi-Council Working Group
 2014-present Extramural Activities Working Group (EAWG) – Co-Chair
 2014-2021 Administrative Data Council (ADC)
 2015-present Diversity Program Consortium – Co-Chair
 2015-2016 Cell Line Authentication Working Group – Co-Chair
 2016-present Executive Leadership Program Advisory Group (ExLP)
 2016-2017 Developing Efficient and Sustainable Funding Policies Working Group
 of EAWG/EPMC – Chair
 2016-2019 Extramural Program Management Committee (EPMC) Agenda Subcommittee
 2016-present National Center for Biotechnology Information (NCBI) Resource Board
 2016-2017 Grant Support Index (GSI) Implementation Subcommittee
 2017-2018 SDC Data Resource Ecosystem “Blue Sky” Working Group – Chair
 2017-2018 Advisory Committee to the Director (ACD) Next Generation Researchers
 Initiative Working Group
 2017 Headquarters Building Planning Committee
 2017 21st Century Cures Implementation Working Group
 2020 Congressional Liaison, request to Connect on the NIH MDAS *Network for Data
 Modeling and COVID-19*
 2020-present NIH Liaison to NSF
 2020 EAWG Working Group: Locus of Review
 2020-present RADx-UP Governance Committee
 2020-present UNITE Full Committee
 2020-present UNITE E Committee, Co-Chair
 2021-present ARPA-H (Advanced Research Projects Agency for Health)
 2022-present EAWG Work Group on Simplifying Peer Review
 2022-2023 ACD Working Group on Postdoctoral Training
 2023-present EAWG Working Group on Redesigning the Submission Process for Unsolicited
 RPG Clinical Trials, Co-Chair
 2023-present AIM-AHEAD Advisory Committee
 2023-present EARA Advisory Committee Working Group
 2023-present Path to Excellence and Innovation Initiative Advisory Committee (PEI)
 2024-present CARE Oversight Committee
 2024-present Scientific Management Review Board, Office of Federal Advisory Committee
 Policy, NIH-OD

NIH Search Committees

2014 Director, Division of Biomedical Research Workforce,
 Office of Extramural Research (OER), NIH (Chair)
 2014 Division Directors (2), Center for Scientific Review (CSR), NIH
 2015 Director, National Library of Medicine (NLM) (Co-Chair)
 2015 Director, National Institute of Neurological Disorders and Stroke (NINDS)
 2018 Associate Deputy Director, OD
 2018 Director, Center for Scientific Review (CSR) (Co-chair)
 2021-2022 NIA Deputy Director
 2021-2022 OER Deputy Director (Chair)
 2021-2022 NCBI Director (Co-chair)

External Administrative Appointments

2012 Member, Mentoring Committee, ASBMB
2013 Board of Directors, RNA Society

Professional Societies

1990-2008 Member, American Chemical Society
1998-2013 Member, RNA Society
2001-2005 Member, Faculty of 1000, RNA Structural Biology Section 2006-2013
Member, American Society for Biochemistry and Molecular Biology

Conference Organizer

2004 Co-organizer, Baltimore-Washington Protein Synthesis Meeting
2006 Co-organizer, DIMACS/DARPA Workshop on State-Dependent Delays
in Gene Regulatory Networks
2011 Co-organizer, EMBL Conference on Protein Synthesis and Translational Control
2012 Chair, Organizing Committee, Johns Hopkins University Gateway Sciences
Initiative Symposium on Teaching Excellence in the Sciences

Session Chair

2006 RNA Society Meeting
2007 FASEB Summer Research Conference on Helicases & NTP-Driven Nucleic Acid
Motors: Structure, Function, Mechanisms & Roles in Human Disease
2007 22nd tRNA Workshop
2009 RNA Society Meeting
2009 EMBO Protein Synthesis and Translational Control Meeting, Heidelberg,
Germany
2010 Ribosome Meeting
2010 Cold Spring Harbor Translational Control Meeting
2012 ASBMB Meeting: RNA Dynamics

Review Groups

2001-2002 Ad Hoc Reviewer for NSF grant applications
2005 Ad hoc member, NIH special program project study section
2006-2008 Ad hoc member, NIH Molecular Genetics A Study Section (three times)
2007 Member, American Heart Association Mid-Atlantic Division Peer Review
Committee 6A (Basic Cell and Molecular Biology)
2008 Member, NIH Special Emphasis Panel on Enzyme and Gene Evolution
2008 Co-chair, American Heart Association Region II Basic Cell and Molecular Biology
Study Group
2008-2012 Member, NIH Molecular Genetics A Study Section
2010 Acting Chair, NIH Molecular Genetics A Study Section (February meeting)
8/18/2021 BMSF DCTCDP Review Committee

RECOGNITION

Honors and Awards

1989	Adamson Prize in Chemistry (Swarthmore College)
1990	American Chemical Society Award for Academic Achievement
1990	Phi Beta Kappa
1995-1998	Damon Runyon-Walter Winchell Post-doctoral Fellowship
1998-2001	Leukemia Society of America Special Fellowship 2001-2005 Member, Faculty of 1000, RNA Structural Biology Section
2002	Graduate Student Association Teacher of the Year (Johns Hopkins School of Medicine)
2003-2007	American Cancer Society Research Scholar
2005	Dean's Marshall (Commencement)
2006	Barry Wood Teaching Award (first year medical students)
2007	Professors Award for Excellence in Pre-clinical Teaching
2008	Graduate Student Association Teacher of the Year
2008	Students' Marshall (Commencement)
2009	"Last Lecture" (Selected by Nathans College Students)
2012	Barry Wood Teaching Award
2012	Graduate Student Association Teacher of the Year
2012	Dean's Lecture (Johns Hopkins School of Medicine)
2013	Convocation Speaker (Johns Hopkins School of Medicine) (http://www.youtube.com/watch?v=ITHDKfCWvOg)
2019	Honorary Doctor of Philosophy (Swarthmore College)
2020	Special Acknowledgement and Deputy Secretary Coin, presented by Deputy Secretary Hargan for significant contributions to ReImagine HHS initiatives
2020	Johns Hopkins University Alumni Award

INVITED TALKS (since 2000)

2/9/2000	Institute for Biophysical Research, Johns Hopkins University: Invited speaker
2/21/2001	Johns Hopkins University School of Medicine, Department of Pharmacology: Invited speaker
7/20/2010	Message Pharmaceuticals: Invited speaker
7/24/2001	LGRD, NICHD, National Institutes of Health: Invited speaker
10/14-16/2001	West Coast Translation and mRNA Stability Meeting, Washington: Selected speaker (from submitted abstracts)
2/28/2002	Trinity College, Department of Biology: Invited speaker
3/12/2002	Pennsylvania State University, Department of Chemistry: Invited speaker
7/10/2002	Bryn Mawr College, Department of Chemistry: Invited speaker
10/24/2002	Swarthmore College, Department of Chemistry: Invited speaker
6/28-7/3/2003	FASEB Summer Research Conference "Helicases: Structure, Function, and Roles in Human Disease," Vermont: Invited speaker
10/17/2003	Institute for Biophysical Research, Johns Hopkins University, Annual Retreat: Keynote speaker (selected by Program in Molecular and Computational Biophysics graduate students)
10/31/2003	LGRD, NICHD, National Institutes of Health: Invited speaker

11/18/2003 Johns Hopkins University School of Medicine, Department of Biological Chemistry: Invited speaker

11/4-6/2004 National Academy of Sciences, Beckman Frontiers of Science Symposium, California: Invited participant

11/19/2004 Meyerhoff Scholars Program, University of Maryland, Baltimore County: Invited speaker

12/2-4/2004 Workshop on "Quantitative mathematical modeling of gene regulatory networks," Mathematical Biosciences Institute, Ohio State University: Invited speaker

4/21/2005 Louisiana State University Health Sciences Center, Department of Biochemistry and Molecular Biology: Invited speaker

10/26/2005 Washington University in St. Louis, Department of Biochemistry and Molecular Biophysics: Invited speaker

12/8/2005 SUNY Downstate Medical Center, Department of Molecular Biology and Immunology: Invited speaker

2/13/2006 University of Delaware, Department of Chemistry and Biochemistry: Invited speaker

3/2/2006 Rutgers University, DIMACS/DARPA Workshop on State-Dependent Delays in Gene Regulatory Networks: Co-organizer and speaker

5/1-5/2006 American Society for Biochemistry and Molecular Biology 100th Anniversary Meeting, Symposium on Protein Synthesis, Post-translational Modification and Degradation, San Francisco, CA: Invited speaker

6/10-12/2006 FASEB Summer Research Conference on Nucleic Acid Enzymes, Saxtons River, VT: Invited speaker

6/20-25/2006 RNA Society Meeting, Seattle, WA: Session chair

10/25/2006 University of Rochester Medical Center, Department of Biochemistry and Biophysics; Invited speaker

11/10/2006 Columbia University, Department of Biochemistry and Molecular Biophysics; Invited speaker

12/12/2006 Uniformed Services University of the Health Sciences, Department of Biochemistry and Molecular Biology; Invited speaker

3/14/2007 Institute for Biophysical Research, Johns Hopkins University: Invited speaker

4/12/2007 Laboratory of Molecular Biology, Medical Research Council, Cambridge, UK: Invited speaker

6/3-7/2007 Ribosome Meeting, Cape Cod, MA: Invited speaker

6/24-28/2007 FASEB Summer Research Conference on Helicases & NTP-Driven Nucleic Acid Motors: Structure, Function, Mechanisms & Roles in Human Disease, Indian Wells, CA: Invited speaker and session chair

7/21-25/2007 Protein Society Meeting, Boston, MA: Invited speaker

10/18/2007 McGill University Cancer Centre: Invited speaker

11/1-6/2007 22nd tRNA Workshop, Uppsala, Sweden (Sponsored by the Royal Swedish Academy of Sciences): Invited speaker and session chair

12/11/2007 University of Maryland, College Park, Department of Chemistry and Biochemistry: Invited speaker

1/15/2008 University of California, San Francisco, Department of Biochemistry and Biophysics: Invited speaker

1/16/2008 Stanford University School of Medicine, Department of Biochemistry: Invited speaker

1/28-2/2/2008 Keystone Symposium on Translational Regulatory Mechanisms, Coeur d'Alene, ID: Invited speaker

2/25/2008 University of Maryland Medical Center, Department of Biochemistry and Molecular Biology: Invited speaker

3/26-3/28/2008 The UK Biochemical Society's Meeting on 'Gene Expression and Analysis,' Manchester, UK: Invited speaker

4/11/2008 University of Michigan, Department of Chemistry: Invited speaker

4/28/2008 Yale University, Department of Molecular Biophysics and Biochemistry: Invited speaker

5/28/2008 Albert Einstein College of Medicine of Yeshiva University, Department of Developmental and Molecular Biology: Invited speaker

6/8-13/2008 FASEB Summer Research Conference on Nucleic Acid Enzymes, Saxtons River, VT: Invited speaker

10/22/2008 Undergraduate Biochemistry Majors Association, Case Western Reserve University: Invited speaker

10/23/2008 Department of Biochemistry, Case Western Reserve University School of Medicine: Invited speaker

1/26-27/2009 Roy Parker Lab Retreat, University of Arizona: Invited speaker and advisor

4/29/2009 Department of Biochemistry and Molecular Biology, University of Chicago: Invited speaker

5/21-26/2009 RNA Society Meeting, Madison, WI: Session chair

6/26/2009 Genes to Society Curriculum Retreat, Faculty Development Session on Lecturing: Invited speaker

9/9-13/2009 EMBO Protein Synthesis and Translational Control Meeting, Heidelberg, Germany: Session chair and invited speaker

4/20/2010 Department of Microbiology, Ohio State University: Invited speaker

5/3-7/2010 Ribosome Meeting, Orvieto, Italy: Invited speaker and session chair

6/23/2010 RNA Society Meeting: Invited speaker

8/30/2010 PTC Therapeutics: Invited speaker and consultant

10/30/2010 American College of Veterinary Pathologists Annual Meeting--Pre-meeting workshop on Principles of Educational Theory in Practice: Invited speaker

11/18/2010 Department of Chemistry, Swarthmore College: Invited speaker

3/2/2011 National Academy of Sciences Workshop: Towards a New Taxonomy of Disease: Panelist

4/21/2011 Department of Chemistry and Biochemistry, University of Texas at Austin: Invited speaker

6/17/2011 Workshop on Leading Small Group Discussions, Genes to Society Curriculum Retreat, Johns Hopkins University School of Medicine: Co-leader

9/8/2011 EMBL Proteins Synthesis and Translational Control Meeting, Heidelberg, Germany: Organizer

11/3/2011 University of Illinois, Urbana-Champaign, Department of Biochemistry: Invited speaker

12/7/2011 Washington University School of Medicine, Department of Biochemistry and Molecular Biophysics: Invited speaker

1/20/2012 Gateway Sciences Initiative Symposium on Teaching Excellence: Organizer
Dean's Lecture, "The Widening Gyre: Biomedical Education in the Age of Information Overload." Johns Hopkins University School of Medicine: Invited speaker (four senior faculty selected by the Dean per year)

2/20/2012 University of Massachusetts School of Medicine: Invited speaker

3/14/2012 Education Retreat, Johns Hopkins University School of Medicine: Workshop leader (teaching and mentoring in a laboratory setting)

3/23/2012 ASBMB Meeting, San Diego, CA: Invited speaker and session chair

4/22/2012 Department of Cell and Molecular Biology, Uppsala University, Sweden: Invited speaker and thesis examiner

5/2/2012 Department of Biology, University of Richmond: Invited speaker

2/11/2013 Division of Chemistry and Chemical Engineering, Biochemistry subgroup, California Institute of Technology: Invited speaker

4/11/2013 Department of Biochemistry and Molecular Genetics, University of Colorado School of Medicine: Invited speaker

5/6/2013 Johns Hopkins University School of Medicine Convocation: Keynote speaker

5/24/2013 Ribosome Meeting, Sonoma, CA: Invited speaker

7/9-12/2013 National Academies' Committee on Key Challenge Areas for Convergence and Health, Washington D.C.: Invited speaker

9/16-17/2013 National Academies' Board on Mathematical Sciences and their Applications Board Meeting, Washington D.C.: Invited speaker

9/30/2013 Southeast Regional IDEa Meeting, Little Rock, AK: Plenary speaker

11/15-16/2013 ASCB Annual Meeting, New Orleans, LA: Invited speaker

12/14-16/2013 Mid-Atlantic American Medical Association, Medical Student Section Regional Meeting, Washington D.C.: Keynote speaker

3/8/2014 Genetics Society of America 2014 Yeast Genetics Meeting, Seattle, WA: Invited speaker

7/29-8/3/2014 Cold Spring Harbor Translational Control Meeting, Cold Spring Harbor, NY: Keynote speaker

9/2-6/14 FASEB Roundtable, Bethesda, MD: Panelist

9/16/2014 16th Annual NIH SBIR/STTR Conference: "Land of Achievement: Extending the Reach of Science with the SBIR/STTR Programs," Albuquerque, NM: Keynote speaker

10/21/2014 ASCB Annual Meeting, Philadelphia, PA: Panelist Leader

12/8/2014 Biophysical Society Annual Meeting, Baltimore, MD: Invited speaker

2/10/2015 The American Academy of Arts and Sciences and Duke University, Durham, NC: Panelist

2/24/2015 ASCPT Annual Meeting (attended via videoconference): Invited speaker

3/5/2015 Grand Rounds Lecture Series at the Johns Hopkins Institute of Excellence in Education, Baltimore, MD: Invited speaker

3/17/2015 2015 GRAND Spring Conference at the American Association of Medical Colleges Learning Center, Washington D.C.: Invited speaker

3/27/2015 National Diversity Equity Workshop, Open Chemistry Collaborative in Diversity Equity, Arlington, VA: Invited speaker

4/14/2015 Molecular Biophysics and Biochemistry Departmental Seminar Series, Yale University, New Haven, CT: Invited speaker

4/19-21/2015

4/30/2015 National Organization of Research Development Professionals 7th Annual Research Development Conference, Bethesda, MD: Invited speaker

5/6-7/2015 Joint Seminars in Molecular Biology seminar series; University of California, San Francisco and University of California, Davis: Invited speaker

5/31/2015 FASEB Science Policy Symposium on Reproducibility of Biological Research, Arlington, VA: Invited speaker

9/9/2015 2015 Drug Information Association/FDA Oligonucleotide-Based Therapeutic Conference, Washington D.C.: Invited speaker

9/25/2015 Northeast Regional IDeA Meeting, Bar Harbor, ME: Invited speaker

10/23/2015 Harvard Medical School Program in Graduate Education Symposium, Cambridge, MA: Invited speaker

10/29/2015 2015 SACNAS National Conference, Washington D.C.: Keynote speaker

11/12/2015 ABRCMS 2015, Seattle, WA: Invited speaker

11/13/2015 Oregon Health and Science University Research Week, Portland, OR: Invited speaker

11/16/2015 Genetics Society of America Board Meeting, Bethesda, MD: Invited speaker

1/15/2016 Association of Medical and Graduate Departments of Biochemistry Meeting, Skype meeting: Invited participant

2/4-5/2016 ASBMB, Sustaining the Biomedical Research Enterprise, Washington, DC: Invited speaker

2/2016-17/2016 Howard Hughes Medical Institute, Accelerating Science and Publication in Biology, Washington, DC: Invited speaker

2/29/2016 EPSCoR/IDeA Annual Conference, Washington, DC: Keynote address

3/2/2016 FASEB Public Service Award Ceremony, Washington, DC: Invited speaker

3/7/2016 University of Maryland-Baltimore MARC Scholars Seminar: Invited speaker

3/2016/2016 Research!America's Advocacy Award Ceremony, Washington, DC: Invited speaker

5/4/2016 USUHS 2016 Research Days (Wu Award Ceremony, Washington, DC: Invited speaker

5/9/2016 NIH SciEd Annual Conference, Washington, DC: Keynote address

5/2016/2016 American Society for Cell Biology Council, Training Grant Support, Bethesda, MD: Invited speaker

5/23-24/2016 MIDAS PI Network Meeting, Reston, VA: Invited speaker

5/25/2016 Tri-Institutional Collaboration Network (TCN), New York: Plenary speaker

5/26/2016 Hunter College, Developing a More Productive, Efficient and Sustainable Biomedical Research Enterprise, New York: Invited speaker

6/20-21/2016 2016 Select USA Summit, US Department of Commerce, Washington, DC: Invited speaker

6/27/2016 National IDeA Symposium of Biomedical Research Excellence, Washington, DC: Invited speaker

7/8-11/2016 Gordon Research Conference—Post-Transcriptional Control, Burlington, VT: Keynote speaker

9/9/2016 US-German Science Leadership Breakfast, Washington, DC: NIH representative

9/29/2016 Kenyon College, Developing a More Productive, Efficient and Sustainable Biomedical Research Enterprise, Ohio: Invited speaker

10/13/2016	Kansas University COBRE Center Visit: Invited speaker
10/26/2016	University of North Carolina, Chapel Hill, speak to SACNAS students
10/27/2016	Duke University Seminar, Durham, NC: Invited speaker
2/1/2017	ISPCTN Steering Committee Meeting, Bethesda, MD: Invited speaker
3/24-25/2017	AAMC Council of Deans, Ongoing Developments in Mechanisms for Funding Research at the NIH, New York City: Invited speaker
5/15/2017	American Society for Cell Biology Council, MIRA, Bethesda, MD: Invited speaker
5/21/2017	University of Virginia-Charlottesville, VA: Commencement Address
5/31/2017	NIH SciEd (SEPA) Conference, "NIGMS Education and Training Programs": Washington, DC: Invited speaker
6/7-9/2017	IDeA Central Regional Meeting, Sioux Falls, SD: Invited speaker
7/20/2017	Association of American Medical Colleges, Great Group MD-Ph.D. Section Meeting, Rockville, MD: Invited speaker
8/20/2017	American Chemical Society, Advancing Graduate Education in the Sciences, Washington, DC: Plenary speaker
9/25/2017	2017 Annual INBRE PI/PC Meeting, Bethesda, MD: Invited speaker
10/2/2017	Association of Independent Research Institutes, NIH's current and future research initiatives and priorities, Washington, DC: Invited speaker
11/13/2017	Vermont Research Day, Burlington, VT: Invited speaker
4/22/2018	NISBRE Conference, News from NIGMS
5/4/2018	NLM Blue Ribbon Panel #3
5/21/2018	NHGRI Advisory Council: NIH's Strategic Plan for Data Science
5/23/2018	NIBIB National Advisory Council, NIH Strategic Plan for Data Science
5/29-6/1/2018	SEPA PI Meeting/NIH SciEd
6/12/2018	Marshall University State of the University Address, Huntington, WVA
7/2/2018	Rescue Biomedical Research Project Annual Meeting, Washington, DC
7/9/2018	Update on the Status of the Strategic Plan for Data Science
8/8/2018	Big Data Working Group, NASA
9/7/2018	NACMHD Council, NIGMS Workforce Development and Research Capacity Building Program
9/24/2018	IDeA Networks of Biomedical Research Excellence (INBRE)
9/17/2018	AAMC Council of Deans and NIH
10/23/2018	AAMC-NIMHD Diversity in Workforce
10/31/2018	NIH Data Science Activities, A Presentation of the AMIA Public Policy Committee (Webinar)
10/2018	Clinical Research Forum IT Round Table
11/29-30/2018	AAHC Research Meeting
6/2019	Briefing on Data Science Strategic Plan
6/4/2019	NIH-NSF Collaborative Workshop, NIH SDC Co-Chair
6/27/2019	Annual ORWH/ICO Directors' Meeting
8/26/2019	Presentation at EO Lunch Meeting
9/2019	Big Data Briefing
9/12/2019	Research Organism Landscape – Choosing the Best Organism
9/24/2019	INBRE PI/PC Meeting
10/2/2019	Inclusion Governance Committee, Disadvantaged Populations

10/7-9/2019	IDeA Western Regional Meeting, Nevada
10/11/2019	Coalition for the Life Sciences
10/22/2019	DORA/HHMI Assessment meeting: Wednesday discussion leader
11/4/2019	NIH-DOE/ORNL, Dr. Lorsch: Pharma Data, Combining and Preserving and Discussion Moderator
11/7/2019	Delaware IDeA Symposium
12/7-11/2019	Joint Meeting of the American Society for Cell Biology/European Molecular Biology Organization Meeting (ASCB/EMBO), Washington, DC
12/25/2019	NCAI/REACH Panel (NIGMS hubs and related entrepreneurial and product development support programs)
2020	NIGMS / VA Collaboration on Sepsis Research
1/12/2020	All About Grants Podcast on the Diversity Statement, Definition and Supplements
1/24/2020	Ad Hoc Group for Medical Research
1/23/2020	NIGMS Meeting with Elizabeth Henry re: IDeA
1/31/2020	Whitehouse Workshop on the Responsible Liberation of Federal Data
2/3/2020	ACD Working Group on Enhancing Reproducibility and Rigor in Animal Research
4/6/2020	Biomedical Research and the NIH in the Age of COVID-19, Swarthmore College Swat Talk
5/2020	Data Access for Infectious Disease Modeling Researchers (Veterans Affairs/NIH)
6/19/2020	Vanderbilt IGP Curriculum Review Committee Meeting
Jun-20	American Chemical Society – Researchers’ needs
6/22/2020	NISBRE Conference
6/24/2020	HHS Protect Demo with Jose Arrieta
7/2020	Joint NSF-NIGMS Technology Development Initiative
8/2020	BCBSA/NIGMS Access to Data
9/22/2020	INBRE PI/PC Meeting
10/24/2020	Rustbelt RNA Meeting, Solutions for Promoting Diversity, Equity, and Inclusion
10/29/2020	Guest Speaker, High School Biology Class (Berger Lab), Upper School Science Department, Chapin School
11/5/2020	Developing a Culture of Safety in Biomedical Research Training -Webinar
11/20/2020	Fall SIAM CSP Meeting
12/7/2020	Research!America Alliance Member Meeting (presentation and panelist)
12/11/2020	NARCH PI Meeting, NIGMS Updates and Engaging Students in Biomedical Research
2021	Initiative to Address Publication Bias
7/1/2021	NIH Cement Extramural Leadership Institute (Celi)
2021	SciEd Conference (Keynote address)
1/19/2021	BMSF & NMF Diversity in Clinical Trials Career Development Program Stakeholder Group
1/27/2021	Wednesday Morning Group Community Presentation
2/2/2021	FASEB Data Sharing Project
2/8/2021	Council on Undergraduate Research (CUR)
2/19/2021	NIGMS/ODSS Workshop on IDeA Cloud Platform and Sandbox

2/26/2021	Scholastic/NIGMS Meeting to Discuss the Next Pathway Issue
3/2021	ACD Working Group Meeting on Enhancing Rigor, Transparency and Translatability
3/5/2021	Trans-NIH Group for High Value Data Asset Sustainability
3/12-13/2021	Common Fund Cryo-EM PI Meeting
3/19/2021	Ad Hoc Working Group – Using AI/ML to Render Electronic Medical Records Usable for Research Purposes
3/25/2021	AI/ML Initiative Related to Health Disparities, Health Inequities, and Minority Health
3/31/2021	Ad Hoc Group for Medical Research
4/6/2021	ACD Working Group on Enhancing Rigor, Transparency, and Translatability in Animal Research
4/12/2021	Racial Equity Institute Training for ICD
4/30/2021	BioKansas – Speak on Government, Academia and Industry’s Roles in Driving R&D (Burroughs Wellcome Fund to help biomedical graduate students successfully transition into private sector careers
5/5/2021	Research Updates from IDeA State Scientists using N3C
5/11/2021	MIDAS Annual Meeting
5/12/2021	NIH Common Fund Transformative High Resolution Cryo-Electron Microscopy
5/19/2021	All of Us Research Program Update
5/26/2021	Presentation, NIDCR Council Meeting
5/26/2021	NIGMS’ Diversity and Capacity Building Programs
6/17/2021	FASEB Shared Research Resources Virtual Roundtable
7/20/2021	EAWG Working Group Presentation to MBW
7/8/2021	Protein Data Bank Cloud Strategy—NIGMS, NSF, and DOE
7/14/2021	NIGMS – AACOM Connection
7/26/2021	IDeA Central Region Conference
7/22/2021	Q3 EAWG Update, Steering Committee Update
7/26/2021	IDeA Central Region (Zoom) Conference
8/2021	NIH COSWD Office Strategic Priorities
8/9/2021	RADx-UP Return to School Virtual Workshop
8/10/2021	Meeting in Twelve Parts of the Mid Atlantic Directors and Staff of Scientific Cores
8/11/2021	ORWH Pearls of Wisdom Virtual Interview
8/16/2021	Rhode Island-INBRE North East Regional IDeA Conference/Rhode Island IDeA Network of Biomedical Research Excellence
8/25/2021	Western Regional IDeA Webinar Presentation
Sep-21	Cloud Computing Workshop
10/18/2021	UNITE Co-Chairs presentation at ACD Workgroup on Diversity in the Biomedical Research Workforce
10/27/2021	NIH Tribal Advisory Committee: Native American Research Centers for Health (NARCH) Outcomes
11/5/2021	Southeast Regional IDeA Conference (recorded)
11/17/2021	SARS-COV-2 Surveillance Mini Symposium

11/29/2021 Next Steps: Quantum Information Technology Applications in Biomedical Sciences, NIH-DOE-NIST-NSF-DAPRA

12/7/2021 Keynote Address: Proof of Concept Network Annual Meeting, 2021

12/7/2021 HHS Stakeholder Meeting

2/9/2022 Cloud Computing Workshop and RFI Report

2/9/2022 Training Advisory Committee – Presentation on UNITE E Committee

2/23-24/2022 Fostering Cohort Recruitment Forum

4/21/2022 Frank Low Research Day, University of North Dakota School of Medicine

1/13/2023 Association of Medical and Graduate Departments of Biochemistry (Virtual)

2/22/2023 DEIA Working Group Meeting (Presentation)

3/14-15/2023 NASEM Workshop - Improving Federal Science Funding Outcomes Process Experimentation and Evaluation

3/20/2023 HBCU Presidents and Chancellors Roundtable

3/29/2023 Thurgood Marshall College Fund Speaker Request

3/30/2023 COSWD Virtual Seminar

3/31/2023 Common Fund ICD Retreat

4/12/2023 RCMI Annual Grantees Conference, Wash., DC

4/14/2023 Delaware Valley Chapter Meeting (speak)

4/18/2023 Alliance of Hispanic Serving Research Universities

5/4-5/2023 Common Fund CryoEM Centers Annual Mtg

5/31/2023 NIH SciEd 2023, Washington, DC

6/6/2023 ASBMB Public Affairs Advisory Comm Meeting

6/6-8/2023 AAMC Biomedical Research Leaders Conference

7/18/2023 National Association for MD-PhD Programs

7/21/2023 Science of Science Funding Workshop/NBER

7/28/2023 Present to NIAMS Leadership

8/2/2023 Research!America

8/17/2023 North East Regional IDeA Meeting

8/21/2023 PCAST Consultation with Vibrancy of Basic Research

9/15/2023 Southeast Regional IDeA Conf

10/18/2023 Advisory Committee on Res. on Women’s Health

10/24/2023 FASEB SPC Symposium

2/8/2024 2024 Keese School Clustered Regularly Interspaced Short Palindromic Repeats (CRISPR) Lecture

2/26/2024 EPSCoR/IDeA Annual Meeting

2/27/2024 Resource Center for Tribal Epidemiology Centers (RC-TEC)

3/15/2024 2024 – Federation of American Societies for Experimental Biology (FASEB) – Future of Scientific Societies Summit

4/11/2024 2024 Texas State University (TXST) STEM Conference

4/29/2024 RCMI: RCM Annual Scientific Conference

5/2/2024 2024 Foundation for Anesthesia Education and Research-Mentored Research Training Grant Awardee Annual Meeting, American Society of Anesthesiologists (FAER)

5/21-22/2024 Positioning Your Institution to Successfully Navigate NIH Grants Workshop

6/7/2024 Brook Grove Retirement Home CRISPR Lecture

6/17/2024 2024 National IDeA Symposium of Biomedical Research (NISBRE)

7/23/2024 2024 SuRE Biennial Conference

