

Curriculum Vitae
David Reid Corey

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PERSONAL

Date of Birth: August 13, 1963, Cambridge Massachusetts

EDUCATION

1985 B.A., cum laude, Chemistry, Harvard University

1990 Ph.D., Chemistry, University of California, Berkeley in the Laboratory of Dr.
Peter G. Schultz. Thesis: "Sequence-Specific Hybrid Nucleases"

EMPLOYMENT

1990-1992 Damon Runyon Walter Winchell Postdoctoral Fellowship in the Laboratory
of Dr. Charles S. Craik, University of California, San Francisco.

1992-2000 Assistant Investigator, Howard Hughes Medical Institute

1992-1998 Assistant Professor, Department of Pharmacology, The University of Texas,
Southwestern Medical Center at Dallas (UTSWMC)

1998-2003 Associate Professor, UTSWMC

2003- Professor UTSWMC

2104- Rusty Kelley Professor of Medical Science

PROFESSIONAL

1985-1987 University Fellowship

1987- Member, American Chemical Society

1989-1990 Pfizer Graduate Fellowship

1993- Member, Biophysics Training Program, UTSWMC

1993- Member, Biochemistry and Molecular Biology Training Program, UTSWMC

1996 Recipient (w. Drs. Jerry Shay and Woodring Wright) of CaP Cure Research Award

1997- Secondary Appointment, Department of Biochemistry, UTSWMC

1997- Member, American Society for Pharmacology and Experimental Therapeutics

1997- Member, American Association For Cancer Research

1998-2003 Head, Proteins Thread, first year graduate core curriculum UTSWMC

2001 Guest Editor for *Methods* "Applications of Engineered Nucleic Acids"

2002-2005 Consultant, ISIS Pharmaceutical

2002-2003 Consultant, Praecis Pharmaceutical

2003 Welch Lectureship

2003- Full Member, Simmons Cancer Center

2006-2008 Scientific Advisory Board, Panagene SA

2006-2012 External Advisory Panel, Program in Excellence in Nanotechnology

2007 AACR Program committee

2008 Bristol Myers Squibb Lectureship, Harvard University

2009 Hirschman Lectureship, Oberlin University

2009 McKnight Neuroscience of Brain Disorder Award

2009- Board of Directors, Oligonucleotide Therapeutic Society

2009-2010, 2018 Organizing Committee, 2010 Oligonucleotides Therapeutic Society Symposium

2010 Excellence in Postdoctoral Mentoring Award (UT Southwestern)

2012-	Executive Editor, <i>Nucleic Acids Research</i>
2014	Chair, Tenth Annual Oligonucleotide Therapeutics Symposium
2014-	Rusty Kelley Professorship in Medical Sciences
2015-	Senior Editor, <i>Nucleic Acid Therapeutics</i>
2017-	Scientific Advisory Board, Ono Pharma Foundation

EDITORIAL BOARD MEMBERSHIPS

Tetrahedron and Tetrahedron Letters 2003-2009, *Cancer Research* 2003-2016, *Journal of RNAi and Gene Silencing* 2005-, *Chemical Biology and Drug Design* 2006-, *Nucleic Acids Research* 2008-2012, *Nucleic Acid Therapeutics* 2008-, *Artificial DNA* 2009-2016, *Methods* 2012-, *Scientific Reports* 2016.

RESEARCH PUBLICATIONS

- Zucker-Franklin, D., Nabi, Z. F., Corey, E. J., Corey, D. R. A Substrate Analog Inhibitor for Arylsulfatase Reduces NK Cell Cytotoxicity. *Biochem. Biophys. Res. Comm.* **126**, 540-543 (1985).
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- Zuckermann, R., Corey, D., Schultz, P. Efficient Methods for the Attachment of Thiol Specific probes to the 3'-ends of Synthetic Oligodeoxyribonucleotides. *Nucl. Acids Res.* **15**, 5305-5321 (1987).
- Corey, D. R. and Schultz, P. G., Generation of a Hybrid Sequence-Specific Single-Stranded Deoxyribonuclease. *Science* **238**, 1401-1403 (1987).
- Zuckermann, R. N., Corey, D. R., Schultz, P. G. Site-Selective Cleavage of RNA by a Hybrid Enzyme. *J. Am. Chem. Soc.* **110**, 1614-1615 (1988).
- Corey, D. R. and Schultz, P. G. Introduction of a Metal-Dependent Regulatory Switch into an Enzyme. *J. Biol. Chem.* **264**, 3666-3669 (1989).
- Corey, D. R., Pei, D., Schultz, P. G. The Generation of a Catalytic Oligonucleotide-Directed Nuclease. *Biochemistry* **28**, 8277-828 (1989).
- Corey, D. R., Pei, D., Schultz, P. G. The Sequence-Selective Hydrolysis of Duplex DNA by an Oligonucleotide-Directed Nuclease. *J. Am. Chem. Soc.* **111**, 8523-8525 (1989).
- Pei, D., Corey, D. R., Schultz, P. G. Site-Specific cleavage of Duplex DNA by a Semi-synthetic Nuclease via triple helix formation. *Proc. Natl. Acad. Sci.*, **87**, 9858-9862 (1990).
- Corey, D. R. and Craik, C. S. An Investigation into the Minimum Requirements for Peptide Hydrolysis by Mutation of the Catalytic Triad of Trypsin. *J. Am. Chem. Soc.* **114**, 1784-1790 (1992).
- Corey, D. R., McGrath, M. E., Vasquez, J. R., Fletterick, R. J., Craik, C. S. An Alternate Geometry for the Catalytic Triad of Serine Proteases. *J. Am. Chem. Soc.* **114**, 4905-4907, (1992).
- Corey, D. R., Shiau, A. K., Yang, Q., Janowski, B. A., Craik, C. S. Trypsin display on the surface of bacteriophage. *Gene* **128**, 129-134 (1993).
- Corey, D. R. and Phillips, M. A Cyclic Peptides as Proteases: A Re-evaluation. *Proc. Natl. Acad. Sci.* **91**, 4106-4109 (1994).
- Corey, D. R., Willett W. S., Coombs, G. C., Craik, C. S. Trypsin Specificity Increased through Substrate-Assisted Catalysis. *Biochemistry* **34**, 11521-11527 (1995).
- Madison, E. L., Coombs, G. S., Corey, D. R. Substrate specificity of Tissue Plasminogen Activator: Characterization of the fibrin independent specificity of t-PA for Plasminogen. *J. Biol. Chem.* **270**, 7558-7562 (1995).
- Corey, D. R., Munoz-Medellin, D., Huang, A. Strand Invasion by Oligonucleotide-Nuclease Conjugates. *Bioconjugate Chemistry* **6**, 93-100, (1995).
- Norton, J. C., Waggenspack, J. H., Varnum, E., Corey, D. R. Targeting Peptide Nucleic Acid Protein Conjugates to Structural Features Within Duplex DNA. *Bioorg Med. Chem.* **3**, 437-445 (1995).
- Ding, L., Coombs, G. S., Strandberg, L., Navre, M., Corey, D. R., Madison, E. L. The Origins of Specificity of Tissue-Type Plasminogen Activator. *Proc. Natl. Acad. Sci.* **92**, 7627-7631 (1995).
- Coombs, G. S., Hazzard, J., Corey, D. R. Kinetic Characterization of a Peptide Inhibitor of Trypsin Isolated from a Synthetic Peptide Combinatorial Library. *Bioorg. Med. Chem. Lett.* **5**, 611-614 (1995).
- Iyer, M., Norton, J. C., Corey, D. R. Accelerated Hybridization of Oligonucleotides to Duplex DNA. *J. Biol. Chem.* **270**, 14712-14717 (1995).

21. Corey, D. R. 48 000-fold Acceleration of Hybridization of Chemically Modified Oligomers to Duplex DNA. *J. Am. Chem. Soc.* **117**, 9373-9374, (1995).
22. Coombs, G. S., Dang, A. T., Madison, E. L., Corey, D. R. Distinct Mechanisms Contribute to Stringent Specificity of Tissue-Type Plasminogen Activator. *J. Biol. Chem.* **271**, 4461-4467 (1996).
23. Norton, J. C., Piatyszek, M. A., Wright, W. E., Shay, J. W., Corey, D. R. Inhibition of Human Telomerase Activity by Peptide Nucleic Acids. *Nature Biotech.* **14**, 615-620 (1996).
24. Smulevitch, S. V., Simmons, C. G., Norton, J. C., Wise, T. W., Corey, D. R. Enhanced Strand Invasion by Oligonucleotides through Manipulation of Backbone Charge. *Nature Biotech.* **14**, 1700-1705 (1996).
25. Hamilton, S. E., Iyer, M., Norton, J. C., Corey, D. R. Specific and Nonspecific Inhibition of RNA Synthesis by DNA, PNA and Phosphorothioate Promoter Analog Duplexes. *Bioorg. Med. Chem. Lett.* **6**, 2897-2900 (1996).
26. Ke, S-H., Coombs, G. S., Tachias, K., Navre, M., Corey, D. R., Madison, E. L. Distinguishing the Specificities of Closely Related Proteases: Role of P3 in Substrate and Inhibitor Discrimination between Tissue-Type Plasminogen Activator and Urokinase. *J. Biol. Chem.* **272**, 16603-16609 (1997).
27. Ke, S-H., Coombs, G. S., Tachias, K., Corey, D. R., Madison, E. L. Optimal Subsite Occupancy and Design of a Selective Inhibitor of Urokinase. *J. Biol. Chem.* **272**, 20456-20462 (1997).
28. Hamilton, S. E., Pitts, A. E., Katipally, R. R., Jia, X. Davies, B. A., Rutter, J. P., Wright, W. R., Shay, J. W., Corey, D. R. Identification of Determinants for Inhibitor Binding within the RNA Active Site of Human Telomerase Using PNA Scanning. *Biochemistry* **36**, 11873-11880 (1997).
29. Simmons, C. G., Pitts, A. E., Mayfield, L. D., Shay, J. W., Corey, D. R. Synthesis and Membrane Permeability of PNA-Peptide Conjugates. *Bioorg. Med. Chem. Lett.* **7**, 3001-3007 (1997).
30. Coombs, G.S., Bergstrom, R.C., Madison, E.L., Corey, D.R. Directing Sequence-Specific Proteolysis to New Targets. The Influence of Loop Size and Target Sequence on Sequence-Selective Proteolysis by Tissue-type Plasminogen Activator and Urokinase-type Plasminogen Activator. *J. Biol. Chem.* **273**, 4323-4328 (1998).
31. Peet, D. J., Doyle, D. F., Corey, D. R., Mangelsdorf, D. J. Engineering novel specificities for ligand-activated transcription in the nuclear hormone receptor RXR. *Chem. Biol.* **5**, 13-25 (1998).
32. Coombs, G.S., Bergstrom, R.C., Pellequer, J-L., Baker, S.I., Navre, M., Smith, M.M., Tainer, J.A., Madison, E.L., Corey, D.R. Substrate Specificity of Prostate Specific Antigen (PSA). *Chem. Biol.* **5**, 475-488 (1998).
33. Pitts, A. E. and Corey, D. R. Inhibition of Human Telomerase by 2'-O-Methyl RNA Oligonucleotides. *Proc. Natl. Acad. Sci.* **95**, 11549-11554 (1998).
34. Mayfield, L. D. and Corey, D. R. Automated Synthesis of Peptide Nucleic Acids (PNAs) and Peptide Nucleic Acid-Peptide Conjugates. *Anal. Biochem.* **268**, 401-404 (1999).
35. Ishihara, T. and Corey, D. R. Rules for Strand Invasion by Chemically Modified Oligonucleotides. *J. Am. Chem. Soc.* **121**, 2012-2020, (1999).
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37. Mayfield, L. D. and Corey, D. R. Enhancing Solid Phase Synthesis by a Noncovalent Protection Strategy - Efficient Coupling of Rhodamine to Peptide Nucleic Acids. *Bioorg. Med. Chem. Lett.* **9**, 1419-1422 (1999).
38. Shammas, M. A., Simmons, C. G., Corey, D. R., and Shmookler-Reis, R. J. Telomerase Inhibition by Peptide Nucleic Acids Reverses "Immortality" of Transformed Cells. *Oncogene* **18**, 6191-6200 (1999).
39. Herbert, B-S., Pitts, A. E., Baker, S. I., Hamilton, S. E., Wright, W. E., Shay, J. W. and Corey, D. R. Inhibition of telomerase leads to eroded telomeres, reduced proliferation, and cell death. *Proc. Natl. Acad. Sci. USA* **96**, 14726-14781 (1999).
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41. Zhang, X., Ishihara, T., and Corey D. R. Strand Invasion by Mixed Base PNAs and PNA-Peptide Chimera. *Nucl. Acids. Res.* **28**, 3332-3338 (2000).
42. Bergstrom, R. C., Mayfield, L. D and Corey D. R. A First Step into a Protein World: Accelerating Delivery of Chemical Reactivity to DNA. *Chem. Biol.* **8**, 199-205 (2001).
43. Doyle D. F., Braasch D. A, Simmons, C. G., Janowski, B. A. and Corey, D. R. Intracellular Delivery and Inhibition of Gene Expression by Peptide Nucleic Acids. *Biochemistry* **40**, 53-64 (2001).
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45. Doyle, D. F., Braasch, D. A., Boehm, M., Jackson, L., Mangelsdorf, D., and Corey D. R. Engineering gene activation using orthogonal ligand receptor pairs. *J. Am. Chem. Soc.* **123**, 11367-11371 (2001).

46. Zhang, X., Simmons, C. G., and Corey, D. R. Synthesis and Intracellular Delivery of Lactose-Labeled PNAs. *Bioorg. Med. Chem. Lett.* **11**, 1269-1272 (2001).
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52. Elayadi, A. N., Braasch, D. A., and Corey, D. R. Implications of high affinity hybridization by locked nucleic acids for inhibition of human telomerase. *Biochemistry* **41**, 9973-9981 (2002).
53. Lee, H. J., Boado, R. J., Braasch, D. A., Corey, D. R., and Pardridge, W. M. Imaging gene expression in the brain in vivo in a transgenic mouse model of Huntington's Disease with an antisense radiopharmaceutical and drug targeting technology. *J. Nucl. Med.* **43**, 948-956 (2002).
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55. Kaihatsu, K., Braasch, D. B., Canizoglu, A., and Corey, D. R. Enhanced Strand Invasion by Hybrid Peptide Nucleic Acids: Synthetic Mimics of DNA Binding Proteins. *Biochemistry* **41**, 11118-11125 (2002).
56. Chen, Z., Monia, B. P., and Corey, D. R. Telomerase Inhibition, Telomere Shortening, and Decreased Cell Proliferation by Cell Permeable 2'-O-Methoxyethyl Oligonucleotides. *J. Med. Chem.* **45**, 5423-5425 (2002).
57. Braasch, D. B., Liu, Y., and Corey, D. R. Antisense gene inhibition by locked nucleic acids. *Nucl. Acids Res* **30**, 5160-5167 (2002).
58. Gamper, H. B., Corey, D. R., Nulf, C. J., and Kmiec, E. B. Hybridization and Strand Exchange within the RecA Synaptic Complex. *Biochemistry* **42**, 2643-2655 (2003).
59. Zhao, X., Kaihatsu, K., and Corey, D. R. Inhibition of Transcription by PNA-peptide conjugates. *Nucleosides, Nucleotides, and Nucleic Acids* **22**, 535-546 (2003).
60. Bergstrom, R. C., Coombs, G. C., Ye, S., Goldsmith, E. J., Madison, E. L., and Corey, D. R. Binding of Nonphysiological Protein and Peptide Substrates to Proteases: Differences Between urokinase-type plasminogen activator and Trypsin and Contributions to the Evolution of Regulated Proteolysis. *Biochemistry* **42**, 5395-5402 (2003).
61. Braasch, D. A., Jensen, S., Liu, Y., Arar, K., White, M. A., and Corey, D. R. RNA interference in mammalian cells by chemically modified RNA. *Biochemistry* **42**, 7967-7975 (2003).
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64. Kaihatsu, K., Shah, R. H., Zhao, X., and Corey, D. R. Extending Duplex Recognition by Peptide Nucleic Acids (PNAs): Strand Invasion and Inhibition of Transcription by Tail Clamp PNAs and PNA-Peptide Conjugates. *Biochemistry*, **42**, 13996-14003 (2003).
65. Liu, B., Han, Y., Ferdous, A., Corey, D. R., and Kodadek, T. Transcription activation by a PNA-peptide chimera in a mammalian cell extract. *Chem. Biol.* **10**, 909-916 (2003).
66. Liu, Y., Braasch, D. A., Nulf, C. J., and Corey, D. R. Isoform-specific inhibition of cellular gene expression by peptide nucleic acid. *Biochemistry* **43**, 1921-1927 (2004).
67. Braasch, D. A., Paroo, Z., Constantinescu, A., Ren, G., Oz, O., Mason, R. P. and Corey, D. R. Biodistribution of phosphodiester and phosphorothioate siRNA *Bioorg. Med. Chem. Lett.* **14**, 1139-1143 (2004).
68. Paroo, Z., Bollinger, R. A., Braasch, D. A., Corey, D. R., Richer, E., Antich, P. A., and Mason, R. P. Bioluminescence imaging as a high throughput, quantitative tool for accessing tumor burden. *Molecular Imaging* **3**, 117-124 (2004).

69. Nulf, C. J. and Corey D. R. Intracellular inhibition of hepatitis C virus (HCV) internal ribosomal entry site (IRES)-dependent translation by peptide nucleic acids (PNAs) and locked nucleic acids (LNAs). *Nucl. Acids Res.* **32**, 3792-3798 (2004).
70. Kaihatsu, K., Huffman, K. E. and Corey, D. R. Cellular Uptake, Localization, and Inhibition of Gene Expression by PNAs and PNA-Peptide Conjugates. *Biochemistry* **43**, 14340-14347 (2004).
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73. Janowski, B. A., Kaihatsu, K., Huffman, K. E., Schwartz, J. C., Ram, R., Hardy, D., Mendelson, C. R., and Corey D. R. Inhibiting transcription of chromosomal DNA using antigene peptide nucleic acids. *Nature Chemical Biology* **1**, 210-215 (2005).
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76. Hardy, D. B., Janowski, B. A., Corey, D. R., and Mendelson, C. R. Progesterone impairs the interleukin-1 β (IL-1 β) stimulation of cyclooxygenase 2 (COX-2) gene expression in human myometrial cells. *Mol. Endo.* **20**, 2724-2733 (2006).
77. Janowski, B. A., Huffman, K. E., Schwartz, J. C., Ram, R., Nordsell, R., Shames, D. S., Minna, J. D., and Corey, D. R. Ago1 and Ago2 link mammalian transcriptional silencing with RNAi. *Nature Structural Molecular Biology* **13**, 787-792 (2006).
78. Janowski, B. A., Hu, J., and Corey, D. R. Antigene inhibition by peptide nucleic acids and duplex RNAs. *Nature Protocols* **1**, 436-443 (2006).
79. Johnson, A.A., Sayer, J.M., Jerina, D.M., Burke, T.R., Marquez, V.E., Debart, F., Vasseur, J., Corey, D.R., Maier, M. A., Pommier, Y. Effect of DNA Modifications on DNA processing by HIV Integrase and inhibitor binding: Role of DNA Backbone Flexibility and an Open Catalytic Site. *J. Biol. Chem.* **281**, 32428-32438 (2006).
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81. Hu, J. and Corey, D. R. Inhibiting Gene Expression with PNA-Peptide Conjugates that Target Chromosomal DNA. *Biochemistry* **46**, 7581-7589 (2007).
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84. Beane, R., Gabillet, S., Montallier, C., Arar, K., and Corey D. R. Recognition of chromosomal DNA by locked nucleic acids. *Biochemistry* **47**, 13147-13149 (2008).
85. Hu, J., Matsui, M., Gagnon, K. T., Schwartz, J. C., Gabillet, S., Arar, K., Wu, J., Bezprozvanny, I., and Corey, D. R. Inhibition of mutant huntingtin expression by targeting mutant RNA structure. *Nature Biotechnology* **27**, 478-484 (2009).
86. Younger, S. T., Pertsemliadis, A., and Corey, D. R. A method for predicting potential miRNA target sites within gene promoters. *Biorg. Med. Chem. Lett.* **19**, 2791-3794 (2009).
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88. Hu, J., Dodd, D.W., Hudson, R. H. E., Corey, D. R. Cellular localization and allele-selective inhibition of mutant huntingtin protein by peptide nucleic acid oligomers containing the fluorescent nucleobase [bis-(o-(aminoethoxy)phenyl)pyrrolocytosine. *Biorg. Med. Chem. Lett.* **19**, 6181-6184 (2009).
89. Li, Yingming, Maleab, B. S., Li, Z., Thompson, M. G., Chen, Z., Corey, D. R., Hsieh, J. T., Shay, J. W., and Koeneman, K. S. Telomerase inhibition and cytolytic therapy in management of androgen independent osseous metastatic prostate cancer. *Prostate* **70**, 616-629 (2010).

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94. Gagnon, K. T., Pendergraff, H., Deleavey, G., Swayze, E., Potier, P., Randolph, J., Roesch, E., Chattopadhyaya, J., Damha, M., Bennett, C. F., Chrisophe, M., Lemaitre, M., and Corey, D. R. Allele-selective silencing of huntingtin expression with antisense oligonucleotides targeting the mRNA expanded CAG repeat. *Biochemistry* **49**, 10166-10178 (2010).
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PATENTS AND PATENT APPLICATIONS

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2. **US 8,999,943** Corey, D. and Janowski B. Antigene oligomers inhibit transcription. U.S. patent application Ser. No. 11/376,483, filed 3/14/2006. **Allowed 12-2-2014.**
3. **US 8,324,181** (supercedes **US 7,709,456**) Corey, D. R., Janowski, B. A., Shames, D. S., and Minna, J. D. Modulation of gene expression by oligomers targeted to chromosomal DNA. Filed 11/13/2006. **Allowed 12/10/09, issued 5/4/2010 and subsequent 12/4/2012.**
4. Schwartz, J. C., Younger, S., Nguyen, N., Janowski, B., and Corey, D. R. Modulating transcription with antigene RNA targeting antisense transcripts. U.S. patent application Ser. No. 60/977,631 filed 10/4/2007.

5. **US 7,858,592** Shames, D. S., Corey, D. R., Greer, R. S., and Minna, J. D. Interfering RNAs against the promoter regions of p53. U.S. patent application 60/891,615 filed 2/24/2008. **Allowed 09/10/2010.**
6. **US 8,222,221** Corey, D. R. and Younger, S. T. Endogenous small RNA targets gene promoters in mammalian cells. U.S. patent application 61/058,909 filed 4/04/08, **Allowed 4/12.**
7. **US 8,901,095, Australia 2009276763** Hu, J., Matsui, M., and Corey D. R. Selective inhibition of polyglutamine protein expression. US patent application 13/056,556 filed 4/18/2011, **Allowed 7-31-2014 in USA and 10-29-2015 in Australia.** Continuation issued as **US 9,340,785** on May 17, 2016.
8. **US 8,815,586** Yue, X and Corey, D. R. Inhibition of gene expression by duplex RNAs that target sequence beyond the 3' terminus of mRNAs. US Patent Application 61/172,528. Filed 3/24/09. **Allowed 5-1-2014**
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10. **US 9,574,191** Corey, D. R., Hu., J. Sah, D. W. Y. Selective inhibition of polyglutamine protein expression by duplex RNAs. U.S. Patent Application 61/301067. Filed 02/03/2010. **Allowed 10-14-2016.**
11. Corey, D. R., Gagnon, K., Swayze, E., Bennett, F. Selective inhibition of polyglutamine protein expression by oligonucleotides, Patent application 61/302450. Filed 02/08/10. **Canadian Patent Allowed, 11-02-2016, 2,732,343.**
12. Liu, J., Hu, J., and Corey, D. R. Oligonucleotide modulation of splicing. Patent application. 61/472957. Filed 04/07/2011.
13. Prakash, T. P., Swayze, E. E., Yu, D., Corey, D. R. Methods and compounds useful in conditions related to triplet expansion (filed 8/29/2011). **European patent allowed 10-16-2015.**
14. Corey, D., Chu, Y., and Janowski, B. A method for single cell sequencing of miRNAs and other cellular RNAs.
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16. Prakash, T.P. and Corey, D.R. Alteration of splicing by single-stranded silencing RNAs. 62/111,025 filed 02/02/2015.
17. Prakash, T.P. and Corey D.R. Compounds and Methods for modulating C9orf72. Filed 01/02/2015.

POSITIONS OF COREY LABORATORY ALUMNI

Gary Coombs (Associate Professor, Waldorf College), John Waggenspack (Instructor, Southeastern Louisiana University), Anne Pitts (Licensing Manager, Du Pont Pioneer), Susan Hamilton (Instructor, University of Incarnate Word), Mridula Iyer (Director, Companion Diagnostics), Sergey Smulevitch (Director, Chiral Technologies), Tsutomu Ishihara (Professor, Nihon University), Kunihiro Kaihatsu (Assistant Professor, Kobe University), Bethany Janowski (Associate Professor, UT Southwestern, ret.), Jacob Schwartz (Asst. Prof. U. Arizona), Scott Younger (Research Scientist, Broad Institute), Dongbo Yu (Resident, U. Chicago), Keith Gagnon (Asst. Prof. U. Southern Illinois), Yuichiro Aiba (Asst. Prof. Nagoya University/August 2015), Randall Beane (Patent Examiner, United States Patent Office), Jonathan Watts (Assistant Professor, U. Massachusetts Medical Center), Masayuki Matsui (Research Scientist, Ono Pharma), David Dodd (Research Scientist, 4Catalyzer), Anissa Elayadi (Associate Director, Intrexon), Zain Paroo (Assistant Professor, University of Illinois at Chicago), Yinghui Liu (Physician, Plano Texas), Dwaine Braasch (Research Scientist, University of Southern Mississippi), Kenneth Huffman (Research Scientist, UT Southwestern), Shobhana Natarajan (Director, Medical Affairs, Reata Pharmaceuticals), Adele Yue (Senior Scientist Abbott Pharmaceuticals), Donald Doyle (Senior Lecturer, Georgia Tech), Roya Kalantari (NIH Presidential Management Fellow), Yuichiro Aiba (Assistant Professor, Nagoya University), and Fuminori Sakurai (Assoc. Prof., Osaka University).

INVITED SEMINARS SINCE 2011

2/5/13 **International Stroke Conference**, Honolulu Hawaii
 3/7/13 **Children's Memorial Research Center, Northwestern University**, Keynote Lecture, Biomedical Research Symposium
 4/10/13 **CHDI Annual Meeting**, Venice Italy
 4/16/13 **Fred Hutchinson Cancer Research Center**
 4/23/13 **Burnham Institute**, Annual RNA Biology Lecture
 6/27/13 **Merck**, RNAi group
 8/14/13 **Alnylam Pharmaceutical**
 9/4/13 **AAAS Webinar Noncoding RNAs**
 10/5/13 **Oligonucleotide Therapeutics Society Annual Meeting**, Naples Italy
 10/30/13 **SciBX Summit**, Boston, Noncoding RNAs as tools and targets
 11/1/13 **Baylor University**, Department of Chemistry and Biochemistry
 11/8/13 **UT Southwestern**, University Lecture Series

11/18/13 **ACS Southwestern Regional Meeting**, Frontiers in Nucleic Acids
 11/19/13 **ACS Southwestern Regional Meeting**, Chemical Biology of Texas
 1/3/14 **Pacific Symposium on Biocomputing**, Noncoding RNA workshop, Kona, Hawaii
 3/19/14 **ACS National Meeting**, Dallas, Frontiers of Nucleic Acids Chemistry
 4/7/14 **Mayo Clinic**, 7th Annual BMB Student Symposium
 5/14/14 **City of Hope**, Leading Edge Lecture
 6/25/14 **Sigma**, Woodlands Texas
 8/28/14 **Vertex Pharmaceutical**
 10/14 **Oligonucleotide Therapeutics Society Annual Meeting**, San Diego, Organizer
 10/22/14 **ALS Investigator Meeting**, Philadelphia
 11/18/14 **EuroTIDES**, Keynote Lecture, Berlin, Germany
 3/19/15 **Keystone Meeting**, Long Noncoding RNAs
 4/8/15 **Cold Spring Harbor Meeting, RNA & Oligonucleotide Therapeutics**, Session Chair
 6/11/15 **British Society for Gene and Cell Therapy**, Glasgow, Scotland
 6/23/15 **RaNA Pharmaceutical**, Cambridge
 8/16/15 **American Chemical Society Meeting**, Boston
 10/13/15 **Oligonucleotide Therapeutics Society Annual Meeting**, Leiden, Session Chair
 10/23/15 **Huntington Study Group**, Tampa
 11/8/15 **American College of Rheumatology Annual Meeting**, San Francisco
 12/7/15 **AACR Special Conference on Noncoding RNA**, Boston
 1/20/16 **Ono Pharmaceutical Company**, Osaka, Japan
 1/21/16 **Takeda Science Foundation**, Osaka, Japan
 3/14/16 **Alios BioPharma**, South San Francisco
 7/30/16 **Peter Schultz Sixtieth Birthday Symposium, Scripps Institute**
 9/27/16 **Oligonucleotide Therapeutics Society Symposium**, Montreal, Canada
 11/17/16 **Nucleic Acid Therapeutic Society of Japan, 2nd Annual meeting**, Tokyo, Japan
 2/8/17 **Keystone meeting**, Noncoding RNAs, Banff Canada
 4/5/17 **University of Massachusetts Medical Center**
 6/9/17 **2nd International Conference, The long and short of RNAs**, Heraklion, Greece.
 9/5/17 **7th Annual Symposium on Nucleic Acid Chemistry**, Cambridge, England
 9/28/17 **International Ataxia Research Conference**, Pisa, Italy
 10/16/17 **Friedreich Ataxia Symposium**, Philadelphia Pennsylvania

STUDY SECTION AND RELATED SERVICE

9/22/98-9/24/98 Reviewer NIGMS/PO1
 11/9/99 Reviewer NIGMS/PO1
 6/7/00-6/9/00 Reviewer, NCI/NCDDG study section
 6/14/00-6/16/00 Reviewer, BBKA study section
 10/11/00-10/12/00 Reviewer, CDF-2 study section
 6/27/01 Reviewer NCI/Molecular Target Laboratory Initiative
 10/04 Reviewer, NCI/NCDDG study section
 10/05 Reviewer, NCI/PO1
 3/28/06 Chair, Special Emphasis Panel ZCA1 SRRB-Y
 6/15/06 Reviewer, BST-L(52): Biology of RNA Interference Special Emphasis Panel
 6/26/06 Reviewer, ZRG1 CBN 10: Cell Biology SBIR/STTR Applications
 6/29/06 Reviewer, MDCN-K(90): Neurogenetics and Neurogenomics Special Emphasis Panel
 11/6/06 Reviewer, ZRG1 CBN 10: Cell Biology SBIR/STTR Applications
 10/3/07-10/4/07 Reviewer, SBCA Synthetic and Biological Chemistry
 2/14/08-1/16/08 Reviewer, Arizona Science Foundation
 5/4/08-5/6/08 Mentor, NIH mentoring workshop for young faculty in organic chemistry and chemical biology
 3/22/08 Reviewer, ZRG1 CB-D 10 B SBIR/STTR Applications
 6/5/08-6/6/08 Reviewer, MGC Molecular Genetics C study section
 10/15/08 Reviewer, ZRG1 CB-B
 3/09 Reviewer, ZRG1 CB-B
 3/29/09-3/31/09 Mentor, NIH mentoring workshop for young faculty in organic chemistry and chemical biology
 6/09 Reviewer, ZRG1 ETTN-A 58/Challenge grants
 6/09 Reviewer, ZRG1 BCMB-H95S/Challenge grants
 6/23/09 Reviewer, ZRG1 BCMB/Competitive Supplements
 5/22/10-5/24/10 Local host, NIH mentoring workshop for young faculty in organic chemistry and chemical biology
 6/27/12 Reviewer, SBCA, Synthetic and Biological Chemistry
 3/27/13-3/29/13 Reviewer, NIH Special Emphasis Panel Extracellular RNA
 4/3/13 Reviewer, NIH Special Emphasis Panel
 6/4/13 Reviewer, MSFE study section
 10/17/13 Reviewer, NSF Probes for nucleic acids
 1/16/14 Reviewer, ZRG1 BCMB-W (02) Member Conflict: Biological Chemistry and Macromolecular Biophysics
 2/18/14 Reviewer, NIH Transformative proposal ZRG1 BCMB-A
 10/27-28/14 Reviewer, SBCA, Synthetic and Biological Chemistry
 5/19-20/16 Reviewer, NIGMS PO1
 9/29-30/16 Reviewer, MGB study section

Ad Hoc reviews for The National Science Foundation, Wellcome Trust, The Petroleum Research Fund, Research Corporation, The Medical Research Council (UK), Fundação para a Ciência e a Tecnologia-Portugal, Israel Science Foundation, European Research Council, Association for International Cancer Research, Agence Nationale de la Recherche, Ataxia Foundation, Muscular Dystrophy Campaign, Singapore National Science Foundation.