

ANNA MARIE PYLE

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Yale University and Howard Hughes Medical Institute
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A. FIELDS OF SPECIALIZATION:

Structure and function of large RNA molecules: ribozymes, introns, lncRNAs and viral RNA; Mechanisms of RNA-stimulated helicases and innate immune receptors; Small molecule targeting of RNA structure.

B. ACADEMIC TRAINING:

1990-1992 Postdoctoral Fellow, Laboratory of Thomas Cech, University of Colorado
1986-1990 Ph.D., Chemistry, Columbia University
1981-1985 B.A., Chemistry, *magna cum laude*, Princeton University
1983-1985 Program Certificate in Science Policy, Woodrow Wilson School of Princeton University

C. POSITIONS:

Yale University, Molecular, Cellular and Developmental Biology and Chemistry, Sterling Professor (2018-present)
Yale University, Molecular, Cellular and Developmental Biology and Chemistry, William Edward Gilbert Professor (2010-2018)
Yale University, Molecular Biophysics and Biochemistry, Professor (2002-2010)
Howard Hughes Medical Institute, Investigator (1997-present)
Columbia University, Biochemistry and Molecular Biophysics, Professor (2001-2002); Associate Professor, Tenure (1997-2001); Assistant Professor (1992-1997)

D. HONORS:

Awards and Distinguished Fellowships:

National Academy of Sciences (2023)
Lifetime Service Award RNA Society (2022)
Yale Faculty Innovation Award (2022)
Eli Lilly and Company Lecturer, American Society of Virology (2021).
Sterling Professor of Molecular, Cellular and Developmental Biology, Yale University (2018)
Novartis Lecture, University of Pennsylvania (2018)
Gomberg Lecture, University of Michigan (2018)
Jerry A. Weisbach Memorial Lecture, Rockefeller University (2018)
Blavatnik Fund for Innovation Award, New Haven (2017, 2018 and 2019)
Plenary Lecturer, ASBMB Annual Meeting, San Diego, CA (2016)
Elected Member, Connecticut Association of Science and Engineering (2016)
Keynote Speaker, Keystone Meeting on Positive-Strand Viruses (2016)
Green Lectureship in Enzymology, University of Wisconsin, Madison (2016)
Distinguished Lecturer, Frontiers in Chemistry, Case Western Reserve University (2013)
Michael Gait Award and Lectureship, Cambridge University (2013)
Distinguished Visitor, European Molecular Biology Laboratory, Heidelberg (2011)
Karl Friedrich Bonhoeffer Lecturer in Biophysics, Max Planck Institute Göttingen (2011)
Fellow of the American Association for the Advancement of Science (2007)
Endowed Chair, The William Edward Gilbert Professorship, Yale University (2005)
Member of the American Academy of Arts and Sciences (2005)
Mayor's Award for Excellence in Science and Technology, New York (2002)
Investigator, Howard Hughes Medical Institute (1997-present)
NSF National Young Investigator Award (1994-1999)
Beckman Young Investigator (1994-1996)
Searle Scholars Award (1993-1996)
Irma T. Hirschl and Monique Weill-Caulier Career Scientist Award (1992-1997)
Jane Coffin Childs Memorial Fund Postdoctoral Fellowship (1990-1992)
Pegram Award, Columbia University (1989)
J. Malcolm Miller Teaching Award, Columbia University (1986)

E. PROFESSIONAL ASSOCIATIONS AND ACTIVITIES:

University Service:

Budget Advisory Committee, Yale University (2013-2020)
Chair, Committee for Design and Construction of the Yale Science Building (2014-2019)
Quantitative Biology Strategic Planning Committee, Yale University (2018)
Yale University Science Strategy Committee (2016-2018)
Faculty Resource Committee, Yale University (2014-2018)
Presidential Search Committee, Yale University (2012)
Yale Committee on Cooperative Research (2012-2015)
Physical Sciences Advisory and Tenure Appointments Committee; Yale University (2011-2013)
FASTAP Committee for restructuring of the Yale tenure system (2007-2010)
Advisory Board, Yale West Campus Institute for Systems Biology (2009-2013)
Divisional Director for Biological Sciences, Yale University (2004-2008)
Biological Sciences Advisory and Tenure Appointments Committee; Yale University (2003-2008)
Executive Committee for the Yale Molecular Virology Program (2007-2012)
Member: Yale Molecular Virology Program (2007-present)
Member: Yale Cancer Center (2006-present)
Yale Medical School Strategic Planning Committee (2005)
Yale BSAC Subcommittee on Computational Biology (2004)
Yale Wilbur Cross Medalist Selection Committee (Fall 2004-2008)
Search Committee for the Dean of Columbia Medical School (2002)
Dean's Committee on Strategic Planning for Columbia Health Sciences (2001)
Committee for Selection of Louisa Gross Horwitz Prize Awardees (2000-2002)

External Scientific Activities and Service:

Advisory Board Member, Somalogic (2022-present)
Advisory Board Chair: Helmholtz Institute for Infection Research HIRI, Wurzburg, Germany (2021-present)
Standing Committee Member: Max Planck Institute of Multidisciplinary Sciences, Germany (2021-present)
Max Planck Institute for Biophysical Chemistry, Göttingen, Advisory Board (2020-2021)
Advisory Board Member and Founder RIGImmune (2020-present)
President (until 2021) and Past President (until 2023) RNA Society (2019-present)
Advisory Board Member and Secretary, Telluride Science Research Center (2019-present)
Arrakis Therapeutics, Scientific Advisory Board (2016-2023)
Vice-Chair, Brookhaven National Laboratory Science and Technology Steering Committee (2013-present)
National Synchrotron Light Source II Biological Beamline Advisory Team (2009-present)
Chair, NIH Study Section MSFA (2014-2016); Member, NIH Study Section MSFE (2010-2013)
American Society for Biochem. & Molecular Biology (ASBMB) Nominating Committee (2010-2013)
Member, NIH Study Section MGB (2004-2007)

Editorial Boards and Editorial Service:

Editor (with David Christianson), *Methods in Enzymology* (2013-present)
Board of Reviewing Editors, *eLife* (2017-2020)
Editorial Board Member, *The RNA Journal* (1998-2005, 2019-present)
Associate Editor, *Journal of Molecular Biology* (2019-present); Editorial Board Member (2007-2018)
Editor: *Current Opinion Structural Biology* (2006) **Vol 16**; (2011) **Vol 21**; (2016) **Vol 36**
Editorial Board, *Nucleic Acids Research* (1995-2005)

Meeting Organization:

Telluride Meeting, Co-founder and Co-organizer (2014, 2016 and 2018)
Keystone Meeting on Structural Biology of Cellular Processes, Co-Organizer (2012)
American Society of Biochemistry & Molecular Biology Annual Meeting, Co-Organizer (2008)
Nucleic Acids Gordon Conference, Organizer (2004, 2023)
FASEB Helicase Meeting, Chair (2003); Co-Chair (2001); Nucleic Acid Enzymes Meeting, Chair (2002).
Proteins that Bind RNA (Meeting Series Founder and Organizer, 1998 and 2001)
RNA Society Meeting, Co-Organizer (1998, 2015, 2021)

Memberships:

American Society for Microbiology (ASM)
American Society for Biochemistry and Molecular Biology (ASBMB)
American Association for the Advancement of Science (AAAS)
American Chemical Society (ACS)
The RNA Society
The Biophysical Society

F. TEACHING:

Professor in Charge: "Molecular Biology", MCDB 200; Yale University, 2012-present.
Professor in Charge: "Biochemical and Biophysical Approaches in Molecular and Cell Biology", Yale University, 2011-2015.
Founder and Professor in Charge: "Macromolecular Interactions & Dynamic Properties", Yale University, 2004-2011.
Contributing Lecturer and co-founder: "Enzyme Mechanisms", Yale University, 2004.
Contributing Lecturer and co-founder: "Macromolecular Structure and Biophysical Analysis", Yale University, 2004- 2010.
Professor in Charge: "Structure and Chemistry of Proteins and Nucleic Acids" Yale University, 2003.
Contributing lecturer: "Eukaryotic Molecular Biology" Yale University; 2004.
Founder and lecturer: "Structure and Function of Nucleic Acids", Columbia University, 1994-2002
Contributing lecturer: "Advanced Eukaryotic Molecular Genetics", Columbia University, 1996-2002.
Contributing lecturer: "Eukaryotic Molecular Biology" and "Biochemistry", Columbia University, 1992-2002.

G. PATENTS:

For patent estate information please contact Yale Ventures, attention Dr. John Puziss.

H. PUBLICATIONS:

221. "Synthesis, deprotection, and purification of diphosphorylated RNA oligonucleotides." Sarah J. Fergione, Olga Fedorova and Anna Marie Pyle. *ChemRxiv* (2023) 10.26434/chemrxiv-2023-rf0bz.
220. "rMSA: A Sequence Search and Alignment Algorithm to Improve RNA Structure Modeling." Chengxin Zhang, Yang Zhang, Anna Marie Pyle. *J Mol Biol.* (2023) **15**;435(14):167904. PMID: 37356900
219. "Systematic detection of tertiary structural modules in large RNAs and RNP interfaces by Tb-seq." Shivali Patel, Alec N Sexton, Madison S Strine, Craig B Wilen, Matthew D Simon, Anna Marie Pyle. *Nat Commun.* (2023) **9**;14(1):3426. PMID: 37296103
218. "MRT-ModSeq - Rapid detection of RNA modifications with MarathonRT." Rafael de Cesaris Araugo Travares, Gandhar Mahadeshwar, Han Wan, Anna Marie Pyle. *bioRxiv.* (2023) **25**;:2023.05.25.542276. Preprint. PMID: 37292902
217. "PDC: a highly compact file format to store protein 3D coordinates." Chengxin Zhang, Anna Marie Pyle. *Database (Oxford).* (2023). **3**;2023:baad018. PMID: 37010520
216. "A protocol for capturing RNA-sensing innate immune receptors in multiple conformations by single Particle cryo-EM." Wenshuai Wang, Olga Fedorova, Anna Maria Pyle. *STAR Protoc.* (2023) **14**;4(2):102166. PMID: 36920909
215. "RSCanner: rapid assessment and visualization of RNA structure content." Gandhar Mahadeshwar, Rafael de Cesaris Araugo Tavares, Han Wan, Zion R Perry, Anna Marie Pyle. *Bioinformatics.* (2023) **1**;39(3):btad111. PMID: 36857576
214. "A compact regulatory RNA element in human Hsp70 mRNA. "

Wenshuai Wang, Fei Liu, Anna Marie Pyle. *bioRxiv*. (2023) **23**:2023.02.22.529618. Preprint.
PMID: 36865185

213. "A rapid RIG-I signaling relay mediates efficient antiviral response." Daniel T Thoresen, Drew Galls, Benjamin Götte, Wenshuai Wang, Anna Marie Pyle. *Mol Cell* (2023) **5**;83(1):90-104.e4. PMID: 36521492
212. "Structures of a mobile intron retroelement poised to attack its structured DNA target." Kevin Chung, Ling Xu, Pengxin Chai, Junhui Peng, Swapnil C Devarkar, Anna Marie Pyle. *Science*. (2022) **11**;378(6620):627-634. PMID: 36356138
211. "The RIG-I receptor adopts two different conformations for distinguishing host from viral RNA ligands." Wenshuai Wang, Anna Marie Pyle. *Mol Cell*. (2022) **3**;82(21):4131-4144.e6. PMID: 36272408
210. "A unified approach to sequential and non-sequential structure alignment of proteins, RNAs, and DNAs". Chengxin Zhang, Anna Marie Pyle. *iScience*. (2022) **28**;25(10):105218. PMID: 36248743
209. "US-align: universal structure alignments of proteins, nucleic acids, and macromolecular complexes." Chengxin Zhang, Morgan Shine, Anna Marie Pyle, Zhang Y. *Nat Methods*. (2022) **19**(9):1109-1115. PMID: 36038728
208. "Monitoring functional RNA binding of RNA-dependent ATPase enzymes such as SF2 helicases using RNA dependent ATPase assays: A RIG-I case study." Rong Guo, Anna Marie Pyle. *Methods Enzymol*. 2022;673:39-52. PMID: 35965013
207. "Direct tracking of reverse-transcriptase speed and template sensitivity: implications for sequencing and analysis of long RNA molecules." Li-Tao Guo, Sara Olson, Shivali Patel, Brenton R Graveley, Anna Marie Pyle. *Nucleic Acids Res*. (2022) **8**;50(12):6980-6989. PMID: 35713547
206. "AMIGOS III: Pseudo-torsion angle visualization and motif-based structure comparison of nucleic acids." Morgan Shine, Chengxin Zhang, Anna Marie Pyle. *Bioinformatics*. (2022) **13**;38(10):2937-2939.10.1093. PMID: 35561202
205. "A molecular beacon assay for monitoring RNA splicing." Qusay Q Omran, Olga Fedorova, Tianshuo Liu, Anna Marie Pyle. *Nucleic Acids Res*. (2022) **22**;50(13):e74. PMID: 35438748
204. "CSSR: assignment of secondary structure to coarse-grained RNA tertiary structures." Chengxin Zhang, Anna Marie Pyle. *Acta Crystallogr D Struct Biol*. (2022) **1**;78(Pt 4):466-471. PMID: 35362469
203. "The *In Vivo* and *In Vitro* Architecture of the Hepatitis C Virus RNA Genome Uncovers Functional RNA Secondary and Tertiary Structures." Han Wan, Rebecca L Adams, Brett D Lindenbach, Anna Marie Pyle. *J Virol*. (2022) **27**;96(8):e0194621. PMID: 35353000
202. "Discovery of highly reactive self-splicing group II introns within the mitochondrial genomes of human pathogenic fungi." Tianshuo Liu, Anna Marie Pyle. *Nucleic Acids Res*. (2021) **2**;49(21):12422-12432. PMID: 34850132
201. "Noncoding RNAs: biology and applications-a Keystone Symposia report." Jennifer Cable, Edith Heard, Tetsuro Hirose, Kannanganattu V Prasanth, Ling-Ling Chen, Jonathan E Henninger, Sofia A Quinodoz, David L Spector, Sarah D Diermeier, Allison M Porman, Dhiraj Kumar, Mark W Feinberg, Xiaohua Shen, Juan Pablo Unfried, Rory Johnson, Chun-Kan Chen, Jeremy E Wilusz, Adelheid Lempradl, Sean E McGeary, Lamia Wahba, Anna Marie Pyle, Amanda E Hargrove, Matthew D Simon, Marco Marcia, Roza K Przanowska, Howard Y Chang, Samie Jaffrey, Lydia M Contreras, Qi Chen, Junchao Shi, Joshua Mendell, Le He, Erwei Song, John L Rinn, Mukesh Kumar Lalwani, Murat Can Kalem, Edward B Chuong, Lynne E Maquat, Xuhang Liu. *Ann N Y Acad Sci*. (2021) **1506**,(1):118-141. PMID: 34791665

200. "A stem-loop RNA RIG-I agonist protects against acute and chronic SARS-CoV-2 infection in mice." Tianyang Mao, Benjamin Israelow, Carolina Lucas, Chantal B F Vogels, Maria Luisa Gomez-Calvo, Olga Fedorova, Mallery I Breban, Bridget L Menasche, Huiping Dong, Melissa Linehan; Yale SARS-CoV-2 Genome Surveillance Initiative; Craig B Wilen, Marie L Landry, Nathan D Grubaugh, Anna Marie Pyle, Akiko Iwasaki. *J Exp Med.* (2022) **3**;219(1):e20211818. PMID: 34757384
199. "The molecular mechanism of RIG-I activation and signaling." Daniel Thoresen, Wenshuai Wang, Drew Galls, Rong Guo, Ling Xu, Anna Marie Pyle. *Immunol Rev.* (2021) **304**,(1):154-168. PMID: 34514601
198. "Evolving A RIG-I Antagonist: A Modified DNA Aptamer Mimics Viral RNA." Xiaoming Ren, Amy D Gelinas, Melissa Linehan, Akiko Iwasaki, Wenshuai Wang, Nebojsa Janjic, Anna Marie Pyle. *J Mol Biol.* (2021) **433**,(21):167227. PMID: 34487794
197. "Insights into the structure and RNA-binding specificity of *Caenorhabditis elegans* Dicer-related helicase 3 (DRH-3)." Kuohan Li, Jie Zheng, Melissa Wirawan, Nguyen Mai Trinh, Olga Fedorova, Patrick R Griffin, Anna Marie Pyle, Dahai Luo. *Nucleic Acids Res.* (2021). **49**,(17):9978-9991. PMID: 34403472
196. "Single-cell longitudinal analysis of SARS-CoV-2 infection in human airway epithelium identifies target cells, alterations in gene expression, and cell state changes." Neal G Ravindra, Mia Madel Alfajaro, Victor Gasque, Nicholas C Huston, Han Wan, Klara Szigeti-Buck, Yuki Yasumoto, Allison M Greaney, Victor Habet, Ryan D Chow, Jennifer S Chen, Jin Wei, Renata B Filler, Bao Wang, Guilin Wang, Laura E Niklason, Ruth R Montgomery, Setphanie C Eisenbarth, Sidi Chen, Adam Williams, Akiko Iwasaki, Tamas Horvath, Ellen F Foxman, Richard W Pierce, Anna Marie Pyle, David van Dijk, Craig B Wilen. *PLoS Biol.* (2021) **19**,(3):e3001143. PMID: 33730024
195. "Comprehensive in vivo secondary structure of the SARS-CoV-2 genome reveals novel regulatory motifs and mechanisms". Nicholas C Huston, Han Wan, Madison S Strine, Rafael de Cesaris Araujo Tavares, Craig B Wilen, Anna Marie Pyle. *Mol Cell.* (2021) **81**,(3):584-598.e5. PMID: 33444546
194. "Structural Optimization of Polymeric Carriers to Enhance the Immunostimulatory Activity of Molecularly Defined RIG-I Agonists." Max E Jacobson, Kyle W Becker, Christian R Palmer, Lucinda E Pastora, R Brock Fletcher, Kathryn A Collins, Olga Fedorova, Craig L Duvall, Anna Marie Pyle, John T Wilson. *ACS Cent Sci.* (2020) **6**,(11):2008-2022. PMID: 33274278
193. "The global and local distribution of RNA structure throughout the SARS-CoV-2 genome". Rafael de Cesaris Araujo Tavares, Gandhar Mahadeshwar, Han Wan, Nicholas C Huston, Anna Marie Pyle. *J Virol.* (2021) **95**,(5):e02190-20. PMID: 33268519
192. "Comprehensive in-vivo secondary structure of the SARS-CoV-2 genome reveals novel regulatory motifs and mechanisms." Nicholas C Huston, Han Wan, Rafael de Cesaris Araujo Tavares, Craig Wilen, Anna Marie Pyle. *bioRxiv.* (2020). **10**,:2020.07.10.197079 PMID: 32676598
191. "Visualizing group II intron dynamics between the first and second steps of splicing." Joseph Manigrasso, Isabel Chillón, Vito Genna, Pietro Vidossich, Srinivas Somarowthu, Anna Marie Pyle, Marco De Vivo, Marco Marcia. *Nat Commun.* (2020) **11**,(1):2837. PMID: 32503992
190. "Sequencing and Structure Probing of Long RNAs Using MarathonRT: A Next-Generation Reverse Transcriptase". Li-Tao Guo, Rebecca L Adams, Han Wan, Nicholas Huston, Olga Potapova, Sara Olson, Christian M Gallardo, Brenton R Graveley, Bruce E Torbett, Anna Marie Pyle, *J Mol Biol.* (2020) **432**,(10):3338-3352. PMID: 32259542
189. "Small-Molecule antagonists of the RIG-I Innate Immune Receptor", David C. Rawling, G. Erik Jagdmann Jr., Olga Potapova and Anna Marie Pyle, *ACS Chem Biol.* (2020), **15**,(2):311-317. PMID: 31944652.

188. "RIG-I recognition of RNA targets: The influence of terminal base-pair sequence and overhangs on affinity and signaling", Xiaoming Ren, Melissa M. Linehan, Akiko Awasaki and Anna Marie Pyle, *Cell Reports* (2019) **29**, 3807-3815. PMID: 31851914.
187. "RNA Binding Activates RIG-I by Releasing an Autorepressed Signaling Domain", Thayne Dickey, Bo Song and Anna Marie Pyle. *Science Advances* (2019), **5**, eaax3641. PMID: 31616790.
186. "Intratatumoral delivery of RIG-I agonist SLR14 induces robust antitumor responses", Xiaodong Jiang, Viswanathan Muthusamy, Olga Fedorova, Daniel J. Kim, Marcus Bosenberg, Anna Marie Pyle, and Akiko Iwasaki, *Journal of Experimental Medicine* (2019) **216**, 2854-2868. PMID: 31601678.
185. "Discovery of N-Substituted 3-Amino-4-(3-boronopropyl)pyrrolidine-3-carboxylic Acids as Highly Potent Third-Generation Inhibitors of Human Arginase I and II", Michael C. Van Zandt, G. Erik Jagdmann, Darren L. Whitehouse, Min Ji, Jennifer Savoy, Olga Potapova, Alexandra Cousido-Siah, Andre Mitschler, Eduardo I. Howard, Anna Marie Pyle, Alberto D. Podjarny, *J Med Chem.* (2019) **62**, 8164-8177. PMID: 31408339.
184. "Sensitive detection of structural features and rearrangements in long, structured RNA molecules", Rebecca L. Adams, Nicholas C. Huston, Rafael C. Tavares and Anna Marie Pyle, *Methods Enzymol.* (2019) **623**, 249-289. PMID: 31239050.
183. "Phylogenetic analysis with improved parameters reveals conservation in lncRNA structures", Rafael C. Tavares, Anna Marie Pyle and Srinivas Somarowthu, *J Mol Biol.* (2019) **431**, 1592-1603. PMID: 30890332.
182. "RIG-I selectively discriminates against 5'-monophosphate RNA", Xiaoming Ren, Melissa M. Linehan, Akiko Iwasaki and Anna Marie Pyle, *Cell Rep.* (2019) **26**, 2019-2027. PMID: 30784585.
181. "Small molecules that target group II introns are potent antifungal agents", Olga Fedorova, G. Erik Jagdmann Jr., Rebecca L. Adams, Lin Yuan, Michael C. Van Zandt and Anna Marie Pyle, *Nat Chem Biol.* (2018) **14**, 1073-1078. PMID: 30323219.
180. "Therapeutically active RIG-I agonist induces immunogenic tumor cell killing in breast cancers", David L. Elion, Max E. Jacobson, Donna J. Hicks, Bushra Rahman, Violeta Sanchez, Paula I. Gonzalez-Ericsson, Olga Fedorova, Anna Marie Pyle, John T. Wilson and Rebecca S. Cook, *Cancer Res.* (2018) **78**, 6183-6195. PMID: 30224377.
179. "Regional Differences in Airway Epithelial Cells Reveal Tradeoff between Defense against Oxidative Stress and Defense against Rhinovirus", Valia T. Mihaylova, Yong Kong, Olga Fedorova, Lokesh Sharma, Charles S. Dela Cruz, Anna Marie Pyle, Akiko Iwasaki and Ellen F. Foxman, *Cell Rep.* (2018) **24**, 3000-3007. PMID: 30208323.
178. "microRNA-122 amplifies hepatitis C virus translation by shaping the structure of the internal ribosomal entry site", Philipp Schult, Hanna Roth, Rebecca L. Adams, Caroline Mas, Lionel Imbert, Christian Orlik, Alessia Ruggieri, Anna Marie Pyle and Volker Lohmann, *Nat Commun.* (2018) **9**, 2613. PMID: 29973597.
177. "A minimal RNA ligand for potent RIG-I activation in living mice", Melissa M. Linehan, Thayne H. Dickey, Emanuela S. Molinari, Megan E. Fitzgerald, Olga Potapova, Akiko Iwasaki and Anna Marie Pyle, *Sci. Adv.* (2018) **4**, E1701854. PMID: 29492454.
176. "Environmentally triggerable retinoic acid-inducible gene I agonists using synthetic polymer overhangs", CR Palmer, ME Jacobson, Olga Fedorova, Anna Marie Pyle and John T. Wilson, *Bioconjug Chem.* (2018) **29**, 742-747. PMID: 29350913.
175. "An ultra-processive, accurate reverse transcriptase encoded by a metazoan group II intron", Chen Zhao, Fei Liu and Anna Marie Pyle, *RNA.* (2018) **24**, 183-195. PMID: 29109157.

174. "NS3 from HCV strain JFH-1 is an unusually robust helicase that is primed to bind and unwind viral RNA", Ting Zhou, Xiaoming Ren, Rebecca L. Adams and Anna Marie Pyle, *J. Virol.* (2017) **92**, 01253-17. PMID: 29070684.
173. "The SMAD3 transcription factor binds complex RNA structures with high affinity", Thayne H. Dickey and Anna Marie Pyle, *Nucleic Acids Res.* (2017) **45**, 11980-11988. PMID: 29036649.
172. "Structural basis for IL-1 α recognition by a modified DNA aptamer that specifically inhibits IL-1 α signaling", Xiaoming Ren, Amy D. Gelinas, Ira von Carlowitz, Nebojsa Janjic and Anna Marie Pyle, *Nat Commun.* (2017) **8**, 810. PMID: 28993621.
171. "The group II intron maturase: a reverse transcriptase and splicing factor go hand in hand", Chen Zhao and Anna Marie Pyle, *Curr Opin Struct Biol.* (2017) **47**, 30-39. PMID: 28528306.
170. "Functional RNA structures throughout the Hepatitis C Virus genome", Rebecca L. Adams, Nathan Pirakitikulr and Anna Marie Pyle, *Curr Opin Virol.* (2017) **24**, 79-86. PMID: 28511116.
169. "Structural insights into the mechanism of group II intron splicing", Chen Zhao and Anna Marie Pyle, *Trends Biochem Sci.* (2017) **42**, 470-482. PMID: 28438387.
168. "Selective RNA targeting and regulated signaling by RIG-I is controlled by coordination of RNA and ATP binding", Megan E. Fitzgerald, David C. Rawling, Olga Potapova, Xiaoming Ren, Andrew Kohlway and Anna Marie Pyle, *Nucleic Acids Res.* (2017) **45**, 1442-1454. PMID: 28180316.
167. "Opportunities and challenges in RNA structural modeling and design", Tamar Schlick and Anna Marie Pyle, *Biophys J.* (2017) **113**, 282-289. PMID: 28162235.
166. "Visualizing the secondary and tertiary architectural domains of lncRNA RepA", Fei Liu, Srinivas Somarowthu and Anna Marie Pyle, *Nature Chemical Biology* (2017) **13**, 282-289. PMID: 28068310.
165. "Inverted repeat Alu elements in the human lincRNA-p21 adopt a conserved secondary structure that regulates RNA function", Isabel Chillon and Anna Marie Pyle, *Nucleic Acids Res.* (2016) **44**, 9462-9471. PMID: 27378782.
164. "Group II intron self-splicing", Anna Marie Pyle, *Annu Rev Biophys.* (2016) **45**, 183-205. PMID: 27391926.
163. "Transcriptome analysis of human cumulus cells reveals hypoxia as the main determinant of follicular senescence", Emanuela Molinari, Bar Haim, Anna Marie Pyle and Pasquale Patrizio, *Mol Hum Reprod.* (2016) **22**, 866-876. PMID: 27268410.
162. "Crystal structures of a group II intron maturase reveal a missing link in spliceosome evolution", Chen Zhao and Anna Marie Pyle, *Nat Struct Mol Biol.* (2016) **23**, 558-565. PMID: 27136328.
161. "Editorial overview: Nucleic acids and their protein complexes", David M. Lilley and Anna Marie Pyle, *Curr Opin Struct Biol.* 2016, **36**:vii-viii. PMID: 26948825.
160. "The Coding Region of the HCV Genome Contains a Network of Regulatory RNA Structures", Nathan Pirakitikulr, Andrew Kohlway, Brett D. Lindenbach and Anna Marie Pyle, *Molecular Cell.* (2016) **62**, 111-120. PMID: 26924328.
159. "Challenges in RNA structural modeling and design", Anna Marie Pyle and Tamar Schlick, *J Mol Biol.* (2016) **428**, 733-735. PMID: 26876599.
158. "Crystal structure of group II intron domain 1 reveals a template for RNA assembly", Chen Zhao, K.R. Rajashankar, Marco Marcia and Anna Marie Pyle, *Nature Chemical Biology* (2015) **11**, 967-972. PMID: 26502156.

157. "Establishing the role of ATP for the function of the RIG-I innate immune sensor", David C. Rawling, Megan E. Fitzgerald and Anna Marie Pyle, *Elife* (2015) Sep 15:4, pii: e09391. PMID: 26371557.
156. "Native purification and analysis of long RNAs", Isabel Chillón Gazquez, Marco Marcia, Michal Legiewicz, Fei Liu, Srinivas Somarowthu and Anna Marie Pyle, *Methods Enzymol.* (2015) **558**, 3-37. PMID: 26068736.
155. "HOTAIR forms an intricate and modular secondary structure", Srinivas Somarowthu, Michal Legiewicz, Isabel Chillón Gazquez, Marco Marcia, Fei Liu and Anna Marie Pyle, *Mol Cell* (2015) **58**, 353-361. PMID: 25866246.
154. "Rediscovering RNA", Anna Marie Pyle, *RNA* (2015) **21**, 714-715. PMID: 25780205.
153. "Temperature-dependent innate defense against the common cold virus limits viral replication at warm temperature in mouse airway cells", Ellen F. Foxman, Megan E. Fitzgerald, Bethany R. Wasik, Lin Hou, Hongyu Zhao, Paul E. Turner, Anna Marie Pyle and Akiko Iwasaki, *Proc. Natl. Acad. Sci. USA* (2015) **112**, 827-832. PMID: 25561542.
152. "Looking at LncRNAs with the Ribozyme Toolkit", Anna Marie Pyle, *Mol Cell* (2014) **56**, 13-17. PMID: 25280101.
151. "The RIG-I ATPase core has evolved a functional requirement for allosteric stabilization by the Pincer domain", David Rawling, Andrew Kohlway, Dahai Luo, Steve C. Ding and Anna Marie Pyle, *Nucleic Acids Res.* (2014) **42**, 11601-11611. PMID: 25217590.
150. "The linker region of NS3 plays a critical role in the replication and infectivity of hepatitis C virus", Andrew Kohlway, Nathan Pirakitikulr, Steve C. Ding, Feng Yang, Dahai Luo, Brett D. Lindenbach and Anna Marie Pyle, *J. Virol.* (2014) **88**, 10970-10974. PMID: 24965468.
149. "An evolving arsenal: viral RNA detection by RIG-I-like receptors", Megan E. Fitzgerald, David C. Rawling, Adriana Vela and Anna Marie Pyle, *Curr Opin Microbiol.* (2014) **6**, 76-81. PMID: 24912143.
148. "Parts, assembly and operation of the RIG-I family of motors", David C. Rawling and Anna Marie Pyle, *Curr Opin Struct Biol.* (2014) **25**, 25-33. PMID: 24878341.
147. "Principles of ion recognition in RNA: insights from the group II intron structures", Marco Marcia and Anna Marie Pyle, *RNA* (2014) **4**, 516-527. PMID: 24570483.
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