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Professional Preparation

2004-2006	Postdoc, Molecular Biology	Northwestern University Advisor: Prof. Jonathan Widom
2002-2004	Postdoc, Biophysics	Université Louis Pasteur Advisor: Dr. Didier Chatenay
2002	Ph.D. Physics	University of Illinois, Chicago Advisor: Prof. John F. Marko
1997	M.S. Physics	University of Illinois, Chicago
1995	B.S. Physics	Truman State University

Appointments

2020 – 2024	Chair, Department of Physics, the Ohio State University (see page 21-22 for administrative accomplishments)
2016 – present	Professor, Department of Physics, the Ohio State University
2016 – present	Professor (by courtesy), Department of Chemistry & Biochemistry, the Ohio State University
2012 – 2016	Associate Professor, Department of Physics, the Ohio State University
2012 – 2016	Associate Professor (by courtesy), Department of Chemistry & Biochemistry, the Ohio State University
2009 – 2012	Assistant Professor (by courtesy), Department of Molecular Virology, Immunology and Medical Genetics, The Ohio State University Medical Center.
2008 – 2012	Assistant Professor (by courtesy), Department of Biochemistry, The Ohio State University.
2006 – 2012	Assistant Professor, Department of Physics, The Ohio State University.
2004 – 2006	Postdoctoral Fellow, Department of Biochemistry, Molecular Biology and Cell Biology, Northwestern University.
2002 – 2004	Postdoctoral Researcher, Laboratoire de Dynamique des Fluides Complexes, Université Louis Pasteur.
1997 – 2002	Research Assistant, Department of Physics, University of Illinois, Chicago.
1995 – 1997	Teaching Assistant, Department of Physics, University of Illinois, Chicago.

Honors

2024	Fellow of the American Physical Society
2020	Elizabeth L. Gross Award
2020	Lumley Interdisciplinary Research Award

- 2018 Visiting Scholar, Institut de Génétique et de Biologie Moléculaire et Cellulaire, Illkirch-Graffenstaden, France
- 2005 Burroughs Wellcome Fund Career Award in Basic Biomedical Sciences
- 2004 Ruth L. Kirschstein National Research Service Award, Individual Fellowship, National Institutes of Health.
- 2003 Postdoctoral Award from Le Centre National de Recherche Scientifique, France.
- 2002 Postdoctoral Award from Le Ministre de la Recherche, France.

Publications

Summary: 88 peer-reviewed publications; 39 corresponding author publications*; 11 first author publications; Graduate students advised by Michael Poirier are underlined; Undergraduate students advised by Michael Poirier are double underlined; Postdoctoral researchers advised by Michael Poirier are dotted underlined; 5745 citations; h-index 41, i10-index 76. (Stats from Google Scholar.)

88. Jergens E, Gayathri Srinivasan N, Kucinic A, Shahhosseini M, Kruse MC, Teng T, Huang K, **Poirier MG**, Castro CE, Winter JO. Dynamic Actuation and Hierarchical Assembly of Iron Oxide-Coated DNA Origami. *ACS Appl Mater Interfaces*. 2025 Jul 16;17(28):40986-40993. doi: 10.1021/acsami.5c03983. Epub 2025 Jul 7.
87. Chesnutt K, Yayli G, Toelzer C, Damilot M, Cox K, Gautam G, Berger I, Tora L*, **Poirier MG***. ATAC and SAGA histone acetyltransferase modules facilitate transcription factor binding to nucleosomes independent of their acetylation activity. *Nucleic Acids Res*. 2025 Jan 7;53(1):gkae1120. doi: 10.1093/nar/gkae1120.
86. Neuhoff MJ, Wang Y, Vantangoli NJ, **Poirier MG***, Castro CE*, Pfeifer WG*. Recycling Materials for Sustainable DNA Origami Manufacturing. *Nano Lett*. 2024 Oct 2;24(39):12080-12087. doi: 10.1021/acs.nanolett.4c02695.
85. Rozebani GM, Colosi P, Oravec A, Sorokina EM, Pfeifer W, Shokri S, Wei Y, Didier P, DeLuca M, Arya G, Tora L*, Lakadamyali M*, **Poirier MG***, Castro CE*. Piggybacking functionalized DNA nanostructures into live cell nuclei. *Sci Adv*. 2024 Jul 5;10(27):eadn9423. doi: 10.1126/sciadv.adn9423.
84. Gaurav N, Kanai A, Lachance C, Cox KL, Liu J, Grzybowski AT, Saksouk N, Klein BJ, Komata Y, Asada S, Ruthenburg AJ, **Poirier MG**, Côté J, Yokoyama A, Kutateladze TG. Guiding the HBO1 complex function through the JADE subunit. *Nat Struct Mol Biol*. 2024 Mar 6. doi: 10.1038/s41594-024-01245-2.
83. Becht DC, Becht DC, Biswas S, Halawa M, Zeng L, Cox KL, **Poirier MG**, Zhou MM, Shi X, Yokoyama A, Kutateladze TG. The winged helix domain of MORF binds CpG islands and the TAZ2 domain of p300. *iScience*. 2024 Feb 29;27(4):109367. doi: 10.1016/j.isci.2024.109367.
82. Kabtiyal P, Robbins A, Jergens E, Castro CE, Winter JO, **Poirier MG***, Johnston-Halperin E*. Localized Plasmonic Heating for Single-Molecule DNA Rupture Measurements in Optical Tweezers. *Nano Lett*. 2024 Feb 28. doi: 10.1021/acs.nanolett.3c04848.
81. Robbins A, Hildebolt H, Neuhoff M, Beshay P, Winter JO, Castro CE, Bundschuh R, **Poirier MG***. Cooperative control of a DNA origami force sensor. *Scientific Reports*. 2024 Feb 19;14(1):4132. doi: 10.1038/s41598-024-53841-3.

80. Sun W, Lebedenko OO, Salguero NG, Shannon MD, Zandian M, **Poirier MG**, Skrynnikov NR, Jaroniec CP. Conformational and Interaction Landscape of Histone H4 Tails in Nucleosomes Probed by Paramagnetic NMR Spectroscopy. *J. Am. Chem. Soc.* 2023 Nov 22;145(46):25478-25485.
79. Jergens E, de Araujo Fernandes-Junior S, Cui Y, Robbins A, Castro CE, **Poirier MG**, Gurcan MN, Otero JJ, Winter JO. DNA-caged nanoparticles *via* electrostatic self-assembly. *Nanoscale*. 2023 Jun 1;15(21):9390-9402. doi: 10.1039/d3nr01424j.
78. Hong ZZ, Yu RR, Zhang X, Webb AM, Burge NL, **Poirier MG**, Ottesen JJ. Development of Convergent Hybrid Phase Ligation for Efficient and Convenient Total Synthesis of Proteins. *Peptide Science*. 2023. May 25;e24323. doi: 10/1.002/pep2.24323.
77. DeLuca M, Pfeifer WG, Randoing B, Huang CM, **Poirier MG**, Castro CE, Arya G. Thermally reversible pattern formation in arrays of molecular rotors. *Nanoscale*. 2023 May 11;15(18):8356-8365. doi: 10.1039/d2nr05813h.
76. Wang Y, Sensale S, Pedrozo M, Huang CM, **Poirier MG**, Arya G, Castro CE. Steric Communication between Dynamic Components on DNA Nanodevices. *ACS Nano*. 2023 Apr 18. doi: 10.1021/acsnano.2c12455.
75. Donovan BT, Chen H, Eek P, Meng Z, Jipa C, Tan S*, Bai L*, **Poirier MG***. Basic helix-loop-helix pioneer factors interact with the histone octamer to invade nucleosomes and generate nucleosome depleted regions. *Mol. Cell*. 2023. Apr 20;83(8):1251-1263.e6. 10.1016/j.molcel.2023.03.006.
74. Becht DC, Klein BJ, Kanai A, Jang SM, Cox KL, Zhou BR, Phanor SK, Zhang Y, Chen RW, Ebmeier CC, Lachance C, Galloy M, Fradet-Turcotte A, Bulyk M, Bai Y, **Poirier MG**, Jacques Côté J, Yokoyama A, Kutateladze TG. MORF and MOZ acetyltransferases target unmethylated CpG islands through the winged helix domain. *Nat. Commun*. 2023. Feb 8;14(1):697. doi: 10.1038/s41467-023-36368-5.
73. Smrt ST, Salguero NG, Thomas JK, Zandian M, **Poirier MG**, Jaroniec CP. Histone H3 Core Domain in Chromatin with Different DNA Linker Lengths Studied by 1H-Detected Solid-State NMR Spectroscopy. *Frontiers in Molecular Biosciences*. 2023. Jan 4;9:1106588. doi: 10.3389/fmolb.2022.1106588.
72. Donovan B, Luo Y, Meng Z, **Poirier MG***. The Nucleosome Unwrapping Free Energy Landscape Defines Distinct Regions of Transcription Factor Accessibility and Kinetics. *Nucleic Acids Res*. 2023. Jan 23;gkac1267. doi: 10.1093/nar/gkac1267.
71. Akbari E, Shahhosseini M, Robbins A, **Poirier MG**, Song J, and Castro CE. Low-Cost and Massively Parallel Force Spectroscopy with Fluid Loading on-a-chip (FLO-Chip). *Nat. Commun*. 2022. Nov 10;13(1):6800. doi: 10.1038/s41467-022-34212-w.
70. Sapp NE, Burge N, Cox K, Prakash P, Balasubramaniam M, Thapa S, Christensen D, Li M, Linderberger J, Kvaratskhelia M, Pandhare J, Craigie R, **Poirier MG**, Dash C. HIV-1 preintegration complex preferentially integrates the viral DNA into nucleosomes containing trimethylated histone 3-lysine 36 modification and flanking linker DNA. *J. Virology*. 2022. Sep 28;96(18):e0101122. doi: 10.1128/jvi.01011-22.
69. Darcy M, Crocker K, Wang Y, Le JV Mohammadiroozbahani G, Abdelhamid MAS, Craggs TD, Castro CE, Bundschuh R, **Poirier MG***. High Force Application by a Nanoscale DNA Force Spectrometer. *ACS Nano*. 2022. Apr 6;16(4):5682-5695. doi: 10.1021/acsnano.1c10698.

68. Burge NL, Thuma JL, Hong ZZ, Jamison KB, Ottesen JJ, **Poirier MG***. The H1.0 C Terminal Domain is Integral For Altering Transcription Factor Binding Within Nucleosomes. *Biochemistry*. 2022. Apr 19;61(8):625-638. doi: 10.1021/acs.biochem.2c00001.
67. Lin-Shiao E, Pfeifer WG, Shy BR, Doost MS, Chen E, Vykunta VS, Hamilton JR, Stahl CE, Lopez DM, Sandoval Espinoza CR, Deyanov AE, Lew RJ, **Poirier M**, Marson A, Castro CE, Doudna JA. CRISPR–Cas9-mediated nuclear transport and genomic integration of nanostructured genes in human primary cells. *Nucleic Acids Res*. 2022 Feb 22;50(3):1256-1268. doi: 10.1093/nar/gkac049
66. Marathe IA, Lai SM, Zahurancik WJ, **Poirier MG**, Wysocki VH, Gopalan V. Protein cofactors and substrate influence Mg²⁺-dependent structural changes in the catalytic RNA of archaeal RNase P. *Nucleic Acids Res*. 2021 Sep 20;49(16):9444-9458. doi: 10.1093/nar/gkab655.
65. Wang Y, Le JV, Crocker K, Darcy MA, Halley PD, Zhao D, Andrioff N, Croy C, **Poirier MG**, Bundschuh R, Castro CE. A nanoscale DNA force spectrometer capable of applying tension and compression on biomolecules. *Nucleic Acids Res*. 2021 Sep 7;49(15):8987-8999. doi: 10.1093/nar/gkab656.
64. Klein BJ, Deshpande A, Cox KL, Xuan F, Zandian M, Barbosa K, Khanal S, Tong Q, Zhang Y, Zhang P, Sinha A, Bohlander SK, Shi X, Wen H, **Poirier MG**, Deshpande AJ, Kutateladze TG. The role of the PZP domain of AF10 in acute leukemia driven by AF10 translocations. *Nat Commun*. 2021 Jul 5;12(1):4130. doi: 10.1038/s41467-021-24418-9.
63. Zandian M, Gonzalez Salguero N, Shannon MD, Purusottam RN, Theint T, **Poirier MG**, Jaroniec CP. Conformational Dynamics of Histone H3 Tails in Chromatin. *J Phys Chem Lett*. 2021 Jul 8;12(26):6174-6181. doi: 10.1021/acs.jpcllett.1c01187.
62. Klein BJ, Cox KL, Jang SM, Singh RK, Côté J, **Poirier MG***, Kutateladze TG*. Structural and biophysical characterization of the nucleosome binding PZP domain. *STAR Protocols*. 2021. Apr 19;2(2):100479. doi: 10.1016/j.xpro.2021.100479.
61. Morrison E, Baweja L, **Poirier MG**, Wereszczynski J, Musselman C. Nucleosome composition regulates the histone H3 tail conformational ensemble and accessibility. *Nucleic Acids Res*. 2021. May 7;49(8):4750-4767. doi: 10.1093/nar/gkab246.
60. Rabdano S, Shannon MD, Izmailov SA, Gonzalez Salguero N, Zandian M, Purusottam RN, **Poirier MG**, Skrynnikov NR, Jaroniec CP. Histone H4 tails in nucleosomes: a fuzzy interaction with DNA. *Angew Chem Int Ed Engl*. 2021 Jan 31. doi: 10.1002/anie.202012046.
59. Tencer AH, Cox KL, Wright GM, Zhang Y, Petell CJ, Klein BJ, Strahl BD, Black JC, **Poirier MG**, Kutateladze TG. Molecular mechanism of the MORC4 ATPase activation. *Nat Commun*. 2020 Oct 29;11(1):5466. doi: 10.1038/s41467-020-19278-8.
58. Klein BJ, Cox KL, Jang SM, Côté J, **Poirier MG**, Kutateladze TG. Molecular Basis for the PZP Domain of BRPF1 Association with Chromatin. *Structure*. 2020 Jan 7;28(1):105-110.e3. doi: 10.1016/j.str.2019.10.014.
57. Zhao D, Le JV, Darcy MA, Crocker K, **Poirier MG**, Castro CE, Bundschuh R. Quantitative modeling of nucleosomes unwrapping from both ends. *Biophys J*. 2019 Oct 30. pii: S0006-3495(19)30880-X. doi: 10.1016/j.bpj.2019.09.048.
56. Johnson JA, Dehankar A, Robbins A, Kabtiyal P, Jergens E, Lee KH, Johnston-Halperin E, **Poirier M**, Castro CE, Winter JO. The path towards functional nanoparticle-DNA

- origami composites. *Mat Sci Eng R*. 2019 Oct;138:153-209. doi: 10.1016/j.mser.2019.06.003.
55. Donovan BT, Huynh A, Ball DA, **Poirier MG**, Larson DR, Ferguson ML, Lenstra TL. Single-molecule imaging reveals the interplay between transcription factors, nucleosomes, and transcriptional bursting. *EMBO J*. 2019 May 17; e100809. doi: 10.15252/embj.2018100809.
 54. Brehove M, Shatoff E, Donovan BT, Jipa CM, Bundschuh R, **Poirier MG***. DNA sequence influences hexasome orientation to regulate DNA accessibility. *Nucleic Acids Res*. 2019 Jun 20;47(11):5617-5633. doi: 10.1093/nar/gkz272.
 53. Donovan BT, Chen H, Jipa CM, Bai L, **Poirier MG***. Dissociation rate compensation mechanism for budding yeast pioneer transcription factors. *eLIFE*. 2019 Mar 19;8. pii: e43008. doi: 10.7554/eLife.43008.
 52. Zhang Y, Klein BJ, Cox KL, Bertulat B, Tencer AH, Holden MR, Wright GM, Black J, Cardoso MC, **Poirier MG** and Kutateladze TG. The mechanism for autoinhibition and activation of the MORC3 ATPase. *Proc. Nat. Acad. Sci, (USA)*. 2019 Mar 8. pii: 201819524. doi: 10.1073/pnas.1819524116.
 51. Fierz B*, **Poirier MG***. Biophysics of chromatin dynamics. *Annu Rev Biophys*. 2019 Mar 18. doi: 10.1146/annurev-biophys-070317-032847.
 50. Bhat S, Hwang Y, Gibson MD, Morgan MT, Taverna SD, Zhao Y, Wolberger C, **Poirier MG***, Cole PA*. Hydrazide Mimics for Protein Lysine Acylation To Assess Nucleosome Dynamics and Deubiquitinase Action. *J Am Chem Soc*. 2018 Aug 1;140(30):9478-9485. doi: 10.1021/jacs.8b03572.
 49. Gatchalian J, Wang X, Ikebe J, Cox KL, Tencer AH, Zhang Y, Burge NL, Di L, Gibson MD, Musselman CA, **Poirier MG**, Kono H, Hayes JJ and Kutateladze TG. Accessibility of the histone H3 tail in the nucleosome for binding of paired readers. *Nature Comm*. 2017 Nov 14;8(1):1489.
 48. Tencer AH, Cox KL, Di L, Bridgers JB, Lyu J, Wang X, Sims JK, Weaver TM, Allen HF, Zhang Y, Gatchalian J, Darcy MA, Gibson MD, Ikebe J, Li W, Wade PA, Hayes JJ, Strahl BD, Kono H, **Poirier MG***, Musselman CA* and Kutateladze TG*. Covalent modifications of histone H3K9 promote binding of CHD3. *Scientific Reports*. 2017 Oct 10;21(2):455-466.
 47. Willy NM, Ferguson JP, Huber SD, Heidotting SP, Aygün E, Wurm SA, Johnston-Halperin E, **Poirier MG**, Kural C. Membrane mechanics govern spatiotemporal heterogeneity of endocytic clathrin coat dynamics. *Mol Biol Cell*. 2017 Sep 13. pii: mbc.E17-05-0282. doi: 10.1091/mbc.E17-05-0282.
 46. Hudoba MW, Luo Y, Zacharias A, **Poirier MG***, Castro CE*. Dynamic DNA Origami Device for Measuring Compressive Depletion Forces. *ACS Nano*. 2017 Jul 25;11(7):6566-6573. doi: 10.1021/acsnano.6b07097.
 45. Gibson MD, Gatchalian J, Slater A, Kutateladze TG, **Poirier MG***. PHF1 Tudor and N-terminal domains synergistically target partially unwrapped nucleosomes to increase DNA accessibility. *Nucleic Acids Res*. 2017 Apr 20;45(7):3767-3776.
 44. Gibson MD, Brehove M, Luo Y, North J, **Poirier MG***. Methods for Investigating DNA Accessibility with Single Nucleosomes. *Methods in Enzymology*. 2016;581:379-415.
 43. Le JV, Luo Y, Darcy M, Lucas C, Goodwin M, **Poirier MG***, Castro CE*. Probing nucleosome stability with a DNA origami nanocaliper. *ACS Nano* 2016. Jul 26;10(7):7073-

- 84.
42. Teeling-Smith RM, Jung YW, Scozzaro N, Cardellino J, Rampersaud I, North JA, Šimon M, Bhallamudi VP, Rampersaud A, Johnston-Halperin E*, **Poirier MG***, Hammel PC*. NV center electron paramagnetic resonance of a single nanodiamond attached to an individual biomolecule. *Biophys. J.* 2016. May 10;110(9):2044-52.
 41. Bhallamudi VP, Xue R, Purser CM, Banasavadi-Siddegowda YK, Kaur B, Hammel PC, **Poirier MG**, Lannutti JJ, Pandian RP. Nanofiber-based paramagnetic probes for rapid, real-time biomedical oximetry. *Biomedical Microdevices.* 2016. Apr;18(2):38.
 40. Wike CL, Graves HK, Hawkins R, Gibson MD, Ferdinand MB, Zhang T, Chen Z, Hudson DF, Ottesen JJ, **Poirier MG**, Schumacher J, Tyler JK. Aurora-A mediated histone H3 phosphorylation of threonine 118 controls condensin I and cohesin occupancy in mitosis. *eLIFE* 2016;10.7554/eLife.11402.
 39. Klein BJ, Muthurajan UM, Lalonde ME, Gibson MD, Andrews FH, Hepler M, Machida S, Yan K, Kurumizaka H, **Poirier MG**, Côté J, Luger K, Kutateladze TG. Bivalent interaction of the PZP domain of BRPF1 with the nucleosome impacts chromatin dynamics and acetylation. *Nucleic Acids Res* 2016 Jan 8;44(1):472-84.
 38. Bernier M, Luo Y, Nwokelo KC, Goodwin M, Dreher SJ, Zhang P, Parthun MR, Fondufe-Mittendorf Y, Ottesen JJ, **Poirier MG***. Linker histone H1 and H3K56 acetylation are antagonistic regulators of nucleosome dynamics. *Nature Commun.* 2015 Dec 9;6:10152. doi: 10.1038/ncomms10152.
 37. Chatterjee N, North JA, Dechassa ML, Manohar M, Prasad R, Luger K, Ottesen JJ, **Poirier MG**, Bartholomew B. Histone Acetylation near the nucleosome dyad axis enhances nucleosome disassembly by RSC and SWI/SNF. *Mol Cell Biol.* 2015 Dec 1;35(23):4083-92. doi: 10.1128/MCB.00441-15.
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 34. Luo Y, North JA, **Poirier MG***. Single molecule fluorescence methodologies for investigating transcription factor binding kinetics to nucleosomes and DNA. *Methods.* 2014 Oct 7. pii: S1046-2023(14)00317-X. doi: 10.1016/j.ymeth.2014.09.011.
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 32. Luo Y, North JA, Rose SD and **Poirier MG***. Nucleosomes Accelerate Transcription Factor Dissociation. *Nucleic Acids Res.* 2014 Mar;42(5):3017-27. doi: 10.1093/nar/gkt1319.
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25. Shimko JC, Howard CJ, **Poirier MG** and Ottesen JJ. "The Preparation of Semisynthetic and Fully Synthetic Histones H3 and H4 to Introduce Modifications in the Nucleosome Core", *Methods Mol. Biol.* 2013;981:177-92.
24. North JA, Shimko JC, Javaid S, Mooney AM, Shoffner MA, Rose SD, Bundschuh R, Fishel R, Ottesen JJ, **Poirier MG***. Regulation of the nucleosome unwrapping rate controls DNA accessibility. *Nucleic Acids Res* 2012 Nov 1;40(20):10215-27.
23. Kodgire P, Mukkavar P, North JA, **Poirier MG**, Storb U. Nucleosome stability dramatically impacts the targeting of somatic hypermutation. *Mol Cell Biol.* 2012 May;32(10):2030-40.
22. Chen A, Vieira G, Henighan T, Howdyshell M, North JA, Hauser AJ, Yang FY, **Poirier MG**, Jayaprakash C and Sooryakumar R. Regulating Brownian Fluctuations with Tunable Microscopic Magnetic Traps. *Phys Rev Lett.* 2011 Aug. 18; 107(8): 87206.
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18. Shimko JC, North JA, **Poirier MG*** and Ottesen JJ*. Preparation of fully synthetic histone H3 reveals that acetyl-lysine 56 facilitates protein binding within nucleosomes. *J Mol Biol.* 2011 Apr 29; 408(2): 187-204.
17. Wong J, **Poirier MG**, Chatenay D and Robert J. Plasmid copy number noise in monoclonal populations of bacteria. *Phys Rev E.* 2010 Jan;81(1 Pt 1):011909..
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Commented on by Belmont, A. 2002 *Proc Natl Acad Sci U S A*. 2002 Nov 26; 99, 15855-7.
6. Sarkar A, Eroglu S, **Poirier MG**, Nemani A, Gupta P and Marko JF, Dynamics of chromosome compaction during mitosis, *Exp Cell Res*. 2002 Jul 1;277(1):48-56.
5. **Poirier MG** and Marko JF, Effect of internal friction on biofilament dynamics *Phys Rev Lett*. 2002 Jun 3; 88(22):228103.
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1. **Poirier M**, Eroglu S, Chatenay D, and Marko JF, Reversible and irreversible unfolding of mitotic newt chromosomes by applied force *Mol Biol Cell*. 2000 Jan; 11, 269-276.

Invited Presentations

Summary: 83 invited talks; includes talks at a Gordon Conference, Keystone Symposia, the ACS National Meeting, the ASBMB National Meeting, the Annual Biophysical Society Meetings and the APS March Meetings, PacificChem Meeting.

83. The mechanics of genome accessibility, Laboratory of Medical Sciences, Imperial College, London, United Kingdom, May. 2025.
82. The mechanics of genome accessibility, Physics seminar, Vrije Universiteit, Amsterdam, Netherlands, April, 2025.
81. A Great Collaboration, The Tora SAGA symposium, Institut Génétique et de Biologie

- Moléculaire et Cellulaire, Strasbourg, France, April, 2025.
80. The mechanics of genome accessibility, Department of Physics Colloquium, Clemson University, Clemson SC, Nov. 2024.
 79. The mechanics of genome accessibility, Center for Cancer Engineering Research Summit. Ohio State University, Columbus OH, Sept. 2024.
 78. Revealing the energetics of chromatin compaction with DNA nanotechnology. Telluride workshop on chromatin dynamics. Telluride, CO, Aug 2024. Co-organizer.
 77. Nucleosome site exposure: an elegant framework for understanding transcription regulation. Endowed Widom Lecture. Northwestern University. Evanston, IL. May 2024.
 76. The mechanics of unlocking our genes. Presented at the Biochemistry Seminar series. Case Western Reserve University. Cleveland, OH. April 2024.
 75. The mechanics of unlocking our genes. Presented at the Biophysics Seminar series, University of Uppsala, Uppsala, Sweden, Dec. 2023.
 74. The mechanics of unlocking our genes. Presented at the Physics colloquium, Kenyon University, Dec. 2023.
 73. The mechanics of unlocking our genes. Presented at Penn State University's 39th Summer Symposium on Chromatin and Regulation of Gene Expression. Penn State University. University Park, PA. August 2023.
 72. The mechanics of unlocking our genes. Presented at the Physics Colloquium. University of Texas, Rio Grand Valley, Online. March 2023.
 71. Dynamics of Transcription Factor Invasion Into Nucleosomes. Presented at the Telluride Workshop on Chromatin Dynamics. Telluride, CO. June 2022. Co-organizer.
 70. High force application by a nanoscale DNA force spectrometer. Presented at the Alpine Single Molecule Meeting. Les Houches, France. March 2022.
 69. Strategies transcription factors use to gain access to inaccessible DNA. APS March meeting, Presented at the Biophysical Society Meeting, Multiscale Genome Organization Session, San Francisco, CA. Feb 2022.
 68. Strategies transcription factors use to gain access to inaccessible DNA. Presented at the PacificChem Conference, Epigenetic Mechanisms and Advances in Chromatin Biology Session, Online. Dec 2021.
 67. A molecular basis for pioneering nucleosome invasion. Presented at the Biophysics Seminar Series, University of Illinois at Chicago, Chicago, IL. Nov. 2021.
 66. Strategies transcription factors use to gain access to inaccessible DNA. Presented at the Biophysics Symposium, University of Minnesota, April 2021.
 65. Strategies transcription factors use to gain access to inaccessible DNA. APS March meeting, Online Conference, March 2021. (This invited talk was originally planned for March 2020, but the APS March meeting as cancelled due to the pandemic.)
 64. Strategies transcription factors use to gain access to inaccessible DNA. Telluride Workshop on Chromatin Dynamics, Online, Aug. 2020. Co-organizer.
 63. Understanding how pioneer factors circumvent nucleosomes, Presented at the Alpine Single Molecule Meeting, Les Houches, France, Feb. 2020.

62. Strategies transcription factors use to gain access to “inaccessible” DNA, Presented at the Department of Biological Chemistry seminar series, University of Michigan, Ann Arbor, Michigan, Dec 2019.
61. The physics of the human genome, Presented at the Physics Colloquium, Case Western University, Cleveland OH, Oct. 2019.
60. Strategies transcription factors use to gain access to “inaccessible” DNA, University of Colorado, Denver Campus, Denver, Colorado, May 2019.
59. Strategies transcription factors use to gain access to “inaccessible” DNA, University of Colorado, Medical School, Denver, Colorado, May 2019.
58. Understanding the coupling between nucleosome and transcription factor dynamics, Presented at the Sorbonne, Paris, France, June 2018.
57. Understanding the coupling between nucleosome and transcription factor dynamics, Presented at the Netherland Cancer Institute, Amsterdam, Netherlands, June 2018.
56. Understanding the coupling between nucleosome and transcription factor dynamics. Presented at the Institut Génétique et de Biologie Moléculaire et Cellulaire, Strasbourg, France, May, 2018.
55. Nucleosome and Pioneer Factor Interactions, Single Molecule Alpine Meeting, Chamonix, France, March, 2018.
54. Deconstructing Nucleosome Dynamics, Presented at the Biochemistry Seminar, SUNY, Buffalo, NY, Nov. 2017
53. Deconstructing Nucleosome Dynamics, Presented at the Molecular Biology Seminar, Brandeis University, Watham, MA, Oct. 2017
52. Epigenetic Regulation of Nucleosome Dynamics. Presented at the Annual Biophysical Society Meeting. New Orleans, LA, 02/2017.
51. Epigenetic Regulation of Nucleosome Dynamics. Presented at the École Polytechnique Fédération de Lausanne, Lausanne, Switzerland, 01/2017.
50. Epigenetic Regulation of Nucleosome Dynamics. Presented at the Institut Génétique et de Biologie Moléculaire et Cellulaire, Strasbourg, France, 01/2017.
49. Dynamic Sensing at the Nanoscale with DNA. Presented at the Physics Colloquium, Iowa State University, Ames, IA, 10/2016.
48. Epigenetic Regulation of Nucleosome Dynamics. Presented at the Telluride Workshop on Chromatin Structure and Dynamics, Telluride, CO, August, 2016.
47. Dynamic sensing at the nanoscale with DNA nanotechnology Presented at the Biophysics Seminar, University of Minnesota, Minneapolis, MN, 05/2016.
46. Dynamic sensing at the nanoscale with DNA nanotechnology. Presented at the Biophysics Seminar, Georgia Institute of Technology, Atlanta GA, 01/2016.
45. Dynamic Consequences of DNA-Protein Binding within Chromatin. Presented at the Molecular Biology and Biochemistry Seminar, University of Iowa Medical School, Iowa City, IA, 12/2015.
44. Dynamics DNA Origami Sensors for Probing Molecular Forces and Chromatin Dynamics, Japan Atomic Energy Agency, Kyoto, Japan, 08/2015.

43. Regulators of Nucleosome Dynamics. Presented at the International Symposium on chromatin Structure, Dynamics and Function, Awaji Yumebutai International Conference Center, Awaji Japan, 08/2015.
42. Functions of Chromatin Dynamics. Presented at the Department of Biochemistry and Molecular Biology Seminar Series. Colorado State University, Fort Collins, CO, 01/2015.
41. The Mechanics of the Human Genome. Presented at the Department of Physics Colloquium. Kent State University, Kent, OH, 01/2015.
40. Functions of Chromatin Dynamics, Presented at The Raymond and Beverly Sackler Institute Seminar Series, Yale University, New Haven, CT 12/2014.
39. The Mechanics of the Human Genome, Presented at the Department of Physics Colloquium, University of Missouri, Columbia, MO, 10/2014.
38. Functions of Chromatin Dynamics. Presented at the Department of Biochemistry and Molecular Biology Seminar Series, Washington University, St. Louis MO, 09/2014.
37. Regulation of Nucleosome Unwrapping Dynamics. Presented at the Telluride Workshop on Chromatin Structure and Dynamics, Telluride, CO, August, 2014.
36. Nucleosomes Dramatically Accelerate Transcription Factor Dissociation. Presented at the Single Molecule Approaches to Biology Gordon Conference. Lucca, Italy, July, 2014.
35. Regulatory Mechanisms of Nucleosome Dynamics. Presented at the International Symposium on Laser and Computational Biophysics, Normal East China University, Shanghai, China, June, 2014.
34. Transcription Factor Binding Dynamics within Chromatin. Presented at the Department of Molecular Genetic, Biochemistry and Microbiology Seminar Series. University of Cincinnati, Cincinnati OH, June, 2014.
33. Mechanics of the Human Genome. Presented at the Department of Physics Colloquium. Indiana University - Purdue University Indianapolis, Indianapolis, Indiana, April, 2014.
32. Regulation and Function of Nucleosome Dynamics, Presented at Department of Pharmacy Seminar Series, University of Colorado Medical School, Denver, CO, November, 2013.
31. Transcription factor binding dynamics within chromatin. Presented at NCI seminar series. National Institutes of Health, National Cancer Institute. Bethesda MD, May, 2013.
30. Single Molecule Studies of Transcription Factor Occupancy within Nucleosomes. Presented at the Telluride Workshop on Chromatin Structure and Dynamics, Telluride, CO, August, 2012.
29. Mechanics of the Human Genome. Presented at the Ohio Section of the American Physical Society, Columbus OH, April, 2012.
28. Regulation of Nucleosome Dynamics. Presented at the Biochemistry Seminar Series. Colorado State University, Fort Collins, CO, April, 2012.
27. Unlocking Nucleosome Dynamics with Histone Post-Translational Modifications. Presented at the Biophysical Society, Dynamic DNA Packaging Across Kingdoms: Chromatin and Beyond, Asilomar, CA, July, 2011.
26. Unlocking Nucleosome Dynamics with Histone Post-Translational Modifications. Presented at the Biochemistry Seminar Series. Brigham Young University, Provo, UT, April, 2011.

25. Unlocking Nucleosome Dynamics with Histone Post-Translational Modifications. Presented at the American Society of Biochemistry and Molecular Biology, Washington, D.C. April, 2011.
24. Unlocking Nucleosome Dynamics with Histone Post-Translational Modifications. Presented at the American Physical Society March Meeting, Dallas, TX, March 2011.
23. Unlocking Nucleosome Dynamics with Histone Post-Translational Modifications. Presented at the Keystone Meeting, Histone Code: Fact or Fiction, Midway Utah, Jan 2011.
22. Unlocking Nucleosome Dynamics with Histone Post-Translational Modifications. Presented at the Biochemistry Seminar Series. University of Illinois, Urbana-Champaign, IL, September 2010.
21. Unlocking Nucleosome Dynamics and Remodeling with Histone Post-Translational Modifications. Presented at the Midwest Single Molecule Meeting. Washington University, St. Louis, MO, July 2010.
20. Unlocking Nucleosome Dynamics and Remodeling with Histone Post-Translational Modifications. Presented at the Cornell Biophysics Colloquia series. Cornell University, Ithaca, NY, April 2010.
19. Histone Post-Translational Modifications Buried in the Nucleosome Dyad Facilitate Nucleosome Disassembly and Repositioning. Presented at The American Chemical Society Annual Meeting. August, 2009.
18. Facilitating a Novel DNA Mismatch Repair Function with Histone Post-Translational Modifications. Presented at The Physics Colloquium. Institut de Physique et Chimie des Matériaux de Strasbourg. Strasbourg, France. June, 2009.
17. Connecting Chemical and Physical Alterations to DNA Organization. Presented at The Department of Physics Colloquium. University of Illinois, Chicago. Chicago, IL. April 2009.
16. How Histone Post-Translational Modifications Function When They Are Buried Under DNA. Presented at The Department of Molecular Virology, Immunology and Medical Genetics Seminar. Columbus, Ohio. December, 2008.
15. The Physics of Genome Folding and Function. Presented at Lorentz Workshop. Leiden, The Netherlands. October, 2008.
14. Molecular Mechanisms of Histone Modifications within the Nucleosomal DNA-Histone Interface. Presented a poster at The Burroughs Wellcome Fund Career Awardees' Summer Conference. Dana Point, California. June, 2007.
13. Understanding How Wrapped DNA is Biologically Active. Presented at of Biochemistry Seminar. The Ohio State University. Columbus, OH. April 2007.
12. Dynamics of Nucleosome Arrays. Presented at The Midwest Microscopy Microanalysis Society. March, 2007.
11. Accessibility and Structure within Nucleosome Arrays. Presented at The American Physical Society March Meeting. March, 2007.
10. Understanding How Wrapped DNA is Biologically Active. Presented at The Department of Biochemistry Seminar. The Ohio State University. Columbus, OH. April, 2007.
9. Accessibility and Structure within Nucleosome Arrays. Presented at The Asia and Pacific Workshop on Biological Physics. National University of Singapore. Singapore. July, 2006.

8. Chromosome Architecture, Mechanics and Function. Presented at The Department of Physics Colloquium. Brandeis University. Waltham, MA. January, 2005.
7. Chromosome Architecture, Mechanics and Function. Presented at The Department of Physics Colloquium. University of Texas, Austin. Austin, TX. January, 2005.
6. Chromosome Architecture, Mechanics and Function. Presented at The Department of Physics Colloquium. University of Arizona. Tucson, AZ. January, 2005.
5. Chromosome Architecture, Mechanics and Function. Presented at The Department of Physics Colloquium. The Ohio State University. Columbus, OH. December, 2004.
4. Two Examples of Mesoscopic Properties within Biological Systems. Presented at The Department of Physics Colloquium. Indiana University. Bloomington, IN. April, 2004.
3. Combining Elasticity and Biochemistry to Study Mitotic Chromosome Structure. Presented at The International Symposium on Chromosome Research at the Nano-Era. Osaka University. December, 2003.
2. Two Examples of Mesoscopic Properties within Biological Systems. Presented at The Laboratoire de Physique des Solides Seminar. Université Paris-Sud. Paris, France. November, 2003.
1. Two Examples of Mesoscopic Properties within Biological Systems. Presented at The Department of Physics Colloquium. University of Illinois, Urbana-Champaign. Champaign, IL. September, 2003.

Research Support

Summary: 27 awards (3 active awards; 24 completed awards)

Total External Funds: \$28,297,150; Total External Funds to the Poirier Lab: \$12,680,777

1 NIH R35 grant as PI; 4 NIH R01 grants as PI; 5 NIH R01 grants as co-I; 1 NIH R21 grant as co-I, 1 NIH S10 instrument grant as PI; 3 NSF grants as PI; 3 NSF grants as co-PI; 3 DOE grants as co-PI; 1 Burroughs-Wellcome Career Award; 2 NSF-MRSEC Proto-IRG seed grants; 3 fellowships to advised graduate students.

Current

06/01/2024 – 05/31/2027

National Science Foundation, MCB-2411725

“NSF-ANR MCB/PHY: DNA Origami-based machines for epigenetic manipulation of gene transcription.”

Principal Investigator: Michael G. Poirier

Total External Funds: \$700,000; Funds to the Poirier Lab: \$350,000

Goal: Develop hybrid DNA based nanodevices to quantify and control gene transcription in living cells.

10/01/2023 – 09/30/2027

National Science Foundation, CMMI-2323968

“DMREF/Collaborative Research: Architecting DNA Nanodevices into Metamaterials, Transducing Materials, and Assembling Materials.”

Principle Investigator: Carlos Castro

Total External Funds: \$1,450,000; Funds to the Poirier Lab: \$725,000

Goal: Develop architected materials based on DNA that are fabricated by molecular self-assembly. We will focus on mechanical DNA metamaterials, signal transducing DNA materials, and polymorphic self-assembly from reconfigurable DNA devices.

Role: Co-Principal Investigator

09/01/2021-08/31/2026 **National Institutes of Health, R35 GM139564**
“Mechanisms of chromatin regulation of transcription.”
Principal Investigator: Michael G. Poirier
Total External Funds: \$3,568,421; Funds to the Poirier Lab: \$3,130,484
Goal: Investigate how pioneer transcription factors and the transcription co-activators, SAGA and ATAC, function to target chromatin properties to dynamically influence chromatin dynamics and accessibility.
Role: Principal Investigator

Completed

03/17/2020-02/29/2025 **National Institutes of Health, R01 R01AI153216**
“RNA binding and packaging by retroviral Gag proteins.”
Principal Investigator: Karin Musier-Forsyth
Total External Funds: \$2,474,264; Funds to the Poirier Lab: \$371,139
Goal: Elucidate the mechanism by which transcriptional start site choice modulates gRNA packaging selectivity. More broadly, we will gain insights into how subtle sequence changes can alter the ensemble of 5'UTR RNA structures and impact viral replication fitness.
Role: Co-Investigator

03/15/2023 - 03/14/2024 **Department of Energy, 225749**
“Energy Exchange in Dynamic DNA-Metal Hybrid Materials”
Principal Investigator: Jessica Winter
Total External Funds: \$350,000; Funds to the Poirier Lab: \$87,000
Goal: Investigate energy conversion and exchange within hybrid DNA nanodevices and metallic nanoparticles.
Role: Co-Principal Investigator

07/15/2020 – 07/14/2021 **National Institutes of Health, S10-OD028705**
“Correlative Optical Tweezers-Fluorescence Microscope.”
Principal Investigator: Michael Poirier
Total External Funds: \$675,000
Goal: The proposal is to fund the purchase of a multi-user single molecule force and fluorescence microscope.
Role: Principal Investigator

03/15/2020-03/14/2023 **Department of Energy, 225749**
“Reciprocal energy exchange in hierarchical DNA origami-nanoparticle composites”
Principal Investigator: Jessica Winter
Total External Funds: \$1,185,191; Funds to the Poirier Lab: \$296,298
Goal: Explore fundamental principles of the physical and thermal interactions between complex DNA structures and energy responsive nanomaterials.
Role: Co-PI

10/01/2019 – 09/30/2024 **National Science Foundation CMMI-1921881**
“DMREF: Collaborative Research: DNA-based sensing, communicating and phase-separating materials”
Principal Investigator: Carlos Castro
Total External Funds: \$1,268,749; Funds to the Poirier Lab: \$609,000
Goal: Develop materials based on assemblies of DNA-based device that are capable of sensing forces, transmitting information, and exhibiting cooperative behaviors based on dynamic behavior of individual devices.

- Role: Co-Principal Investigator
- 09/01/2019 – 08/31/2024 **National Science Foundation, EFMA-193334**
 “EFRI CEE: DNA origami tools to engineer chromatin structure and function in live cells.”
 Principal Investigator: Carlos Castro
 Total External Funds: \$2,200,000; Funds to the Poirier Lab: \$502,928
 Goal: Develop DNA origami nanodevices for targeting and manipulating chromatin in live cells.
 Role: Co-Principal Investigator
- 02/01/2019-01/31/2023 **National Institutes of Health, R01 GM131626**
 “Understanding How Two Related Mammalian Histone Acetyl Transferase Co-activators, SAGA and ATAC, Differentially Regulate Chromatin Dynamics and Transcription.”
 Principal Investigator: Michael G Poirier
 Total External Funds: \$1,301,566; Funds to the Poirier Lab: \$861,781
 Goal: Investigate how the transcription co-activators, SAGA and ATAC, target chromatin properties through their accessory proteins to dynamically influence chromatin dynamics and accessibility.
 Role: Principal Investigator
- 08/01/2017-07/31/2022 **National Science Foundation, 1715321**
 “Mechanistic studies of heterochromatin mesoscale structural dynamics with DNA origami nanotechnology.”
 Principal investigator: Michael G Poirier
 Total External Funds: \$647,328; Funds to the Poirier Lab: \$323,664
 Goal: Develop DNA origami nanostructures for investigating heterochromatin mesoscale structural dynamics.
 Role: Principal Investigator
- 02/01/2017-01/31/2022 **National Institutes of Health, R01 GM121966**
 “Regulatory mechanisms of linker histones and their post-translational modifications.”
 Principal investigator: Michael G Poirier
 Total External Funds: \$1,169,019; Funds to the Poirier Lab: \$818.313
 Goal: Determine the mechanisms by which linker histone isoforms and their post-translational modifications regulate chromatin function.
 Role: Principal Investigator
- 02/01/2017-01/31/2022 **National Institutes of Health, R01 GM121858**
 “Mechanistic Studies of Pioneer Factors.”
 Principal investigator: Lu Bai
 Total External Funds: \$367,772 (Subcontract from Penn State University)
 Goal: Determine the mechanisms by which pioneer factors interact with chromatin and induce nucleosome disassembly.
 Role: Co-Investigator
- 09/01/2017-08/31/2019 **National Institutes of Health, R01 GM123743**
 “Structural and dynamic studies of histone tails in chromatin by magnetic resonance spectroscopy.”
 Principal Investigators: Chris Jaroniec & Michael G Poirier
 Total External Funds: \$658,132; Funds to the Poirier Lab: \$102,411
 Goal: Determine with SSNMR the influence of post translational modifications and histone readers on histone tail dynamics to regulate chromatin compaction and function.
 Role: Multi Principal Investigator

- 03/15/2017-03/14/2020 **Department of Energy, 225749**
 “Exploring Fundamental Properties of Dynamic DNA Origami-Nanoparticle Composites”
 Principle Investigator: Jessica Winter
 Total External Funds: \$1,170,000; Funds to the Poirier Lab: \$222,300
 Goal: Explore fundamental principles of the physical and thermal interactions between complex DNA structures and energy responsive nanomaterials.
 Role: Co- Principal Investigator
- 10/01/2016-09/30/2018 **National Institutes of Health, R01 GM118664**
 “Structural and dynamic studies of histone tails in chromatin by magnetic resonance spectroscopy.”
 Principal Investigator: Chris Jaroniec
 Total External Funds: \$622,019; Funds to the Poirier Lab: \$94,363
 Goal: Determine the influence of histone tail dynamics on chromatin compaction and function.
 Role: Co-Investigator
- 10/01/2016-09/30/2021 **National Institutes of Health, R01 GM120582**
 “Dissecting functional cooperation among subunits in a catalytic ribonucleoprotein.”
 Principle Investigator: Venkat Goplan
 Total External Funds: \$1,850,200; Funds to the Poirier Lab: \$144,657
 Goal: Determine the structural dynamics that occurs within RNaseP and its protein subunits so that it can recognize and process tRNAs.
 Role: Co-Investigator
- 08/01/2015-07/31/2017 **National Science Foundation, 1516979**
 “Chromatin structural dynamics studies with DNA origami nanotechnology.”
 Principal investigator: Michael G Poirier
 Total External Funds: \$350,000; Funds to the Poirier Lab: \$175,000
 Goal: Develop DNA origami nanostructures for investigating mesoscale structural dynamics.
 Role: Principal Investigator
- 05/01/2015-04/30/2020 **National Institutes of Health, R01 ES024478**
 “The roles of chromatin structure and epigenetic changes in arsenic induced gene expression.”
 Principal investigator: Yvonne Fondufe-Mittendorf
 Total External Funds: \$178,275 (Subcontract from Univ. of Kentucky)
 Goal: Determine the impact of arsenic on chromatin regulation of gene expression.
 Role: Co-Investigator
- 04/01/2013-03/31/2016 **National Institutes of Health, R21 CA174583**
 “Nanoscale tools for functional studies of cancer-relevant chromatin modifications”
 Principal Investigator: Carlos Castro
 Total External Funds: \$612,793; Funds to the Poirier Lab: \$269,629
 Goal: Develop DNA origami nanostructures to detect multiple histone post translational modifications within single nucleosomes.
 Role: Co-Investigator
- 01/01/2011-12/31/2013 **Ohio State University Pelotonia Fellowship**
 “A study of the molecular mechanism by which human Rad51 and MSH2/MSH6 clear their own path for DNA repair.”
 Principal Investigator: Michael G Poirier

Goal: Provide Pre-doctoral training for Mr. Justin North, a second year graduate student working in my laboratory.

Role: Advisor

09/01/2010-08/31/2014

National Science Foundation

Proto-IRG Funding from The Center for Emergent Materials, an NSF-funded Materials Research Science and Engineering Center,

“Magnetic Resonance Studies of Chromatin Structure and Dynamics.”

Principal Investigator: Michael G Poirier

Goal: Determine chromatin material properties with magnetic resonance studies.

Role: Principal Investigator

07/01/2010-06/30/2012

American Heart Association

“A study of the influence of histone core post translational modifications on nucleosome positioning.”

Principal Investigator: Michael G Poirier

Total External Funds: \$46,000

Goal: Provide Pre-doctoral training for Mr. Alex Mooney, a second year graduate student working in my laboratory.

Role: Advisor

02/01/2009-01/31/2011

National Science Foundation

Seed Funding from The Center for Emergent Materials, an NSF funded Materials Research Science and Engineering Center,

“Heterogeneous Magnetic Particles for Force and Torque Sensing: A New Approach for Single Molecule Biology.”

Principal Investigator: Michael G Poirier

Goal: Develop new magnetic nanoparticles for single molecule torque measurements.

Role: Principal Investigator

07/01/2008-06/30/2010

American Heart Association

“A study of the molecular mechanisms by which histone modifications in the nucleosome dyad symmetry axis function.”

Principal Investigator: Michael G Poirier

Total External Funds: \$42,000

Goal: Provide Pre-doctoral training for Mr. Justin North, a second year graduate student working in my laboratory.

Role: Advisor

02/01/2008-04/30/2018

National Institutes of Health, R01 GM083055

“Mechanisms of chromatin transcriptional regulation.”

Principal investigator: Michael G Poirier

Total External Funds: \$2,751,426; Funds to the Poirier Lab: \$1,829,300

Goal: Determine the mechanisms by which histone variants, PTMs, chaperones and chromatin remodeling complexes function together to cooperatively, anti-cooperatively and redundantly regulate transcription.

Role: Principal Investigator

09/01/2005 - 08/31/2013

Burroughs Wellcome Fund, Career Award in Basic Biomedical Research

“A study of DNA accessibility within nucleosome arrays.”

Principal investigator: Michael G Poirier

Total External Funds: \$500,000; Funds to the Poirier Lab: \$457,960

Goal: This award funds the person not a specific project.

Role: Principal Investigator

Teaching

Summary: Taught 20 undergraduate level and 8 graduate level physics courses.

PHYS 5600	Thermal Physics, Fall 2019
PHYS 6809	Introduction to Biophysics, Fall 2013, Fall 2014, Fall 2017, Fall 2018, Fall 2024
PHYS 1250	Mechanics, Thermal Physics and Waves, Fall 2012, Spring 2014, Spring 2015, Fall 2015 (2 sections), Fall 2016 (2 sections), Spring 2017, Spring 2020.
PHYS 111	Mechanics and Heat, Fall 2007, Winter 2008, Fall 2010 (2 sections), Fall 2011 (2 sections), Winter 2012.
PHYS 780	Introduction to Biophysics, Spring 2008, Spring 2009, Spring 2010. Spring 2011.
PHYS 594/294	Introduction to Nanoscience, Winter 2008, Winter 2009, Winter 2010 Winter 2011.

Advised Personnel

Summary: 21 graduate students (primary advisor for 13 who graduated with a Ph.D.; co-advisor for 1 that graduated with a Ph.D.; primary advisor for 1 who graduates with an MS; 1 transitioned to another lab; 10 current graduate students), 1 research scientist, 5 postdoctoral researchers (5 completed their training), 1 research technician, 2 research associates, and 44 undergraduate students

Graduate Students:

Marek Simon	(Physics, 2006-2012), Ph.D. in Physics, Presidential fellowship; postdoctoral fellow with Wolfgang Fischle, Max Planck Institute for Biophysical Chemistry. Currently a Research Scientist at ASK Chemicals
Robert Forties	(Physics, 2007-2011), co-advisor, Ph.D. in Physics, NSF predoctoral fellowship; postdoctoral fellow with Michelle Wang, HHMI Investigator, Cornell University
Justin North	(Physics, 2007-2012), Ph.D. in Physics, AHA predoctoral fellowship; Pelotonia fellowship; postdoctoral fellow with Robert Tabita, Dept. of Microbiology, Ohio State University.
Alex Mooney	(Physics, 2008-2012), Ph. D. in Physics, AHA predoctoral fellowship; Software design leader at Epic; Now a project manager at CoverMyMeds.
Morgan Welsh	(Physics, 2009-2015), Ph.D. in Physics, Financial analyst, Chase Bank.
Yi Luo	(Biophysics, 2010-2016), Ph.D. in Biophysics, postdoc with William Shih, Harvard University. Currently a research scientist at Illumina.
Omar Tabbaa	(Physics, 2010-2011), Transitioned to another advisor.
Matthew Brehove	(Physics, 2011-2016), Ph.D. in Physics. Post doc with Tijana Talisman, City of Hope Hospital. Currently senior scientist at Chromologic
Matthew Gibson	(Physics, 2012-2016), Ph.D. in Physics, Technology Development Module and Integration Yield Engineer. Intel.
Ben Donovan	(Biophysics, 2015-2020), Ph.D. in Biophysics, Awarded a Cellular, Molecular and Biochemistry NIH T32 fellowship. Postdoctoral researcher at the NIH in Bethesda MD.

Michael Darcy	(Physics, 2015-2021), Ph.D. in Physics, Senior scientist at a Nautilus Biotechnology.
Ariel Robbins	(Biophysics, 2016-2023), Ph.D. in Biophysics. Research scientist at UAS, A BlueHalo Company.
Khan Cox	(Physics, 2016-2024), Ph.D in Physics. Postdoc at OSU.
Nathanial Burge	(Biochemistry, 2017-2022), Ph.D. in Biochemistry. Awarded a Cellular, Molecular and Biochemistry NIH T32 fellowship. Staff scientist at Forge Biologics.
Kevin Jamison	(Physics, 2017-present)
Zhiyuan Meng	(Biophysics, 2020-present)
Kristin Chesnutt	(Biochemistry, 2020-2024) Awarded a Molecular Biophysics Training Grant NIH T32 fellowship.
Blanche Chen	(Biochemistry, 2021-present)
Michael Neuhoff	(Physics, 2021-present)
Kalvin Bonin	(Physics, 2022-present)
Eun Jun	(Physics, 2023-present)
Cassie Robbins	(Biochemistry, 2023-present)
Nancy Romo	(Physics, 2024-2025), MS in Physics.
Shuhbam Mulay	(Biophysics, 2025-present)
Nils Sommerfeld	(Physics, 2025-present)
Frank Hegedus	(Physics, 2025-present)

Undergraduate Students:

Joseph Wayman	2007 - 2008; Graduate school, Chemical and Biomedical Engineering, Cornell University
Jonathan Picking	2008 - 2010; Graduate school, Ohio State Biochemistry Program, The Ohio State University, awarded a Summer Undergraduate Research Fellowship. Co-authored 3 papers from the Poirier lab.
Matthew Shoffner	2008 – 2011; Research technician, The Ohio State Medical School. Co-authored 3 papers from the Poirier lab.
Liana Bonano	2008 - 2009
Malcolm McCauley	2009 - 2010
Shayne Reichard	2009 - 2010
Malika Randeria	2009, summer
Megan Segbers	2010, summer; REU student, Xavier University
Aaron Bruns	2009 – 2011; Graduate school, Ohio State Biochemistry Program, The Ohio State University. Co-authored 1 paper from the Poirier lab.
Sean Rose	2010-2013; Graduate school, Medical Physics, University of Chicago. Co-authored 2 papers from the Poirier lab.
Amelia Heston	2010-2012; Medical School, Ohio University
Gino Pace	2011-2012
Kimberly DiMauro	2011-2012
Andrew Slater	2012-2013, Medical School, Ohio University, co-authored 1 paper from the Poirier lab.
Alan Scott Hutchinson	2012-2013, Academic year REU student, Columbus State Univ
Kingsley Nwokelo	2013-2014, Academic year REU student.
Jillian Zhang	2013-2014
Gaurav Shastri	2013-2014, Department of Physics summer research fellowship
Chatondra Williams	2014-2015, Medical School, University of Alabama.
Michelle Goodwin	2014-2016, Medical School, Co-authored 2 papers from the Poirier lab.

Ariel Wurm	2014-2016, Graduate School, Biophysics, OSU, awarded a URO Undergraduate Summer Research Fellowship. co-authored 1 paper from the Poirier lab.
Michelle Scott	2015-2017, Dental School at OSU, awarded a URO Undergraduate Summer Research Fellowship.
Catherine Mendel	2015-2016, Academic year REU student, Columbus State Univ
Shefali Ferguson	2016
Caroline Jipa	2016-2019, MD-PhD graduate student at University of Michigan, Co-authored 3 papers from the Poirier lab, awarded a 2017 URO Undergraduate Summer Research Fellowship, awarded a Goldwater Fellowship.
Tom Sinha	2017
Wesley Terrill	2017-2018, Department of Physics 2018 summer research fellowship
Stephen Forster	2017
Jenna Thuma	2018-2019, Department of Physics 2019 summer research fellowship, Co-authored 1 paper from the Poirier Lab, Ohio State Biophysics graduate students.
Danielle Bingman	2019-2020, Department of Physics 2019 summer research fellowship, Ohio State Physics graduate students.
Alea Leganik	2020-2021, Ohio State Undergraduate Research Scholarship, 2021
Luke Schawe	2022, Summer REU Molecular Biology Fellowship.
Khushi Bhondwe	2022, Summer SEED Research Fellowship
Kavya Alagappan	2022, Summer SEED Research Fellowship
Nafeez Ahmed	2022, Ohio Five-OSU SURE Research Fellowship
Llyod Yang	2022 – current
Stephanie Aboagye-Mensah	2023, Summer SEED Research Fellowship
Roan Kovach	2023, Summer SEED Research Fellowship
Gregory Palmer	2023, Summer REU Molecular Biology Fellowship, University of Tulsa
Noah Hankin	2024, Ohio Five-OSU SURE Research Fellowship
Sera Mathew	2024 – current
Brickelle Rahmaan-Bixles	2024 – current
Carson Fox	2025, Ohio Five-OSU SURE Research Fellowship
Eian McNamar	2025, Summer REU Physics Fellowship

Research Scientist

Ehsan Akbari (PhD, Ohio State University), 2023 – Current.

Postdoctoral Researcher:

Paula Vivas (PhD, University of Illinois, Chicago) 2009 – 2013, Moved to postdoc in the Ohio State University Medical School. Currently a research scientist at ASK Chemicals

Golbarg Mohammadiroozbahani (PhD, Illinois Institute of Technology), 2020-2022. Moved to a senior scientist position at Pfizer.

Wolfgang Pfeifer (PhD, University of Duisburg-Essen), 2020-2023.

Ehsan Akbari (PhD, Ohio State University), 2021-2023. Transitioned to a research scientist.

Siamak Shokri (PhD, Illinois Institute of Technology), 2022-2024.

Research Technician:

Carter Mason 2017-2020

Research Associate:

Robin Nakkula 2006 – 2010, Research associate in the Ohio State University Medical School
Pandian Ramasamy 2014 – 2015, Scientist in Ricerca Biosciences

Service and Professional Memberships

2002-present Peer reviewer for 162 papers: Biochemistry, Biophysical Journal, Chromosoma, Epigenetics and Chromatin, ELife, FEBS Letters, JACS, Journal of Molecular Biology, JoVE, Molecular Biology of the Cell, Molecular Cell, Nature Communications, Nature Reviews Molecular and Cellular Biology, Nature Structural and Molecular Biology, Nucleic Acids Research, Physical Review E, Plos One, PNAS, Science, Scientific Reports, Virology.

2006-present Faculty Member, Ohio State Biochemistry Program, the Ohio State University

2006-present Faculty Member, Biophysics Graduate Program, the Ohio State University

2006-present *Course Development:* Developed a new course on nano- and biotechnology to expose undergraduates in the colleges of biological sciences, physical sciences and engineering to new collaborative science. 2006-2009.

2007-present *Minority Outreach:* Hosted 5 minority physics undergraduate students and successfully recruited 1 minority student to become a graduate student in the Department of Physics at OSU. Helped develop an APS funded bridge program to help students from under-represented groups successfully apply to graduate school in Physics and complete a PhD degree. Currently, participating in an NSF funded project to create inclusive Physics graduate programs.

2007-present *International Meetings:* Chaired sessions at the American Physical Society March meeting and the American Chemical Society Annual Meeting.

2008 Reviewer for l'Agence Nationale de la Recherche

2009 Reviewer for NIH Challenge Grants

2011-present Faculty Trainer, Cellular, Molecular and Biochemical Sciences Training Program, OSU

2011 Adhoc editor, PLOS Computational Biology

2011 Reviewer for MRC New Investigator Research Grants

2012-2015 External advisory board member for P01-GM088409

2012 Reviewer for the NSF, Chemistry, Chemistry of Life Processes.

2012 Ad hoc reviewer for NIH K99/R00

2013 Ad hoc reviewer for the NIH Pioneer Awards

2013 Ad hoc member of NIH Study Section for ES12-006 (R21) and ES12-007(R01)

2013-2023 Editorial Board Member, Journal of Biological Chemistry

2014 Reviewer for NSF, MCB, Molecular Biophysics.

2014 Ad hoc member of Molecular Genetics A NIH Study Section

2014 Ad hoc member of Molecular Structure and Function C Study Section

2014	Faculty representative on an OSU STEM Scholars Float Trip.
2015	Ad hoc member of Molecular Genetics A NIH Study Section
2015	Reviewer for the NSF, MCB, Genetic Mechanisms
2016-present	Faculty Trainer, Molecular Biophysics Training Program, OSU
2016	Ad hoc member of Molecular Genetics A NIH Study Section
2016-2020	Member of Molecular Genetic A NIH Study Section
2017	Reviewer for KAUST Grants.
2018	Reviewer for the NSF, MCB, Genetic Mechanisms
2020-present	Member of the Center for Cancer Engineering Steering Committee
2022-present	Co-organizer of the Telluride Workshop on Chromatin Dynamics
2024-2025	Co-Chair for the BPS Multiscale Genome Organization Subgroup.
2023	Adhoc member of ZRG1 MBBC-R MIRA R35 Study Section.
2025	Adhoc member of MRFA MIRA R35 Study Section.

Administrative Accomplishments During Term as Chair of the Department of Physics at Ohio State University.

- Hired 8 new faculty in the areas of Astroparticle Physics Experiment; Atomic, Molecular, and Optical Physics Experiment; High Energy Physics Experiment; High Energy Physics Theory; Nuclear Physics Experiment; Physics Education Research (2); Quantum Information Experiment in three years. In 2020-2021, there was no faculty hiring at OSU because of the Covid-19 pandemic. Half of the faculty hired are female and one of the faculty hired is from a minorized group.
- Restructured the administrative support for the department. This including hiring a new department manager, 2 new grants managers, and 2 new fiscal officers. Overall, I oversaw the hiring 11 of the 18 administrative staff, 11 of the 20 research staff, and 9 of the 20 instructional staff. The changes I led resulted in dramatically improved faculty support, staff morale, and staff retention.
- Successfully managed a department budget of ~\$20M in university support, \$3M in endowment expenditures, and \$18M in research expenditures. This includes providing a balanced budget at the end of my term and providing the 50% of the startup funds for the 8 faculty hired during my term. By fully understanding the department's income and expenditures, I was able to make the case for increased funding including a 1.5-fold increase in funding for the supplies and services budget, and positions for the department including 2 new grant manager positions, an instructional staff support position, and a research infrastructure support position.
- Successfully managed the department during the Covid-19 pandemic. This includes overseeing the transition to online and hybrid instructions, and then the transition back to in-person instruction. Overseeing the research infrastructure shutdown and restart. Managed the huge range of expectations from department members for safety while maintaining our instructional and research missions.
- Successfully expanded endowment funds. This includes a \$2M endowment to fully support the department's M.S. to Ph.D. bridge program, and a \$1M commitment for a new endowed chair position.

- Successfully competed for \$1.25M in funds for faculty hiring from the Provost office as part of the Office of Academic Affairs Good-to-Great competition for department investment.
- Implemented a new weekly communication process for sharing information regularly with all department members.
- Directed and oversaw the development of a DEI strategic plan for the department. This is a dynamic and adaptive plan that is integrated into all the department's operations. It provides a sustainable approach to ensure the department is continually working to improve the inclusivity and climate of the department.
- Oversaw 9 promotion and tenure cases.
- Oversaw the implementation of a new peer review and feedback procedure for faculty teaching.
- Oversaw the development of a new Computational Physics Certificate for undergraduate majors.
- Oversaw the department's promotion and celebrations for Pierre Agostini being awarded the 2023 Nobel Prize in Physics.
- Chaired the Interim Math Chair search committee in 2023.
- Chaired the Math Chair search committee in 2024.
- Organizer of the month meeting among the department chairs from the Division of Natural and Mathematical Sciences in the College of Arts & Sciences. These meetings allowed for department chairs to share the successes and challenges in their respective departments and to build collaborations between departments.