

MINKUI LUO, PH.D.

Chemical Biology Program
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PERSONAL

Born: Sep. 20th, 1976; Urumqi, Xinjiang, China
Citizenship: China (US permanent resident)

ACADEMIC APPOINTMENTS

2019-present Member of Chemical Biology, Memorial Sloan Kettering Cancer Center
2019-present Professor of Pharmacology, Weill Medical College of Cornell University
2019-present Professor of Tri-Institute Program of Chemical Biology
2019-present Professor, Gerstner Sloan Kettering Graduate School of Biomedical Sciences
2014-2019 Associate Member of Chemical Biology, Memorial Sloan Kettering Cancer Center
2014-2019 Associate Professor of Pharmacology, Weill Medical College of Cornell University
2014-2019 Associate Professor of Tri-Institute Program of Chemical Biology
2014-2019 Associate Professor, Gerstner Sloan Kettering Graduate School of Biomedical Sciences
2008-2014 Assistant Member of Chemical Biology, Memorial Sloan Kettering Cancer Center
2008-2014 Assistant Professor of Pharmacology, Weill Medical College of Cornell University
2008-2014 Assistant Professor of Tri-Institute Program of Chemical Biology
2008-2014 Assistant Professor, Gerstner Sloan Kettering Graduate School of Biomedical Sciences
2008-2014 Assistant Member of Mol. Pharm. & Chem., Memorial Sloan Kettering Cancer

EDUCATION & TRAINING

2005-2008 Postdoctoral Fellow in Biochemistry & Chemical Biology, Albert Einstein College of Medicine, with Vern L. Schramm
1999-2005 Ph.D. in Bioorganic and Bioinorganic Chemistry, Princeton University, with John T. Groves
1994-1999 B.A. in Organic Chemistry, Fudan University, China, with Cheng-ye Yuan (Shanghai Institute of Organic Chemistry)

AWARDS

2019 Maximizing Investigators' Research Award (R35), NIGMS/NIH
2015 Eli Lilly Award in Biological Chemistry, American Chemical Society
2014 Clinical & Translational Science Center Novel Award, Weill Cornell Medical College
2011 Basil O'Connor Starter Scholar, March of Dimes Birth Defects Foundation
2010 2010 NIH Director's New Innovator Award, NIH
2010 Alfred W. Bressler Scholar, Alfred W. Bressler Scholars Endowment Fund
2009 The V Scholar Award, the V Foundation for Cancer Research
2007 Outstanding Postdoctoral Research Prize, Albert Einstein College of Medicine
2003 Best Presentation Award, 3rd ACS Annual Metropolitan New York Area Poster Program for Graduate Students in the Chemical Sciences
1998 Rohm & Haas Fellowship, Fudan University
1998 Du Pont Fellowship, Fudan University

PROFESSIONAL MEMBERSHIPS

2002-present American Chemical Society
2005-present The New York Academy of Science
2010-present The Harvey Society
2017-present Sigma Xi

BIBLIOGRAPHY

MANUSCRIPTS UNDER REVIEW OR REVISION

Hairui Su, Ming Jiang, Chamara Senevirathne, Srinivas Aluri, Tuo Zhang, Juliana Xavier Ferrucio, Ngoc-Tung Tran, Szu-Mam Liu, Guo Han, Yongxia Zhu, Xiaosi Han, Yuling Chen, Cheng-kui Qu, Christopher Klug, Ravi Bhatia, Yabing Chen, Y. George Zheng, Stephen Nimer, Haiteng Deng, Diane Krause, Jenny Xiang, Amit Verma*, **Minkui Luo*** and Xinyang Zhao*, “Methylation of Dual Specificity Phosphatase 4 Controls Cell Differentiation”, *BioRxiv*, <https://www.biorxiv.org/content/10.1101/2020.12.16.422727v1>, **under review**

Kanchan Devkota, Matthieu Schapira, Sumera Perveen, Aliakbar Khalili Yazdi, Fengling Li, Irene Chau, Pegah Ghiabi, Taraneh Hajian, Peter Loppnau, Albina Bolotokova, Ke Wang, Deyao Li, Jing Liu, David Smil, Minkui Luo, Jian Jin, Paul V. Fish, Peter J. Brown and Masoud Vedadi, “Probing the SAM Binding Site of SARS-CoV-2 nsp14 Using SAM Competitive Inhibitors Guides Developing Selective bi-substrate Inhibitors”, *BioRxiv*, **under review**

Lulu Hu, Shun Liu, Yong Peng, Ruiqi Ge, Rui Su, Chamara Senevirathne, Bryan T. Harada, Qing Dai, Jiangbo Wei, Lisheng Zhang, Ziyang Hao, Liangzhi Luo, Huanyu Wang, Yuru Wang, Minkui Luo, Mengjie Chen, Jianjun Chen, Chuan He, “Quantitative RNA m6A Sequencing Reveals Dynamic Human Epitranscriptome”, **under review**

PUBLISHED AND IN PRESS (* ML AS A CORRESPONDING AUTHOR)

Reviews and Commentaries

- Williams RM, Chen S, Langenbacher RE, Galassi TV, Harvey JD, Budhathoki-Uprety J*, **Luo M*** and Heller DA*, “Harnessing Nanotechnology to Extend Chemical Biology’s Research”, *Nat. Chem. Biol.*, **2021**, 17, 129-137.
- Luo M**, “Chemical and Biochemical Perspectives of Protein Lysine Methylation”, *Chem. Rev.*, **2018**, 118, 6656-6705. This review was featured by Today’s Science Sparks at MSKCC.
- Luo M**, “Inhibition of the Kinase Cascade Can Be Quantitative”. *Biochemistry*, **2017**, 56, 4443-4444.
- Luo M**, “Inhibitors of Protein Methyltransferases as Chemical Tools”. *Epigenomics*, **2015**, 7, 1327-1338.
- Wang R, **Luo M**, “A Journey toward Bioorthogonal Profiling of Protein Methylation inside Living Cells”, *Curr. Opin. Chem. Biol.* **2013**, 17, 729-737. PMID:PMC3823810
- Luo M**, “Current Chemical Biology Approaches to Interrogate Protein Methyltransferases”, *ACS Chemical Biology*, **2012**, 7, 443-463. PMID:PMC3306480

Peer-Reviewed Manuscripts

Independent:

- Gustavo A Bezerra, Alexander Holenstein, William R. Foster, Bing Xie, Kevin G. Hicks, Céline Bürer, Seraina Lutz, Ayan Mukherjee, Dipika Sarkar, Debomita Bhattacharya, Jared Rutter, Arindam Talukdar, Peter J. Brown, Minkui Luo h, Lei Shi, D. Sean Froeseb, and Wyatt W. Yue, “Identification of small molecule allosteric modulators of 5,10-methylenetetrahydrofolate reductase (MTHFR) by targeting its unique regulatory domain”, *Biochimie*, **2021**, DOI: 10.1016/j.biochi.2021.01.007
- Zhesi Zhu, Zhen Han, Levon Halabelian, Xiangkun Yang, Jun Ding, Nawei Zhang, Liza Ngo, Jiabao Song, Hong Zeng, Maomao He, Yingming Zhao, Cheryl H. Arrowsmith, Minkui Luo, Michael G. Bartlett, Y. George Zheng, “Identification of Lysine Isobutyrylation as A New Histone Acylation”, *Nucleic Acids Res.*, **2021**, 49, 177-189.

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52. Zvi Yaari, Justin M. Cheung, Hanan A. Baker, Rune S. Frederiksen, Prakrit V. Jena, Fang Jiao, Simon Scheuring, Minkui Luo, Daniel A. Heller, “Nanoreporter of an Enzymatic Suicide Inactivation Pathway”, *Nano Lett.*, **2020**, *20*, 7819-7827.
51. Jelcic M, Wang K, Hui KL, Cai XC, Luo M, Niethammer P, “A photo-clickable ATP-mimetic reveals novel nucleotide interactors in the membrane proteome”, *Cell Chem. Biol.*, **2020**, *27*, 1073-1083.
50. Cai XC, Zhang T, Kim EJ, Jiang M, Wang K, Wang J, Chen S, Zhang N, Wu H, Li F, Dela Seña CC, Zeng H, Vivcharuk V, Niu X, Zheng W, Lee JP, Chen Y, Barsyte D, Szewczyk M, Hajian T, Ibáñez G, Dong A, Dombrowski L, Zhang Z, Deng H, Min J, Arrowsmith CH, Mazutis L, Shi L, Vedadi M, Brown PJ, Xiang J, Qin LX, Xu W, **Luo M***, “A Chemical Probe of CARM1 Alters Epigenetic Plasticity against Breast Cancer Cell Invasion”, *Elife*, **2019**, *8*, e47110.
This work was highlighted by *Elife* Digest.
49. Chen S, Kapilashrami K, Senevirathne C, Wang Z, Wang J, Linscott JA, **Luo M***, “Substrate-differentiated Transition States of SET7/9-catalyzed Lysine Methylation”, *J. Am. Chem. Soc.* **2019**, *141*, 8064.
48. Chen S, Wiewiora RP, Meng F, Babault N, Ma A, Yu W, Qian K, Hu H, Zou H, Wang J, Fan S, Blum G, Pittella-Silva F, Beauchamp KA, Tempel W, Jiang H, Chen K, Skene R, Zheng YG, Brown PJ, Jin J, Luo C*, Chodera JD*, **Luo M***, “The Dynamic Conformational Landscape of the Protein Methyltransferase SETD8”, *Elife*, **2019**, *8*, e45403.
This work was highlighted by *Elife* Digest, News of Shanghai Institute of Materia Medica, MSKCC Blog, and TPCB Webpage.
47. Scheer S, Ackloo S, Medina TS, Schapira M, Li F, Ward JA, Lewis AM, Northrop JP, Richardson PL, Kaniskan HÜ, Shen Y, Liu J, Smil D, McLeod D, Zepeda-Velazquez CA, **Luo M**, Jin J, Barsyte-Lovejoy D, Huber KVM, De Carvalho DD, Vedadi M, Zaph C, Brown PJ, Arrowsmith CH, “A Chemical Biology Toolbox for the Study of Protein Methyltransferases and Epigenetic Signaling”, *Nat. Comm.* **2019**, *1*, 19.
46. Quintero CM, Laursen KB, Mongan NP, **Luo M**, Gudas LJ, “CARM1 (PRMT4) Acts as a Transcriptional Coactivator during Retinoic Acid-induced Murine Embryonic Stem Cell Differentiation”, *J. Mol. Biol.* **2018**, *430*, 4168.
45. Shu X, Dai Q, Wu T, Bothwell IR, Yue Y, Zhang Z, Cao J, Fei Q, **Luo M**, He C, Liu J, “N6-Allyladenine: A New Small Molecule for RNA Labeling Identified by Mutation Assay”, *J. Am. Chem. Soc.* **2017**, *139*, 17213.
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43. Butler KV, Ma A, Yu W, Li F, Tempel W, Babault N, Pittella-Silva F, Shao J, Wang J, **Luo M**, Vedadi M, Brown PJ, Arrowsmith CH, Jin J, “Structure Based Design of Covalent Inhibitors of the SETD8 Protein Lysine Methyltransferase”, *J. Med. Chem.* **2016**, *59*, 9881.
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This paper was featured by Today's Science Sparks at MSKCC.
40. Tang H, Chen Y, Liu X, Wang S, Lv Y, Wu D, Wang Q, **Luo M**, Deng H, “Downregulation of HSP60 disrupts mitochondrial proteostasis to promote tumorigenesis and progression in clear cell renal cell carcinoma”, *Oncotarget.* **2016**, *7*, 38822.

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35. LaFave LM, Béguelin W, Koche R, Teater M, Spitzer B, Chramiec A, Papalexi E, Keller MD, Hricik T, Konstantinoff K, Micol JB, Durham B, Knutson SK, Campbell JE, Blum G, Shi X, Doud EH, Krivtsov AV, Chung YR, Khodos I, de Stanchina E, Ouerfelli O, Adusumilli PS, Thomas PM, Kelleher NL, **Luo M**, Keilhack H, Abdel-Wahab O, Melnick A, Armstrong SA, Levine RL, “Loss of BAP1 function leads to EZH2-dependent transformation”, *Nat. Med.* **2015**, *21*, 1344.
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33. Blum G, Ibáñez G, Rao X, Shum D, Radu C, Djaballah H, Rice JC, **Luo M***, “Small-molecule Inhibitors of SETD8 with Cellular Activity”, *ACS Chem. Biol.* **2014**, *9*, 2471-2478. PMID: PMC4245162
32. Feng S, Zhang L, Adilijiang G, Liu J, **Luo M**, Deng H., “Substrate Profiling of Glutathione S-transferase with Engineered Enzymes and Matched Glutathione Analogues”, *Angew. Chem. Int. Ed.* **2014**, *53*, 7149-7153. PMID: Not applicable.
31. Bothwell IR, **Luo M***, “Large-scale, Protection-free Synthesis of *Se*-Adenosyl-L-selenomethionine Analogues and Their Application as Cofactor Surrogates of Methyltransferases”, *Org. Lett.* **2014**, *16*, 3056-3059. PMID: PMC4059250. This paper was featured by Today's Science Sparks at MSKCC.
30. Wang R, Zheng W, **Luo M***, “A Sensitive Mass-spectrum Assay to Characterize Engineered Methionine Adenosyltransferases with *S*-alkyl Analogues of Methionine (SAAM) as Substrates”, *Anal. Biochem.* **2014**, *450*, 11-19. PMID:PMC3947680. This paper was featured as the cover of the issue of *Anal. Biochem.*
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21. Ibanez G, Shum D, Blum G, Bhinder B, Radu C, Antczak C, **Luo M**, Djaballah H, “A High Throughput Scintillation Proximity Imaging Assay for Protein Methyltransferases”, *Comb. Chem. High Throughput Screen.* **2012**, 15, 359-371. This paper was featured as the cover of the issue *Comb. Chem. High Throughput Screen.* PMID:PMC3553658
20. Islam K, Bothwell I, Chen Y, Sengelaub C, Wang R, Deng H, **Luo M***, “Bioorthogonal Profiling of Protein Methylation (BPPM) Using Azido Derivative of S-adenosyl-L-methionine”, *J. Am. Chem. Soc.* **2012**, 134, 5909-5915. This paper was featured by Today's Science Sparks at MSKCC and highlighted in *Chemical and Engineering News* in the April 9th issue, **2012**, 15, p.35. PMID:PMC3336210
19. Chakraborty D, Islam K, **Luo M***, “Facile Synthesis and Altered Ionization Efficiency of Diverse Nε-Alkyllysine-containing Peptides”, *Chem. Comm.* **2012**, 48, 1514-1516. Invited paper for “ChemComm Emerging Investigators”. PMID:PMC3573693
18. Wang R, Ibáñez G, Islam K, Zheng W, Blum G, Sengelaub C, **Luo M***, “Formulating Fluorogenic Assay to Evaluate S-adenosyl-L-methionine Analogues as Protein Methyltransferase Cofactors”, *Mol. BioSyst.* **2011**, 7, 2970-2981. This paper was featured as the cover of the issue of *Mol. BioSyst.* PMID:PMC3575546
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16. Wang R, Zheng W, Yu H, Deng H, **Luo M***, “Labeling Substrates of Protein Arginine Methyltransferase with Engineered Enzymes and Matched S-Adenosyl-L-methionine Analogues”, *J. Am. Chem. Soc.* **2011**, 133, 7648-7651. PMID:PMC3104021
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Postdoctoral (Albert Einstein College of Medicine):

14. Yong Zhang, **Minkui Luo** and Vern L. Schramm, “Transition State Structures of *Plasmodium falciparum* and Human Orotate Phosphoribosyltransferases”, *J. Am. Chem. Soc.* **2009**, 131, 4685-4694. This paper was featured by Today's Science Sparks at MSKCC.
13. María B. Cassera, Keith Z. Hazleton, Paul M. Riegelhaupt, Emilio F. Merino, **Minkui Luo**, Myles H. Akabas and Vern L. Schramm, “Erythrocytic adenosine monophosphate as an alternative purine”, *J. Biol. Chem.* **2008**, 283, 32889-32899.
12. **Minkui Luo** and Vern L. Schramm, “Ribosyl Geometry in the Transition State of *Streptococcus pneumoniae* Methylthioadenosine Nucleosidase from the 3'-²H Kinetic Isotope Effect”, *J. Am. Chem. Soc.* **2008**, 130, 11617-11619.

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11. Lei Li, **Minkui Luo**, Mahmoud Ghanem, Erika A. Taylor and Vern L. Schramm, “Residues Remote from Catalytic Sites Contribute to Transition State Structure in Bovine Purine Nucleoside Phosphorylase”, *Biochemistry* **2008**, *47*, 2577-2583.
10. **Minkui Luo**, Lei Li and Vern L. Schramm “Remote Mutations Alter Transition State Structure of Human Purine Nucleoside Phosphorylase”, *Biochemistry* **2008**, *47*, 2565-2576.
9. **Minkui Luo** and Vern L. Schramm, “Transition State Structure of *E. coli* tRNA-specific Adenosine Deaminase”, *J. Am. Chem. Soc.* **2008**, *130*, 2649-2655. This paper was featured in JACS Select, March 2009.
8. Vipender Singh, **Minkui Luo**, Rosemary L. Brown, Gillian E. Norris and Vern L. Schramm, “Transition State Structure of *Neisseria meningitidis* 5'-Methylthioadenosine/S-adenosylhomocysteine Nucleosidase”, *J. Am. Chem. Soc.* **2007**, *129*, 13831-13833.
7. Jemy A. Gutierrez, **Minkui Luo** (co-first author), Vipender Singh, Lei Li, Rosemary L. Brown, Gillian E. Norris, Gary B. Evans, Richard H. Furneaux, Peter C. Tyler, Gavin F. Painter, Dirk H. Lenz, and Vern L. Schramm, “Picomolar Inhibitors as Transition State Probes of 5'-Methylthioadenosine Nucleosidases”, *ACS Chem. Biol.* **2007**, *2*, 725-734. The paper was featured as the cover and in *Point of View* of the issue of *ACS Chemical Biology*.
6. **Minkui Luo**, Vipender Singh, Erika A. Taylor and Vern L. Schramm, “Transition-State Variation in Human, Bovine, and *Plasmodium falciparum* Adenosine Deaminases”, *J. Am. Chem. Soc.* **2007**, *129*, 8008-8017.

Graduate (Princeton):

5. **Minkui Luo**, Hening Lin, Michael A. Fischbach, David R. Liu, Christopher T. Walsh, John T. Groves, “Enzymatic Tailoring of the Bacterial Siderophore Enterobactin Alters Membrane Partitioning and Iron Acquisition”, *ACS Chem. Biol.* **2006**, *1*, 29-32.
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3. Evgeny A. Fadeev, **Minkui Luo**, and John T. Groves, “Synthesis and Structural Modeling of the Amphiphilic Siderophore Rhizobactin-1021 and its Analogs”, *Bioorg. Med. Chem. Lett.* **2005**, *15*, 3771-3774.
2. **Minkui Luo**, Evgeny A. Fadeev, and John T. Groves, “Membrane Dynamics of the Amphiphilic Siderophore, Acinetoferrin”, *J. Am. Chem. Soc.* **2005**, *127*, 1726-1736. The results were highlighted by *Chemical & Engineer News* in July 4th issue, **2005**, 22-23.
1. Evgeny A. Fadeev, **Minkui Luo**, and John T. Groves, “Synthesis, Structure and Molecular Dynamics of Gallium Complexes of Schizokinen and the Amphiphilic Siderophore Acinetoferrin”, *J. Am. Chem. Soc.* **2004**, *126*, 12065-12075.

Book Chapters

3. Chen S, Cai X, **Luo M**, Mechanistic Aspects of Methyltransferases with Small-molecule Metabolites and Natural Products as Substrates (Hung-Wen (Ben) Liu and Tadhg P. Begley (eds.) *Comprehensive Natural Products III: Chemistry and Biology*, volume 4, pp. 474-496, Elsevier, 2020
2. Cai X, Kapilashrami K, **Luo M**, *Enzymes of Epigenetics Part B: Synthesis and Assays of Inhibitors of Methyltransferases*, *Methods in Enzymology*, volume 574, Elsevier, 2016.
1. **Luo M**, *Epigenetic Technological Applications: Current Methods for Methylome Profiling*, Elsevier, 2015.

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Selected Patent Applications

1. SK2011-013: “Methyltransferase Inhibitors for Treating Cancer I”. PCT/US2012/062157; WO2013063417A1, filed on Oct. 26th, 2012 and published on May, 2nd, 2013.
2. SK2013-010: “Methyltransferase Inhibitors for Treating Cancer II”. PCT/US2014/034118; WO2014172330A1, filed on April 15th, 2014 and published on Oct. 23rd, 2014.
3. SK2013-013-07: “Cofactor Analogs as Methyltransferase Inhibitors for Treating Cancer”. PCT/US2016/058100; WO2017070464, filed on Oct. 21st, 2016 and published on Apr. 27th, 2017.
4. SK2015-110: “Adenosine Analogs as Methyltransferase Inhibitors for Treating Cancer”. PCT/US2017/051858, filed on Sept. 15th, 2017

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ACTIVE RESEARCH SUPPORT

Active External Research Support

MIRA-R35 GM131858 (PI: M. LUO) 06/01/19– 05/31/24 51%
NIH: NIGMS \$440K/yr direct cost
“Interrogating Protein Methyltransferases with Integrated Approaches”
This proposal is aimed at annotating and perturbing functions of protein methyltransferases with the combined chemical or biological approaches.

Active Internal Research Support

GMETC Individual Grant (PI: M. Luo) 08/01/18–02/31/21 10%
Metastasis and Tumor Ecosystems Center \$125K/yr direct cost
“CARM1 Inhibition Alters the Epigenetic Plasticity of Metastatic Breast Cancer Cells”
This proposal is aimed at annotating the effects and mechanisms of CARM1 perturbation with single-cell RNA-seq technology.

Research Project (PI: M. Luo) 12/01/18 – 05/31/21 8%
Functional Genomic Initiative (FGI) \$105K/yr direct cost
“Integrated Approaches Annotate Functions of Cancer-associated H3K36 Methyltransferases”
This proposal is aimed at analyzing functions of cancer associated H3K36 methyltransferases with the combined computational, biochemical and biological approaches.

Active Fellowship Support

None

PENDING SUPPORT

COMPLETED RESEARCH SUPPORT

Completed External Research Support

2009 V Scholar Award (PI: M. Luo) 12/01/09–11/30/11 N.A.
The V Foundation for Cancer Research \$100K/yr direct cost
This award is expected to be used to offset the direct cost of the project “Protein Arginine Methylation Profiling in Cancer” in Luo laboratory.

Assay Development for HTS – R21 (PI: M. Luo) 09/30/10 – 09/30/11 10%
NIH:NINDS \$100K direct cost
“Developing High Throughput Assay to Screen Protein Methyltransferase Inhibitors”
This proposal is aimed at developing HTS technology for identifying SET7/9 inhibitors. The \$100K is expected to cover the cost in the phase of assay development.

Basil O'Connor Starter Scholar Award (PI: M. Luo) 01/01/11 – 12/31/12 10%
March of Dimes Birth Defects Foundation \$75K direct cost
“Chemical Biology Approaches to Define Pathological Protein Methylation”

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This proposal is aimed at applying our BPPM technology (Bioorthogonal Profiling of Protein Methylation) to dissect the targets of human PRDM9 and PRDM14, two of a 17-member protein methyltransferase family PRDMs that have been implicated in malignant transformation, embryo development and cell differentiation.

Starr Cancer Consortium (SCC) 4th Grant (PI: M.Luo) Starr Cancer Consortium “Chemical Biology Approaches to Dissect Protein Methylation in Hematopoietic Cancer” This proposal is aimed at developing the technology to profile the targets of SET7/9 in the context of accurate hematopoietic cancer models.	08/01/10–07/31/13 \$100,000/yr direct cost	10%
NIH Directors New Innovator Award – DP2 (PI: M. Luo) NIH Roadmap “Enzyme-engineering Approaches to Dissect Protein Methylation Profiles” This proposal is aimed at developing the technology to profile protein methyltransferase targets <i>in vitro</i> and <i>in vivo</i> . Primary targets: G9a and EuHTMase1. Model: prostate cancer.	09/30/10–09/30/15 \$300K/yr direct cost	25%
Starr Cancer Consortium (SCC) 6th Grant (PI: M.Luo) Starr Cancer Consortium “Define Oncogenic Mechanisms of Protein Methyltransferases SETDB1 and SUV39H1 in Melanoma” This proposal is aimed at implementing BPPM technology to elucidate downstream roles of SETD1 and SUV39H1 in melanoma.	01/01/13–12/31/15 \$150,000/yr direct cost	15%
Starr Cancer Consortium (SCC) 7th Grant (co-PI: M.Luo) Starr Cancer Consortium “Elucidating the Function of Cancer-related Histone Modifiers by Integrative Analysis” This proposal is aimed at implementing BPPM technology in combination with bioinformatics analysis to elucidate downstream roles of >30 PMTs in the two models of AML and breast cancer.	01/01/14–12/31/15 \$198,000/yr direct cost	15%
Tri-I Therapeutics Discovery Grant (PI: M. Luo) Tri-Institutional Therapeutics Discovery Institute “Small Molecule Inhibitors of Protein Methyltransferase SET8 for Novel Anti-cancer Therapy” This proposal is aimed at developing SET8 inhibitors toward clinic application.	07/01/14–06/30/17 \$150,000/yr + cost for 2.5 chemists	10%
Starr Cancer Consortium I8-A8-058 (PI: M.Luo) Starr Cancer Consortium “Designing Sinefungin Scaffolds as Specific Protein Methyltransferase Inhibitors” This proposal is aimed at developing cofactor analogue inhibitors against protein methyltransferases.	01/01/15–06/31/17 \$180,000/2 yrs direct cost	10%
Tri-I Therapeutics Discovery Grant (PI: M. Luo) The Experimental Therapeutics Center Developing methyltransferase inhibitors as anti-cancer drugs This proposal is aimed at developing inhibitors of SET8.	02/01/18–12/31/18 \$150K/yr direct cost	10%
Ro1GM109760 (PI: M. Luo) NIH: NIGMS “New Synthetic Reactions to Reach Bioactive Proteins” This proposal is aimed at developing new chemical reactions to access proteins with diverse posttranslational modifications. I took the role of Prof. Danishefsky as the PI of this grant after he retired on 12/31/2016.	02/01/11 – 02/31/19 \$240K/yr direct cost	20%
Ro1 GM096056 (PI: M. Luo) NIH: NIGMS “Profile substrates and inhibitors of protein lysine methyltransferase”	02/01/11 – 06/31/19 \$267K/yr direct cost	20%

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This proposal is aimed at profiling the targets and identifying the inhibitors of PRMTs.

Ro1 GM120570 (PI: M. Luo) 08/01/16 – 12/31/20 10%
NIH: NIGMS \$224K/yr direct cost
“Interrogating Functions of Protein Methyltransferases with Chemical Tools”
This proposal is aimed at developing chemical tools to identify the substrate and inhibitors of SET8 in the context of breast cancers.

Alzheimer’s-focused Supplement for Ro1 (PI: M. Luo) 08/01/19 – 12/31/20 10%
NIH: NIGMS \$150K/yr direct cost
“Exploring Mechanisms of γ -secretase Activation by Protein Methyltransferases”
The objective of this supplement is to leverage the complementary skills of the Li laboratory to explore the potential mechanism of Alzheimer’s disease via the crosstalk between PMTs and γ -secretase.

Completed Fellowship Support

T32 GM073546 (PI: Steve Gross) 8/1/12 – 7/31/13
NIH/GM awarded through WCMC
Pharmacology Training Grant
Traineeship support for Jamie McBean

T32 GM073546 (PI: Steve Gross) 8/1/13 – 7/31/15
NIH/GM awarded through WCMC
Pharmacology Training Grant
Traineeship support for Ryan Blawski

T32 GM073546 (PI: Steve Gross) 8/1/13 – 7/31/15
NIH/GM awarded through WCMC
Pharmacology Training Grant
Traineeship support for Cynthia Quintero

T32 CA062948 (PI: Lorraine Gudas) 08/01/16 – 07/31/18
NIH/NCI awarded through WCMC
Cancer Pharmacology Training Grant
Traineeship support for Cynthia Quintero (Graduate student)

T32 CA062948 (PI: Lorraine Gudas) 06/01/17 – 5/31/18
NIH/NCI awarded through WCMC
Cancer Pharmacology Training Grant
Traineeship support for Chamara Senevirathne (Postdoctoral Fellow)

T32 CA062948 (PI: Lorraine Gudas) 07/01/18 – 11/30/18
NIH/NCI awarded through WCMC
Cancer Pharmacology Training Grant
Traineeship support for Elizabeth Isaac (Graduate student)

Completed Internal Research Support

2010 Alfred W. Bressler Scholar (PI: M. Luo) 08/01/10–07/31/13 N.A.
Alfred W. Bressler Scholars Endowment Fund \$100K/yr direct cost
“Dissect the molecular targets of protein lysine methyltransferases SUV39H1/2”
This award is expected to replace the startup package to support the projects in the Luo laboratory.

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<p>3rd Rapid Response Pilot Grant (PI: M. Luo) Functional Genomic Initiative (FGI) “Characterization of SETD2’s catalytic domain mutations implicated in kidney renal clear cell carcinoma” This proposal is aimed at examined gain-of-function mutations of SETD2</p>	<p>09/01/15–12/31/15 \$25K direct cost</p>	<p>3%</p>
<p>5th Rapid Response Pilot Grant (PI: M. Luo) Functional Genomic Initiative (FGI) “Characterization of Potential Oncogenic SET8 Mutants Implicated in Cancer” This proposal is aimed at examining gain-of-function mutations of SETD8.</p>	<p>06/01/16–12/31/16 \$25K direct cost</p>	<p>3%</p>
<p>7th Rapid Response Pilot Grant (PI: M. Luo) Functional Genomic Initiative (FGI) “Characterization of Cancer-associated CARM1 Variants” This proposal is aimed at examining gain-of-function mutations of CARM1.</p>	<p>06/01/17–09/30/17 \$25K direct cost</p>	<p>3%</p>
<p>Drug Discovery and Development Initiative (PI: M. Luo) The Experimental Therapeutics Center Developing methyltransferase inhibitors as anti-cancer drugs This proposal is aimed at developing inhibitors of cancer-relevant protein methyltransferases.</p>	<p>07/01/09–12/31/15 \$180K/yr direct cost</p>	<p>15%</p>
<p>Big Bets against Cancer (PI: S. Armstrong) The Experimental Therapeutics Center “Curative therapy for leukemia through blockade of aberrant transcription and translation” This proposal is aimed at developing PMT inhibitors against leukemia.</p>	<p>01/01/16–12/31/17 \$165K/yr direct cost</p>	<p>10%</p>
<p>8th Rapid Response Pilot Grant (PI: M. Luo) Functional Genomic Initiative (FGI) “Characterization of SET-i Domain Specific Gain-of-function Variants of NSD family of PKMTs” This proposal is aimed at examining gain-of-function mutations of NSD1/2/3.</p>	<p>12/01/17–05/31/18 \$25K direct cost</p>	<p>3%</p>
<p>Shared Resources Funding (PI: M. Luo) Geoffrey Beene Cancer Research Center This proposal is aimed at purchasing an ITC as a shared instrument.</p>	<p>09/01/17–08/31/18 \$250K/yr direct cost</p>	<p>0%</p>
<p>Geoffrey Beene Cancer Research Grant (PI: M. Luo) Geoffrey Beene Cancer Research Center “Define molecular network of DOT1L-driven leukemia via noncanonical methylation” This proposal is aimed at delineating how DOT1L renders transcription activation and thus leukemogenesis by targeting noncanonical histone sites under <i>MLLr</i> settings.</p>	<p>08/01/16 – 07/31/18 \$200K/yr direct cost</p>	<p>15%</p>
<p>Drug Discovery Individual PI Project (PI: M. Luo) The Experimental Therapeutics Center Developing Protein Methyltransferase Inhibitors as Anti-cancer Reagents This proposal is aimed at developing diverse methyltransferase inhibitors as potential anti-cancer reagents.</p>	<p>07/01/09–12/31/15 \$200K/yr direct cost</p>	<p>15%</p>
<p>10th Rapid Response Pilot Grant (PI: M. Luo) Functional Genomic Initiative (FGI) “Quantitative Modeling of Vulnerability of MTAP-deleted Cancer Cells upon PRMT5 Inhibition” This proposal is aimed at developing mathematic models to predict cellular sensitivity of PRMT5 inhibition in MTAP^{-/-} cells.</p>	<p>12/01/18–05/31/19 \$25K direct cost</p>	<p>0%</p>

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Drug Discovery Individual PI Project (PI: M. Luo) 01/01/20–12/31/21 15%
Experimental Therapeutics Center \$212K/yr direct cost
Developing Mechanism-based Protein Arginine Methyltransferase Inhibitors as Anti-cancer Reagents
This proposal is aimed at developing inhibitors against CARM1 and PRMT5 via distinct modes of interaction.

Rapid Response Pilot Grant (PI: M. Luo) 12/01/19–05/31/20 0%
Functional Genomic Initiative (FGI) \$25K direct cost
“Characterization of Methylarginine-antagonistic Cancer Mutations of FOXO1”
This proposal is aimed at assaying cancer-associated FOXO1 variants with the potential loss/gain-of-functions.

LAB PERSONNEL

Current Lab Members

Graduate students

Nicole Weiss (2016-), 4th-year graduate student (BCMB)

Postdoctoral Fellows/Research Associate

Nawei Zhang (2013-), 5th-year Postdoctoral Research Fellow/Senior Scientist

Yu Zong (2019-), 2nd-year Postdoctoral Research Fellow

Ryan Blawski (2020-), 1st-year Postdoctoral Research Fellow

Deyao Li (2020-), 1st-year Postdoctoral Research Fellow

Visiting Scholar/Professors/Senior Scientists

Ke Wang (2015-), Visiting Scholar/Senior Scientist

Zhizhong Li (2019-), Senior Research Assistant

Technicians

Junyi Wang (2014-), Lab technician, Current: to be rehired after obtaining working authorization.

Previous Lab Members

M.S. Students

Michael J. Stokes (2011-2011), MS, Pharmacology Program, Current, N.A. as 2016

Elizabeth Isaac (2017-2018), MS, Pharmacology Program, lab transfer as 2018

Ph.D. Students with current positions

Rui Wang (2009-2013), PhD, Pharmacology Program. Current: PI at AbbVie (Chicago)

Jamie McBean (2009-2014), PhD, Pharmacology Program. Current: Medical Writer, BGB (New York)

Joshua Linscott (2010-2014), PhD, Pharmacology Program. Current: M.D. candidate at Tufts University

Gil Blum (2009-2014), PhD, TPCB Program. Current: Scientific Advisor at Cadwalader

Ian Bothwell (2010-2015), PhD, TPCB Program. Current: Postdoctoral Fellow with Dr. Wilfred A. van der Donk at UIUC

Han Guo (2010-2015), PhD, TPCB Program. Current: Business Development Manager, Betta Pharmaceuticals, China

Cynthia Quintero (2013-2018), Pharmacology Progress. Current: TBD

Michael Langberg (2014-2019), GSK. Current: a short-term postdoctoral fellow in the Luo laboratory.

Shi Chen (2014-2019), PhD, TPCB Program. Current: Postdoctoral Fellow with Dr. Squire Booker at Penn State

Ming Jiang (2014-2019), PhD, Pharmacology Program. Current: Research Investigator at BeiGene, Beijing, China

Ryan Blawski (2013-2019), PhD, Pharmacology Program. Current: Postdoctoral Fellow in the Luo laboratory.

Postdoctoral Fellows with current positions (updated on 02/18)

Wei Xiong (2010-2012), Pharmacy Intern at Ochsner Hospital in New Orleans

Kabirul Islam (2009-2013), Assistant Professor at University of Pittsburgh

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Jianxian Gong (2012-2013), Associate Investigator at Peking University
Weihong Zheng (2009-2013), Director at Viva Biotech (Shanghai) Limited
Fanny Cherblanc (2014-2015), Project Manager at Institut Pasteur
Gil Blum (2014 fall), a previous graduate student in the Luo laboratory, Scientific Advisor at Cadwalader
Feng Wang (2016 summer), Research Associate at Albert Einstein College of Medicine
Kanishk Kapilashrami (2014-2016), Sr. Research Investigator, Incyte Corporation
Liudmila Dzhekieva (2012-2017), Sr. Scientist, Merck Research Laboratory, West Point, PA
Chamara Senevirathne (2013-2018), Assistant Professor at St. John's University
Xiaochuan Cai (2013-2019), Medicinal Chemist II at Dicerna Pharmaceuticals, Cambridge, MA

Visiting Professor with current positions

Li Yang (2013-2015), Current: Associate Professor at Sicuan University as 2016
Lihui Wang (2015-2017), Current: Professor at Shenyang Pharmaceutical University as 2018
Fabio Pittella (2014-2018), Current: Senior Scientist at Cancer Precision Medicine Center of the Japanese Foundation for Cancer Research

Technicians with current positions

Glorymar Ibáñez (2008-2013), Senior laboratory technician, Current: senior laboratory technician at Columbia University.

Visiting Student with current positions

Yongxia Zhu (2016-2018), visiting student (Sichuan University), Current: A postdoctoral fellow in Department of Gynecology and Obstetrics, Henan Provincial People's Hospital.

INVITED SEMINARS

Gordon Research Conference on Graduate Research Seminar: Bioinorganic Chemistry, Ventura, CA, Feb. 2003
Center for Environmental BioInorganic Chemistry Summer Conference, Princeton, NJ, Jun. 2003
Center for Environmental BioInorganic Chemistry Summer Conference, Princeton, NJ, Jun. 2005
Chemical Biology Discussion Group: Special Year End Meeting of the New York Academy of Science, New York, NY, Jun. 2007
22nd Enzyme Mechanisms Conference, St. Pete Beach, FL, Jan. 2011
Ronald Breslow Award for Achievement in Biomimetic Chemistry: Symposium in honor of Kevan Shokat, 241st ACS National Meeting, Anaheim, CA, March 2011
GlaxoSmithKline, PA, Sept. 2011
2011 Starr Cancer Consortium Retreat, Sept. 2011
Department of Chemistry, CUNY Hunter College, NY, Dec. 2011
ACS Chemical Biology Award Symposium in honor of Carolyn Bertozzi, 243rd ACS National Meeting, San Diego, March 2012
The Scripps Research Institute at Florida, Jupiter, FL, April 3rd, 2012
Transcription and Cancer Meeting, Banbury Center, Cold Spring Harbor Laboratory, April 11, 2012
Polytechnic Institute of New York University, NY, April 13th, 2012
Biology Frontier lecture, Tsinghua University, Beijing, China, April, 17th, 2012
Experimental Therapeutics Center Retreat, Memorial Sloan-Kettering Cancer Center, NY, May 23rd, 2012
Chemical Biology Seminar Series, Department of Chemistry, Princeton University, Princeton, NJ, May 24th, 2012
2012 Bioorganic Chemistry Gordon Research Conference, Andover, NH, Jun 10th, 2012
Novartis Institutes for BioMedical, Cambridge, MA, July 20th, 2012
2011 Starr Cancer Consortium Retreat, Cold Spring Harbor, NY, Sept. 24th, 2012
Department of Chemistry, MIT, Cambridge, MA, Oct. 1st, 2012
10th Drug Discovery on Target: Targeting Histone Methyltransferases and Demethylases, Cambridge, MA, Oct. 3rd, 2012
Dept. of Structural & Chem. Biol., Mount Sinai School of Medicine, New York, NY, Oct. 9th, 2012
Department of Chemistry, UIUC, Urbana, IL, Nov. 19th, 2012
Abbott, Chicago, IL, Nov. 20th, 2012
Department of Medicinal Chemistry, Kansas University, Jan, 23rd, 2013
Department of Chemistry, California Institute of Technology, Feb. 27th, 2013
Department of Chemistry, Yale University, Mar. 1st, 2013
Department of Chemistry, Stony Brook University, Mar. 7th, 2013

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Department of Pharmacology, Johns Hopkins University, April 10th, 2013
Department of Chemistry, Chicago University, April 12th, 2013
Department of Chemistry and Biochemistry, Boise State University, April 24th, 2013
Broad Institute, May 2nd, 2013
The Scripps Research Institute, May 7th, 2013
GRC: Enzymes, Coenzymes & Metabolic Pathways, July 14, 2013
246th ACS Meeting, "Recent Advances in Modulating the Epigenome" symposium, Sept. 8th, 2013
Department of Biochemistry and Molecular Biology, Indiana University School of Medicine, Sept. 9th, 2013
3rd Annual Center for Cancer Systems Biology (CCSB) Symposium, Memorial Sloan-Kettering Cancer Center, Oct. 28, 2013
Department of Pathology/Department of Chemistry, University of Michigan, Nov. 15th, 2013
Chemical Biology Discussion Group Symposium: Bioorthogonal Chemistry in Biology and Medicine, New York Academy of Sciences, Dec. 11, 2013
Novartis Institutes for BioMedical, Cambridge, MA, Dec. 19th, 2013
Epizyme Inc, Cambridge MA, Jan. 30th
37th Steenbock Symposium: The Future of Chemical Biology, University of Wisconsin, Madison, WI, Jun. 5-7th
FASEB SRC, Biological Methylation Conference, Nassua Bahamas, Jul. 6-11th
Drug Discovery on Target: Targeting Histone Methyltransferases and Demethylases, Cambridge, MA, Oct. 9th, 2014
Biology Frontier lecture, Tsinghua University, Beijing, China, Oct. 28th, 2014
Xiangshan Science Conference: Modifications and Chemical Perturbation of Biological Macromolecules (香山会议): 生物大分子修饰及其功能的化学干预, Beijing, China, Oct. 30th, 2014
24nd Enzyme Mechanisms Conference, Galveston, TX, Jan. 2015.
Biochemistry, Utah State University, Utah, Feb. 11th, 2015
Penn Epigenetics Program, University of Pennsylvania, Philadelphia, PA, Feb. 12th, 2015.
2015 Cornell University Chemical Biology Interface (CBI) Symposium, Ithaca, NY, Mar. 7th, 2015
ACS Symposium "New Approaches to Investigating Chromatin Modifying Enzymes: Structure and Function", 249th ACS National Meeting, Denver, CO, Mar. 23rd, 2015.
Department of Chemistry, University at Buffalo, Keynote Speaker at the 33rd annual Graduate Student Symposium, May 10~20, 2015
Shanghai Institute of Materia Medica, Shanghai, June 18th, 2015
Novartis Institute of BioMedical Research (CNIBR), Shanghai, June 19th, 2015
Department of Pharmacology, College of Pharmaceutical Sciences, Soochow University, Soochow, Jiangsu, June 22nd, 2015
ACS Symposium Eli Lilly Award in Biological Chemistry, 250th ACS National Meeting, Boston, MA, Aug. 17th, 2015.
Department of Chemistry, Wayne State University, Detroit, MI, Biochemistry Seminar series, Oct. 23, 2015
Frontiers in Chromatin Biology and Chemical Epigenetics/Epigenomics Symposium at Pacificchem, Honolulu, Hawaii, Dec. 15~ 20, 2015.
Takeda Pharmaceutical Company, Yokohama, Kanagawa, Japan, 02/08/16
International Symposium for RIKEN Epigenetics program, RIKEN, Wakō, Saitama, Japan, 02/16/16
Department of Structural and Chemical Biology, Icahn School of Medicine at Mount Sinai, New York, NY, 04/07/16
EpiCypher 2016: Biological and Clinical Frontiers in Epigenetics, Puerto Rico, April 20-23, 2016
2016 Starr Cancer Consortium Retreat, Cold Spring Harbor, NY, May 3rd, 2016
American Chemical Society 44th Middle Atlantic Regional Meeting (MARM 2016), Riverdale, New York, June 11th, 2016.
5th Annual Targeting Histone Methyltransferases and Demethylases Meeting, Cambridge, MA, Sept. 20th, 2016.
Department of Biochemistry and Molecular Genetics, University of Alabama at Birmingham, AL, Oct. 17th, 2016.
2016 ACS Midwest Regional Meeting, Manhattan, KS, Oct. 27th, 2016
Department of Physiology and Pharmacology, Oregon Health & Science University, OR, Mar. 9th, 2017
ACS Symposium "New Targeting Epigenetic Writers and Erasers", 253rd ACS National Meeting, San Francisco, CA, April 5th, 2017.
Department of Chemistry, Georgia State University, City of Atlanta, GA, April 7th, 2016.
Department of Pharmaceutical and Biomedical Sciences, University of Georgia, Athens, GA, April 12th, 2017.
2017 Starr Cancer Consortium Retreat, Cold Spring Harbor, NY, May 2nd, 2016
Department of Chemistry & Biochemistry Department, Queens College – CUNY, Flushing, NY, April 24th, 2017.
Department of Chemistry, Nanjing University, Nanjing, Jiangsu, China, June 22nd, 2017

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A.I. Scott Medal Symposium in honor of Vern Schramm, Texas A&M University, College Station, TA, Oct. 13th, 2017.

Department of Chemistry, New York University, New York, NY, Oct. 24th, 2017

1st Annual Chromatin and Epigenetics Symposium, University of North Carolina at Chapel Hill, Chapel Hill, NC, Dec. 7th, 2017.

Chemical Biology Laboratory, National Cancer Institute, MD, Feb. 15th, 2018

Department of Chemistry, University of Southern California, CA, Mar. 8th, 2018

FASEB Science Research Conferences: Biological Methylation, Florence, Italy, Jun. 18th, 2018

Shenyang Pharmaceutical University, Shenyang, China, Jun. 28th-29th, 2018

The School of Life Sciences, Tsinghua University, Beijing, China, July, 3rd, 2018

Department of Chemistry, Temple University, Philadelphia, PA, April 25th, 2019

Shanghai Institute for Advanced Immunochemical Studies, ShanghaiTech Univ, Shanghai, China, June 21st, 2019

Biology Division, Westlake University, Hangzhou, Zhejiang, China, June 24th, 2019

Life Sciences Institute, Zhejiang University, Hangzhou, Zhejiang, China, June 25th, 2019

Cancer Epigenetics Symposium co-sponsored by the SU2C and the MSKCC Center for Epigenetics Research, MSKCC, New York, Aug. 14th, 2019

GRC: Enzymes, Coenzymes & Metabolic Pathways, Jul. 18th-23rd, 2021

Frontiers in Chromatin Biology and Chemical Epigenetics/Epigenomics Symposium at 2020 Pacifichem, Honolulu, Hawaii, Dec. 16~21, 2021.

EDITORIAL/ORGANIZATION BOARDS

2013-present, Review Editorial Board of Frontiers in Chemical Biology

2015-present, Editorial Board of Cell Chemical Biology

2020-present, Scientific Advisory Board of the Chemical Probes Portal

SERVICE

National & International

2021	Organizer of Frontiers in Chromatin Biology and Chemical Epigenetics/Epigenomics Symposium at Pacifichem, Honolulu, Hawaii, Dec. 16~21, 2021.
2020	Reviewer panel for California's Tobacco-Related Disease Research Program
2020	Mail reviewer for the Chemistry of Life Processes Program at NSF
2019, 2020	Mail reviewer for the Vermont Genetics Network
2019, 2020	NIH Special panels for pre- and post-doctoral fellowships
2019	NIH Special mail review panel of DP2
2018	Ad hoc reviewer: Emerson Collective
2018	NCI Omnibus R21/RO3 Study Section (Clinical and Translational Studies)
2018	CAREER Award review panel for the Chemistry of Life Processes Program at NSF
2018	NIH ad hoc reviewer: Synthetic and Biological Chemistry A (SBCA)
2017-present	Mail reviewer for U.S.-Israel Binational Science Foundation
2017, 2019	Reviewer of Doris Duke Charitable Foundation
2017	Enzymes II Chemistry Panel, Division of Chemistry, National Science Foundation
2016	Ad hoc consultant of Takeda
2015	NIH ad hoc reviewer: NIH SBIR/STTR
2014-2016	NCI R21/RO3 Study Section, Drug Development Special Panel
2014	Ad hoc consultant of Epizyme
2013	HHMI Int'l Predoc Reviewer Panel
2012-2013	Ad hoc consultant at Novartis
2012	Ad hoc consultant of Abbott
2011	Ad hoc consultant of GlaxoSmithKline

MINKUI LUO, PH.D.

MSKCC/WCMC

2013-present Course Director of Pharmacology I: Chemical Biology, WCMC
2013-present Graduate Student Admission Committee: TPCB
2014-present Chairman of Curriculum Committee of Pharmacology Program, WCMC
2020-present Committee on Appointments and Promotions of SKI
2013-2014 Chairman of Pharmacology Retreat Committee, WCMC

TEACHING

2008-present Gerstner Sloan Kettering Graduate Core Course (1~2 lectures/yr)
2008-present Pharmacology I: Chemical Biology, Weill Medical College, Cornell University (1~3 lecture(s)/yr)
2008-present Molecular Pharmacology of Cancer (1 lecture/yr)
2010-2011 MD-PhD Frontier Course, Tri-institutional MD-PhD program (1 lecture/yr)
2013-2014 TPCB: Chemical Biology (2 lectures/yr)