

**Kotaro Nakanishi**

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**Employment**

2019 – Associate Professor, The Ohio State University, Dept. of Chemistry and Biochemistry  
 2013 – 2019 Assistant Professor, The Ohio State University, Dept. of Chemistry and Biochemistry  
 2013 Senior Research Scientist, Memorial Sloan-Kettering Cancer Center, New York. Mentor: Dinshaw J. Patel  
 2011 – 2013 Research Associate, Memorial Sloan-Kettering Cancer Center, New York. Mentor: Dinshaw J. Patel  
 2008 – 2011 Research Fellow, Memorial Sloan-Kettering Cancer Center, New York. Mentor: Dinshaw J. Patel  
 2007 – 2008 Postdoctoral Fellow, Tokyo Institute of Technology, Tokyo, Japan. Mentor: Osamu Nureki

**Education**

1996 – 2000 BS, Biochemistry, Tokyo University of Science, Japan, Mentor: Hayao Taguchi  
 2001 – 2003 MS, Biochemistry, The University of Tokyo, Japan, Mentor: Haruhiko Masaki  
 2004 – 2007 D.Sc., Biological Information, Tokyo Institute of Technology, Japan, Mentor: Osamu Nureki

**Fellowships and Awards**

2024 A finalist of Ohio State Innovator of the Year  
 2013 – 2017 PRESTO (Japan Science and Technology Agency)  
 2013 The Young Scientists' Prize of the Commendation for Science and Technology by the Japanese Minister of Education, Culture, Sports, Science and Technology  
 2012 RNA Society/Scaringe Award  
 2011 New York Structural Biology Discussion Group Outstanding Poster Prize  
 2009 – 2011 Human Frontier Science Program Long-term Fellow  
 2008 – 2009 Japan Society of the Promotion of Science, Postdoctoral Fellowship for Research Abroad  
 2006 – 2008 Japan Society of the Promotion of Science, Research Fellowship for Young Scientist

**RESEARCH****Research Statements**

My research interest lies in understanding how small non-coding RNAs and their binding proteins, Argonaute, work together to control eukaryotic gene expression. I am particularly interested in **i)** the unique functions of each of the four human Argonaute proteins, and **ii)** the physiological roles of tinyRNAs, which are shorter than regular miRNAs. To achieve these aims, my group utilizes a combinatorial approach involving molecular biology, biochemistry, biophysics, cell biology, and structural biology. We have determined the crystal structure of Argonaute3 in complex with guide RNA and discovered that Argonaute3 exhibits RNA-slicing activity when loaded with specific microRNAs. Subsequently, our study identified the tinyRNA biogenesis pathway, where several 3'→5' exonucleases, such as ISG20, TREX1, and ERI1, trim Argonaute-associated microRNAs down to 14 nucleotides or shorter. Some of these resulting tinyRNAs confer Argonaute3 with competitive slicing capabilities compared to Argonaute2, and thus, we have termed them "cleavage-inducing tinyRNAs (cityRNAs)." Furthermore, our high-resolution crystal structure analysis of Argonaute4 in complex with guide RNA has revealed that Argonaute proteins incorporate numerous water molecules at specific positions inside the protein, which function as glue to connect the domains. Additionally, we have discovered that Argonaute proteins require their bilobed structure to verify base complementarity between the guide and target strands, thereby preventing target cleavage in the presence of a mismatch. I am also interested in the development of cityRNAs for therapeutic purposes.

## Publications

30. Nakanishi K. (2024) When Argonaute takes out the RNase sword. **J. Biol. Chem.** 300 105499.
29. Sim GY, Kehling AC, Park MS, Divoky C, Zhang H, Malhotra N, Secor J, Nakanishi K. (2023) Determining the defining lengths between mature microRNAs/small interfering RNAs and tinyRNAs. **Sci. Rep.**, 19761.
28. Shen Z, Yang XY, Xia S, Huang W, Taylor DJ, Nakanishi K., Fu TM (2023) Oligomerization-mediated activation of a short prokaryotic Argonaute. **Nature** Published as “Accelerated Article Preview.”
27. Huberdeau MQ, Shah VN, Nahar S, Neumeier J, Houle F, Bruckmann A, Gypas F, Nakanishi K., Großhans H, Meister G, Simard MJ. (2022) A specific Argonaute phosphorylation regulates the binding to microRNAs during *C. elegans* development. **Cell Rep.**, 41, 111822.
26. Sim GY, Kehling AC, Park MS, Secor J, Divoky C, Zhang H, Malhotra N, Bhagdikar D, Abd El-Wahab EW, Nakanishi K. (2022) Manganese-dependent microRNA trimming by 3'→5' exonucleases generates 14-nucleotide or shorter tiny RNAs. **Proc. Natl. Acad. Sci. USA**, 119, e2214335119.
25. Nakanishi K. (2022) Anatomy of four human Argonaute proteins. **Nucleic Acids Res.**, 50, 6618-6638.
24. Nakanishi K. (2021) Are Argonaute-associated tiny RNAs junk, inferior miRNAs, or a new type of functional RNAs? **Front. Mol. Biosci.**, Dec 3;8:795356.
23. Li YC, Chao TC, Kim HJ, Cholko T, Chen SF, Li G, Snyder L, Nakanishi K., Chang C, Murakami K, Garcia BA, Boyer TG, Tsai KL (2021) Structure and noncanonical Cdk8 activation mechanism within an Argonaute-containing Mediator kinase module. **Science Advances**, 7: eabd4484.
22. Park MS, Sim GY, Kehling AC, Nakanishi K. (2020) Human Argonaute2 and Argonaute3 are catalytically activated by different lengths of guide RNA. **Proc. Natl. Acad. Sci. USA**, 117, 28576-28578.
21. Park MS, Araya-Secchi R, Brackbill JA, Phan HD, Kehling AC, Abd El-Wahab EW, Dayeh DM, Sotomayor M., Nakanishi K. (2019) Multidomain Convergence of Argonaute During RISC Assembly Correlates with the Formation of Internal Water Clusters. **Molecular Cell**, 75, 725-740.
20. Dayeh DM., Cantara WA., Kitzrow J., Musier-Forsyth K., Nakanishi K. (2018) Argonaute-based programmable RNase as a tool for cleavage of highly-structured RNA. **Nucleic Acids Res.**, gky496, <https://doi.org/10.1093/nar/gky496>.
19. Dayeh DM., Kruithoff BC., Nakanishi K. (2018) Structural and functional analyses reveal the contributions of the C- and N-lobes of Argonaute protein to selectivity of RNA target cleavage. **J. Biol. Chem.**, 203, 6308-6325.
18. Gangras P., Dayeh D.M., Mabin J., Nakanishi K., Singh G. (2017) Cloning and identification of recombinant Argonaute-bound small RNAs using next-generation sequencing. **Methods Mol. Biol.**, 1680, 1-28.
17. Phan HD., Li J., Poi M., Nakanishi K. (2017) Quantification of miRNAs co-immunoprecipitated with Argonaute proteins using SYBR Green-based qRT-PCR. **Methods Mol. Biol.**, 1680, 29-40.
16. Park MS., Phan HD., Busch F., Hinckley SH., Brackbill JA., Wysocki VH., Nakanishi K. (2017) Human Argonaute3 has slicer activity. **Nucleic Acids Res.**, 45, 11867-11877.
15. Danhart EM., Bakhtina M., Cantara WA., Kuzmishin AB., Ma X., Sanford BL, Košutić M., Goto Y., Suga H., Nakanishi K., Micura R, Foster MP, Musier-Forsyth K. (2017) Conformational and chemical selection by a trans-acting editing domain. **Proc. Natl. Acad. Sci. USA.**, 114, E6774-E6783.
14. Jannot G., Michaud P., Quévillon Huberdeau M., Morel-Berryman L., Brackbill J.A., Piquet S., McJunkin K., Nakanishi K., Simard MJ. (2016) GW182-Free microRNA Silencing Complex Controls Post-transcriptional Gene Expression during *Caenorhabditis elegans* Embryogenesis. **PLoS Genet.**, E1006484.
13. Sun HL., Cui R., Zhou J., Teng KY., Hsiao YH., Nakanishi K., Fassan M., Luo Z., Shi G., Tili E., Kutay H., Lovat F., Vicentini C., Huang HL., Wang SW., Kim T., Zanesi N., Jeon Y.J., Lee T.J., Guh J.H., Hung M.C.,

12. Ghoshal K., Teng CM., Peng Y. & Croce CM. (2016) ERK Activation Globally Downregulates miRNAs through Phosphorylating Exportin-5. **Cancer Cell**, 14, 723-736.
11. Nakanishi K. Anatomy of RISC: How do small RNA and chaperones activate Argonaute proteins? (2016) **Wiley Interdiscip. Rev. RNA.**, 7, 637-60.
10. Swarts DC., Makarova K., Wang Y., Nakanishi K., Ketting RF., Koonin EV., Patel DJ., van der Oost J. (2014) The evolutionary journey of Argonaute proteins from a structure-function perspective. **Nat. Struct. Mol. Biol.**, 21, 743-53.
9. Nakanishi K., Ascano M., Gogakos T., Ishibe-Murakami S., Serganov AA., Briskin D., Morozov P., Tuschl T., Patel DJ. (2013) Eukaryote-Specific Insertion Elements Control Human ARGONAUTE Slicer Activity. **Cell Rep.** 3, 1893-1900.
8. Shen J., Xia W., Khotskaya YB., Huo L., Nakanishi K., Lim SO., Du Y., Wang Y., Chang WC., Chen CH., Hsu JL., Lam YC., James BP., Liu CG., Liu X., Patel DJ., Hung MC. (2013) EGFR Modulates miRNA Maturation in Response to Hypoxia through Phosphorylation of Ago2. **Nature** 497, 383-387.
7. Nakanishi K., Weinberg DE., Bartel DP., Patel DJ. (2012) Structure of yeast Argonaute with guide RNA. **Nature** 486, 368-374.
6. Weinberg DE., Nakanishi K., Patel D.J., Bartel DP. (2011) The inside-out mechanism of Dicers from budding yeasts. **Cell** 146, 262-276.
5. Nakanishi K., Bonnefond L., Kimura S., Suzuki T., Ishitani R., Nureki O. (2009) Structural basis for translational fidelity ensured by transfer RNA lysidine synthetase. **Nature** 461, 1144-1148.
4. Nakanishi K., Ogiso Y., Nakama T., Fukai S., Nureki O. (2005) Structural basis for anticodon recognition by methionyl-tRNA synthetase. **Nat. Struct. Mol. Biol.** 12, 931-932.
3. Nakanishi K., Fukai S., Ikeuchi Y., Soma A., Sekine Y., Suzuki T., Nureki O. (2005) Structural basis for lysidine formation by ATP pyrophosphatase accompanied by a lysine-specific loop and a tRNA-recognition domain. **Proc. Natl. Acad. Sci. U.S.A.** 24, 7487-7492.
2. Nakanishi K., Nureki O. (2005) Recent progress of structural biology of tRNA processing and modification. **Mol. Cells.** 19, 157-166.
1. Yajima S., Nakanishi K., Takahashi K., Ogawa T., Hidaka M., Kezuka Y., Nonaka T., Ohsawa K., Masaki H. (2004) Relation between tRNase activity and the structure of Colicin D according to X-ray crystallography. **Biochem. Biophys. Res. Commun.** 24, 966-973.

### Edited Books

Okamura K., Nakanishi K. Argonaute Proteins: Methods and Protocols (2018). Springer.

### Seminars and Talks

*tinyRNAs and cityRNAs unveil Argonaute's new functions.* Laboratory for Biochemistry and Molecular Biology (NIH). Bethesda. April 25, 2024

*Gene Silencing by cityRNAs.* National Cancer Institute RNA Biology Laboratory Seminar (NIH). Frederick. November 13, 2023

*Gene Silencing by cityRNAs.* Case Western Reserve University. Cleveland. October 11, 2023.

*Gene Silencing by cityRNAs.* Structure, Function and Dynamics International Conference. Waikiki. September 29, 2023.

*Gene Silencing by cityRNAs.* University of Florida. Gainesville. September 18, 2023.

*Gene Silencing by cityRNAs.* Biochemistry Seminar. Ohio State University. Columbus. August 24, 2023.

*Tiny RNAs beneath the layer of microRNAs.* CMBP/CRB Meeting. Columbus. May 9, 2023.

- Tiny RNAs beneath the layer of microRNAs.* Barbados Silencing Meeting. Barbados. April 1, 2023.
- Tiny RNAs beneath the layer of microRNAs.* microRNA Symposium. University of Illinois Chicago, USA. October 7, 2022.
- Global microRNA trimming generates their tiny RNAs.* Argonaute Meeting. University of Regensburg, Germany. August 24-27, 2022.
- Biogenesis of tiny RNAs.* The RNA Society Meeting. University of Colorado. June 4, 2022.
- Biogenesis of tiny RNAs.* Interdisciplinary Graduate Programs. Columbus. May 24, 2022.
- Biogenesis of tiny RNAs.* Regulatory & Non-coding RNAs. The Cold Spring Harbor Lab. May 18, 2022.
- MicroRNAs are now even more micro.* University of California Riverside. November 30, 2021.
- Studies and applications of Argonaute protein.* Cincinnati Children's Hospital Medical Center, Cincinnati, USA. November 6, 2019.
- Studies and applications of Argonaute protein.* The University of Tokyo, Japan. July 16, 2019.
- Structure and Mechanism of Human Argonaute Paralogs.* The RNA Society of Japan. Tokyo, Japan. July 17, 2019.
- Anatomy of RNAi effector complex and the application to a programmable RNA restriction enzyme.* Department of Biological Chemistry Seminar Series, Johns Hopkins University, Baltimore, USA. October 29, 2018.
- Anatomy of RNAi effector complex and the application to a programmable RNA restriction enzyme.* Seminars in Biochemistry, Indiana University School of Medicine. Indianapolis, USA. October 22, 2018.
- Anatomy of RNAi effector complex and the application to a programmable RNA restriction enzyme.* Graduate Program Seminar Series, Uniformed Services University of the Health Sciences. Bethesda, USA. September 27, 2018.
- Anatomy of RNAi effector complex and the application to a programmable RNA restriction enzyme.* Biochemistry and Molecular Biology Seminar Series, Wright State University. Dayton, USA. September 13, 2018.
- When does human Argonaute3 cleave RNAs? -Structural and functional studies of human Argonaute3.* RNA Society Meeting. Prague Czech. June 2, 2017.
- Structural and Functional Studies of the Largest and Smallest Argonaute proteins.* Institute of Molecular and Cellular Biosciences Seminar Series, The University of Tokyo. Tokyo, Japan. 2017.
- Structural and functional studies of Argonaute proteins.* Open seminar of PRESTO. Tokyo, Japan. January 20, 2017.
- Anatomy of RISC, Department of Biological Sciences Seminar Series.* The University of Tokyo. Tokyo Japan. May 20, 2016.
- Structural and Functional Insights into Mechanisms of Argonaute Proteins.* Cincinnati Children Hospital. Ohio, USA. May 13, 2016.
- Structural and Functional Insights into Mechanisms of Argonaute Proteins.* Small RNA Silencing, Keystone Symposia. Colorado, USA. January 26, 2016.
- Crystal structure of the eukaryotic RNA-induced silencing complex.* National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan. June 15, 2012.
- Crystal structure of the eukaryotic RNA-induced silencing complex.* The 22<sup>nd</sup> international CDB Meeting, RNA Sciences in Cell and Developmental Biology II, Kobe, Japan. June 13, 2012
- Structural basis for cleavage mechanism of budding yeast Dicer.* Department of Basic Medical Sciences, Institute of Medical Science, The University of Tokyo, Tokyo, Japan. June 8, 2012.
- Crystal structure of the eukaryotic RNA-induced silencing complex.* RNA Society Meeting 2012, Michigan, USA. May 13, 2012.

*Structural basis for translational fidelity ensured by transfer RNA lysidine synthetase.* RNA conference 2010, Seattle, USA. June 24, 2010

*Physiological meanings of sequence specific and non-specific RNA binding proteins.* Graduate School of Agricultural and Life Sciences, The University of Tokyo, Japan. June 14, 2010

*Structural basis for cleavage mechanism of budding yeast Dicer.* Department of Basic Medical Sciences, Institute of Medical Science, The University of Tokyo, Tokyo, Japan. June 11, 2010

## Grants

### Current

NIH/NIGMS, R01GM138997-01~04 Jul. 2020 – Jun. 2024 \$1,194,564 total  
Title: Structural and molecular basis for cityRNA (Cleavage-inducing tiny RNA)-directed RNA cleavage by AGO3

Role: **PI**

NIH/NIGMS. R01GM124320-01~09 Sep. 2017 – Aug. 2026 \$2,775,410 total  
Title: Target Specificity of human RNA-induced silencing complex

Role: **PI**

NIH/NIAID. R21AI178624-01~02 May. 2023 – Apr. 2025 \$424,797 total  
Title: Tiny RNAs as new potential biomarkers for gammaherpesvirus-driven neurological and central nervous system diseases

Role: **PI**

NIH/NIGMS, R01GM138997-03S1 Jul. 2022 – Jun. 2024 \$199,982 total  
Title: Structural and molecular basis for cityRNA (Cleavage-inducing tiny RNA)-directed RNA cleavage by AGO3

Role: **PI**

NIH/NIGMS, R01GM124320-06S1 Jul. 2022 – Jun. 2026 \$146,704 total  
Title: Structural and molecular basis for cityRNA (Cleavage-inducing tiny RNA)-directed RNA cleavage by AGO3

Role: **PI**

### Pending

NIH/NIGMS, R01GM138997-05~08 Jul. 2024 – Jun. 2028 \$1,631,565 total  
Title: Structural and molecular basis for cityRNA (Cleavage-inducing tiny RNA)-directed RNA cleavage by AGO3

Role: **PI**

Impact Score: 19, Percentile: 4

NIH/NCI, R21CA297630 Aug. 2024 – Jul. 2026 \$433,125 total  
Title: ISG20-mediated immune evasion promotes gliomagenesis

Role: **PI**

### Completed

Seed grant of the Center for RNA Biology, OSU Jun. 2017 – May. 2018 \$45,000 total  
Title: DNA-directed cleavage of viral genomic RNA

Role: **Co-PI**

Seed grant of the Center for RNA Biology, OSU Jun. 2014 – May. 2015 \$35,000 total  
Title: The First Combined Structural and Functional Understanding of Chromatin-Modifying Argonaute Protein

Role: **Co-PI**

PRESTO (JST), JPMJPR13L7 Oct. 2013 – Mar. 2017 \$540,690 total  
Title: Structure and Function of non-coding RNAs

Role: **PI**

Human Frontier Science Program, grant.3fbabc7e Jun. 2009 – Dec. 2011  
 Title: Structural basis for epigenetic readout of methyl-arginine mark and its impact on chromatin function.  
 Role: PI

## Patents

Making tiny RNAs inside the cell. 3/30/2023.

Inventors: Nakanishi K

Application number: 63/578,265 (United States) on 8/23/2023

Methods and compositions regarding optimum target sequence of siRNAs for cleavage. 3/30/2023.

Inventors: Nakanishi K

Application number: 63/493,137 (United States) on 3/30/2023

Application number: 63/493,144 (United States) on 3/30/2023

Methods and compositions regarding using tiny RNAs as biomarkers.

Inventors: Nakanishi K

Application number: 63/493,063 (United States) on 3/30/2023

Methods of using exonucleases to make tiny RNAs on Argonaute proteins.

Inventors: Nakanishi K

Application number: 63/400,886 (United States) on 8/25/2022

Methods and compositions related to catalytic activation of human Argonaute-3.

Inventors: Nakanishi K and Park MS

Application number: PCT/US2021/039897 on 6/30/2021

Application number: 18/011,799 (United States) on 12/20/2022

Application number: 21834439.8 (Europe) on 6/30/2021

Methods and compositions related to catalytic activation of human Argonaute3

Inventors: Nakanishi K., and Park M.S

Application number: 63/110,405 on 11/6/2020

System and methods for purification of DNA-induced slicing complexes (DISC).

Inventors: Nakanishi K., Dayeh D.M., Kankia B., and Musier-Forsyth K.

Application number: 62/685,513 on 6/15/2018

System and methods for DNA-guided RNA cleavage

Inventors: Nakanishi K., Dayeh D.M

Application number: 62/435,272 on 12/16/2016

## SERVICE

### Journal Referee Activity

Ad-hoc reviewer, Analytical Chemistry

Ad-hoc reviewer, Cell

Ad-hoc reviewer, Cellular and Molecular Life Sciences

Ad-hoc reviewer, EMBO J.

Ad-hoc reviewer, FEBS Letters

Ad-hoc reviewer, JACS Au

Ad-hoc reviewer, Journal of Biological Chemistry

Ad-hoc reviewer, Journal of Molecular Biology

Ad-hoc reviewer, Molecular Cell

Ad-hoc reviewer, Nature

Ad-hoc reviewer, Nature Catalysis  
 Ad-hoc reviewer, Nature Communications  
 Ad-hoc reviewer, Nucleic Acids Research  
 Ad-hoc reviewer, PLOS Genetics  
 Ad-hoc reviewer, PLOS One  
 Ad-hoc reviewer, Proceedings of the National Academy of Science  
 Ad-hoc reviewer, RNA  
 Ad-hoc reviewer, Scientific Reports  
 Ad-hoc reviewer, WIREs RNA

### Conference

2021: Co-Organizer of the Rustbelt RNA Meeting  
 2020: Co-Vice Organizer of the Rustbelt RNA Meeting

### University Service

2023: Center for RNA Fellowship Committee, Member  
 2023: CBC Summer Oral Committee, Member  
 2022: Center for RNA Fellowship Committee, Member  
 2020 – 2022: Research Publicity Committee, Member  
 2020: Junior Under Representative Minority Faculty Recruiting (2020)  
 2019 – 2022: OSBP Admission Committee, Member  
 2019 - 2020: Graduate Recruiting Committee, Member  
 2019: Referee for the Center for RNA Biology Seed Grant Competition  
 2015 – Present: CBC Graduate Admission Committee, Member  
 2015: CBC Summer Oral Committee, Member  
 2015: Referee for the Center for RNA Biology Seed Grant Competition  
 2014 – Present: Advisors of the first-year graduate student  
 2013 – 2018: CBC Safety Committee, Member  
 2013 – 2016: OSBP Admission Committee, Member

## TEACHING

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### Classes

Period	Course Number and Title	Enr.
Spring 2024	Biochem 6765 Advanced Physical Biochemistry	17
Autumn 2023	BIOCHEM 5613 Biochemistry and Molecular Biology I	37
Spring 2023	Biochem 6765 Advanced Physical Biochemistry	28
Autumn 2022	BIOCHEM 5613 Biochemistry and Molecular Biology I	47
Spring 2021	Biochem 6765 Advanced Physical Biochemistry	22
Spring 2021	Biochemistry Seminar	51
Autumn 2020	BIOCHEM 5613 Biochemistry and Molecular Biology I	40
Autumn 2020	Biochemistry Seminar	58
Spring 2020	BIOCHEM 5613 Biochemistry and Molecular Biology I	46
Autumn 2019	BIOCHEM 5613 Biochemistry and Molecular Biology I	32
Spring 2019	BIOCHEM 5613 Biochemistry and Molecular Biology I	37
Autumn 2018	BIOCHEM 5613 Biochemistry and Molecular Biology I	32
Spring 2018	BIOCHEM 5613 Biochemistry and Molecular Biology I	57
Spring 2017	BIOCHEM 5613 Biochemistry and Molecular Biology I	56
Autumn 2016	BIOCHEM 8990 X-ray crystallography	4
Spring 2016	BIOCHEM 5613 Biochemistry and Molecular Biology I	73
Autumn 2015	BIOCHEM 8990 X-ray crystallography	6
Autumn 2014	BIOCHEM 8990 X-ray crystallography	16
Autumn 2013	BIOCHEM 8990 Advanced Topics in Biochemistry	6

**Mentoring Experience****Postdoctoral Fellows Advised:**

Dr. Vishal Adhav (2023 – present)  
 Dr. Uttam Sharma (2023 – present)  
 Dr. Huaqun Zhang (2020 - present)  
 Dr. Divyaa Bhagdikar (2020 -2022): Orna Therapeutics  
 Dr. Meng Sun: Life Edit  
 Dr. Ekram Waham:  
 Dr. Seema Nath:  
 Dr. Daniel Dayeh: Regeneron

**Ph.D. Student Advised:**

Daniel Dayeh (Graduation 2018): Scientist in Protein Biochemistry at Regeneron (2021-present), Postdoctoral Fellow in the Alexander Tarakhovskiy lab at The Rockefeller University (2019-2021), Pelotonia Graduate Student Fellowship 2016-2018, Center for RNA Biology Graduate Student Fellowship 2015-2016, RNA Society Meeting 2018 Travel Fellowship, First Prize poster Award at RNA Rustbelt Meeting 2017, First Prize Poster at Center for RNA Biology/Cellular, Molecular biochemical Sciences Symposium 2017, Cold Spring Harbor Laboratory Travel Award 2016.

Mi Seul Park (Graduation 2019): K99/R00 NIH Pathway to Independence Award 2021, Postdoctoral Fellow in the Christopher Lima Lab at The Memorial Sloan-Kettering Cancer Center, Pelotonia Graduate Student Fellowship 2018-2020, RNA Society Meeting Travel Awards 2017&2019, Travel grant from Robin C. Burrell memorial Fund 2017&2019, Cold Spring Harbor Laboratory Travel Award 2018.

GeunYoung Sim (2018 – present): Pelotonia Graduate Student Fellowship 2020-2022, Center for RNA Biology Graduate Student Fellowship 2020-2021, Outstanding Oral Presentation Award at Rustbelt RNA Meeting 2020, Poster Prize at IGP Symposium 2021.

Andrew Savidge (2022 – present): T32 NIH Training Grant Fellowship 2022-2023, 1<sup>st</sup> place of IGP poster award 2023, Poster award at the Rustbelt RNA Meeting 2023, RNA Society Research Presentation Fellowship 2024.

Cameron Divoky (2022 – present):

**Undergraduate Student Research Mentor:**

Alison Hager (2018 – 2019): Albany Medical College  
 Taylor Roger (2018)  
 Elaina Boyle (2017-2018): Graduate student in the Brenda Bass Lab at University of Utah  
 Audrey Kehling (2016-2017): Research Tech III in the Nakanishi Lab at The Ohio State University  
 Dechen Wangmo (2017)  
 Bradley Kruihoff (2015 – 2017): New York Institute of Technology College of Osteopathic Medicine  
 Viktor Gravenstein (2014)  
 Jackson Norris (2014)  
 Quince Guttman (2014)  
 Monica Mabilia (2013 - 2014)



**Research Assistant:**

Audrey Kehling (2017 – 2019, 2020 -present)  
 Jackson Secor (2021 – 2022): The Ohio State University, Tech  
 Nipun Malhotra (2021 - 2022): The Ohio State University, Tech  
 Christopher Brodtkin (2020)  
 Aaron Natarelli (2019)  
 James Brackbill (2013-2015)

**Committee Member for PhD Student:**

Andrew Savidge (Ohio State University Biochemistry Program)  
 Allison Marie Webb Chasser (Department of Molecular Genetics)  
 Anthony Rish (Ohio State Biochemistry Program)  
 Brendan Harty (Department of Chemistry & Biochemistry)  
 Cameron Divoky (Ohio State University Biochemistry Program)  
 Danni Jin (Molecular, Cellular and Developmental Biology Graduate Program)  
 Debadrita Modak (Department of Chemistry & Biochemistry)  
 Diego Cuerda-Gil (Department of Molecular Genetics)  
 Elakkiya Tamilselvan (The Biophysics Graduate Program)  
 GeunYoung Sim (Molecular, Cellular and Developmental Biology Graduate Program)  
 Harsha Mandayam (Department of Chemistry & Biochemistry)  
 Hond-Duc Phan (Ohio State Biochemistry Program)  
 Jonathan Gordon (Department of Chemistry & Biochemistry)  
 Marina Buyanova (Department of Chemistry & Biochemistry)  
 Maryam Baniasad (Department of Chemistry & Biochemistry)  
 Matias Montes (Molecular, Cellular and Developmental Biology Graduate Program)  
 Mi Seul Park (Department of Chemistry & Biochemistry)  
 Michelle Gray (Ohio State Biochemistry Program)  
 Miranda Gardner (Ohio State Biochemistry Program)  
 Moulisubhro Datta (Molecular, Cellular and Developmental Biology Graduate Program)  
 Naray Puthillathu (Biophysics Graduate Program)  
 Nathan Howell (Ohio State Biochemistry Program)  
 Ruiqi Wu (The Biophysics Graduate Program)  
 Rylan Watkins (Department of Chemistry & Biochemistry)  
 Shiqin Miao (Department of Chemistry & Biochemistry)  
 Vaishnavi Sidharthan (Department of Chemistry & Biochemistry)  
 Vibhuti Wadhwa (Department of Chemistry & Biochemistry)  
 Xiao Ma (Department of Chemistry & Biochemistry)  
 Yui-Hui Wang (Ohio State Biochemistry Program)  
 Xiaoyuan Yang (Ohio State Biochemistry Program)

**Committee Member for Master Student:**

Jonathan Gordon (Master of Science)

**Committee Member for Undergraduate Student:**

Seth Lyon (The Ohio State University)