

Lobachev, Kirill S.
Associate Professor
School of Biological Sciences

I. Earned Degrees

M.S.	Biology and Genetics	1992	St. Petersburg State University, Russia
Ph.D.	Biology (Genetics)	1996	St. Petersburg State University, Russia

II. Employment History

Graduate Research Assistant, Dept. of Genetics, St. Petersburg University	1992-1996
Research Fellow, Laboratory of Physiological Genetics, Biological Research Institute, St. Petersburg University	1996-1997
Postdoctoral Fellow, Laboratory of Molecular Genetics, National Institute of Environmental Health Sciences, Research Triangle Park, NC, USA	1997–2003
Assistant Professor, School of Biology, Georgia Institute of Technology	2003-2009
Associate Professor, School of Biology (tenured), Georgia Institute of Technology	2009-present

III. Honors and Awards

“Soros Graduate Student” award from the International Soros Education Program	1994
Travel Grant from the International Science Foundation	1995
Scholarship from the organizers of the Keystone Symposium on “Molecular Mechanisms in DNA Replication and Recombination”	1999
Scholarship from the organizers of the Keystone Symposium on “Molecular Mechanisms of DNA Replication and Recombination”	2002
“Paper of the Year” award by the Division of Intramural research at the NIEHS of NIH	2003
“Sigma Xi Best Paper” award by Sigma Xi Georgia Tech Chapter	2007
“Distinguished Lecture Series” of the Center for the Study of Systems Biology at Georgia Tech	2007
“Thank a Teacher” certificate from Center for the Enhancement of Teaching and Learning, Georgia Institute of Technology	2009
Abell Junior Faculty Fellowship	2012
Faculty Development Grant	2018
MAYENT-ROTHSCHILD-Institute Curie sabbatical award	2018

“Thank a Teacher” certificate from Center for the Enhancement of Teaching and Learning, Georgia Institute of Technology	2021
“Student Recognition of Excellence in Teaching: CIOS Award Winner	2022
“Student Recognition of Excellence in Teaching: Class of 1934 CIOS Honor Roll”	2022

IV. Research, Scholarship, and Creative Activities

A. Published Books, Book Chapters, and Edited Volumes

A1. Books - no data

A2. Refereed Book Chapters – no data

A3. Edited Volumes – no data

B. Referred Publications and Submitted Articles

B1. Published and Accepted Journal Articles

* corresponding author, bold- Lobachev lab author

Tony M. Mertz, Elizabeth Rice-Reynolds, Ly Nguyen, Ellen MacNary, Mikayla Enstrom, Anna Wood, Nicholas Bray, Debra Mitchell, Kirill Lobachev, and Steven A. Roberts (2023) “Genetic Modifiers of APOBEC-Induced Mutagenesis. bioRxiv. Apr 6:2023.04.05.535598. doi: 10.1101

Ait Saada A, Guo W, Costa AB, Yang J, Wang J, Lobachev KS* “Widely spaced and divergent inverted repeats become a potent source of chromosomal rearrangements in long single-stranded DNA regions” (2023) *Nucleic Acids Res.* Mar 15; gkad153. doi: 10.1093

Ait Saada A, Costa AB, Lobachev KS* Characterization of canavanine-resistance of *cat1* and *vhc1* deletions and a dominant *any1* mutation in fission yeast. (2022) *PLoS One.* May 31;17(5):e0269276. doi: 10.1371

Osia B, Twarowski J, Jackson T, Lobachev K, Liu L, Malkova A.
Migrating bubble synthesis promotes mutagenesis through lesions in its template.
Nucleic Acids Res. 2022 Jul 8;50(12):6870-6889. doi: 10.1093

Ait Saada A, Costa AB, Sheng Z, Guo W, Haber JE, Lobachev KS* Structural parameters of palindromic repeats determine the specificity of nuclease attack of secondary structures (2021) *Nucleic Acids Res* Apr 19;49(7):3932-3947. doi: 10.1093

Ait Saada A, Costa A and Lobachev KS* Genetic and molecular approaches to study chromosomal breakage at secondary structure-forming repeats (2021) *Methods in Molecular Biology*, 2153:71-86. doi: 10.1007

Szlachta K, Anukyan A, Raimer HM, Singh S, Salamon A, **Guo W, Lobachev KS**, and Wang YH Topoisomerase II contributes to DNA secondary structure-mediated double-stranded breaks (2020) *Nucleic Acids Res.* Jul 9;48(12):6654-6671. doi: 10.1093

Guo W, Lobachev KS* Genetic Screens to Study GAA/TTC and Inverted Repeat Instability in *Saccharomyces cerevisiae*. (2020) *Methods Mol Biol*. 2056:103-112.doi: 10.1007

Kiktev DA, **Sheng Z, Lobachev KS**, Petes TD. GC content elevates mutation and recombination rates in the yeast *Saccharomyces cerevisiae*. (2018) *Proc Natl Acad Sci USA*. Jul 24;115(30):E7109-E7118. doi: 10.1073

Elango R, **Sheng Z**#, Jackson J, DeCata J, Ibrahim Y, Pham NT, Liang DH, Sakofsky CJ, Vindigni A, **Lobachev KS***, Ira G, Malkova A. (2017) Break-induced replication promotes formation of lethal joint molecules dissolved by Srs2. *Nat Commun*. Nov 27;8(1):1790. doi: 10.1038 (#Elango and Sheng – equal contribution, Lobachev –is co-corresponding author).

Dahal BK, Kadyrova LY, Delfino KR, Rogozin IB, Gujar V, **Lobachev KS**, Kadyrov FA. Involvement of DNA mismatch repair in the maintenance of heterochromatic DNA (2017) stability in *Saccharomyces cerevisiae*. *PLoS Genet*. Oct 25;13(10):e1007074. doi: 10.1371

Hang LE, Peng J, Tan W, Szakal B, Menolfi D, **Sheng Z, Lobachev K**, Branzei D, Feng W, Zhao X. (2015) Rtt107 Is a Multi-functional Scaffold Supporting Replication Progression with Partner SUMO and Ubiquitin Ligases. *Molecular Cell*. Oct 15; 60(2):268-79. doi: 10.1016*

Zaarur N, Xu X, Lestienne P, Meriin AB, McComb M, Costello CE, Newnam GP, Ganti R, Romanova NV, Shanmugasundaram M, Silva ST, Bandejas TM, Matias PM, **Lobachev KS**, Lednev IK, Chernoff YO, Sherman MY. (2015) RuvbL1 and RuvbL2 enhance aggregates formation and disaggregate amyloid fibrils. *EMBO J*. Sep 14;34(18):2363-82. doi: 10.15252*

Chaudhri R.A., Hadadi A., **Lobachev K.S.**, Schwartz Z., Boyan B.D. (2014) Estrogen receptor-alpha 36 mediates the anti-apoptotic effect of estradiol in triple negative breast cancer via a membrane-associated mechanism *BBA - Molecular Cell Research*, Nov;1843(11):2796-806*

Zhang Y., Saini N., Sheng Z., Lobachev K.S. (2013) Genome-wide screen identifies replication pathway for quasi-palindrome fragility dependent on homologous recombination *PLoS Genetics*, Dec;9(12):e1003979. doi: 10.1371*

Saini N, Ramakrishnan S, Elango R, Ayyar S, Zhang Y, Deem A, Ira G, Haber JE, Lobachev KS, Malkova A. (2013) Migrating bubble during break-induced replication drives conservative DNA synthesis. *Nature*, Oct 17;502(7471):389-92. doi: 10.1038*

Kadyrova L.Y., Mertz T.M., **Zhang Y.**, Northam M.R., **Sheng Z., Lobachev K.S.**, Shcherbakova P.V., Kadyrov F.A. (2013) A reversible histone H3 acetylation cooperates with mismatch repair and replicative polymerases in maintaining genome stability. *PLoS Genetics*, Oct;9(10):e1003899. doi: 10.1371*

Saini N., Zhang Y., Nishida Y, Sheng Z., Choudhury S., Mieczkowski P, Lobachev KS. (2013) Fragile DNA motifs trigger mutagenesis at distant chromosomal loci in *saccharomyces cerevisiae*. *PLoS Genetics*. Jun;9 (6):e1003551. doi: 10.1371*

Chen J, Lobachev KS, Grindel BJ, Farach-Carson MC, Hyzy SL, El-Baradie KB, Olivares-Navarrete R, Doroudi M, Boyan BD, Schwartz Z. . (2013) Chaperone properties of pdia3 participate in rapid membrane actions of $1\alpha,25$ -dihydroxyvitamin d3. *Molecular Endocrinology*. Jul;27 (7):1065-77. doi: 10.1210*

Zhang Y., Nishida Y., Shishkin A. A., Marcinkowski-Desmond D., **Saini N.**, Volkov K., Mirkin S. and Lobachev K.S. (2012) “Genome-wide screen identifies pathways that govern GAA/TTC repeat fragility and expansion in dividing and non-dividing yeast cells.” *Molecular Cell*, 48(2):254-65*

Waisentreiger I. S.-R., Liston V., Menezes M., **Kim H-M.**,# Lobachev K, Stepchenkova E. I., Tahirov T. H., Rogozin I. B. and Pavlov Y.I.* (2012) “Attenuation of mutagenesis in eukaryotes by DNA replication fork dynamics and quality of nucleotide pools”. *Environmental and Molecular Mutagenesis*, doi: 10.1002/em.21735, PMID: 23055184*

Tang W., Dominska M., Greenwell P. W., Harvanek Z., Lobachev K. S., **Kim H-M.** #, **Narayanan V.** #, Mirkin S. M., Petes T.D. (2011) “Friedreich's Ataxia (GAA)n.(TTC)n Repeats Strongly Stimulate Mitotic Crossovers in *Saccharomyces cerevisiae*” *PLOS Genetics*,7(1): e1001270*

Shishkin A.A., Voineagu I., Matera R., Cherng N., Chernet B.T., Krasilnikova M.M., Narayanan V.#, Lobachev K.S., Mirkin S.M.*(2009) “Large-scale expansions of Friedreich's ataxia GAA repeats in yeast.” *Molecular Cell* 35(1): 82-92. *

Kim H-M., **Narayanan V.**, Mieczkowski P.A., Petes T.D., Krasilnikova M.M., Mirkin S.M. and Lobachev K.S.* (2008) “Chromosome fragility at GAA/TTC tracts depends on repeat orientation and requires mismatch repair” *EMBO journal* 27:2896-906*

Voineagu I., **Narayanan V.**, Lobachev K.S., Mirkin S.M. (2008) “Replication stalling at unstable inverted repeats: interplay between DNA hairpins and fork stabilizing proteins”, *PNAS* 105: 9936-9941 (Highlighted in *Discovery* magazine and *Nature* journal 2008, 454:371)*

Vernon M, Lobachev K., Petes T.D. (2008) “High rates of “unselected” aneuploidy and chromosome rearrangements in tell *mec1* haploid yeast strains”, *Genetics* 179: 237-247*

Narayanan V., and Lobachev K.S.* (2007) “Intrachromosomal amplification triggered by hairpin-capped breaks is homologous recombination-dependent and non-homologous end-joining-independent”, *Cell Cycle* 6: 1814-1818*

Lobachev K.S.*, Rattray A., **Narayanan V.** (2007) “Hairpin- and cruciform-mediated chromosome breakage: causes and consequences in eukaryotic cells”, *Frontiers in Bioscience* 12: 4208-4220*

VanHulle K., Lemoine F. J., **Narayanan V.**, Downing B., Hull K., McCullough C., Bellinger M., Lobachev K., Petes T. D., Malkova A. (2007) “Inverted DNA repeats channel repair of distant double-strand breaks into chromatid fusions and chromosomal rearrangements” *Molecular and Cellular Biology* 27: 2601-2614*

Narayanan V., Mieczkowski P., **Kim H-M.**, Petes T.D., Lobachev K.S. (2006) “The pattern of gene amplification is determined by chromosomal location of hairpin-capped breaks” *Cell* 125:1283-1296 (“Sigma Xi Best Paper”, Featured in the same issue of *Cell*) *

Lewis K.L., Lobachev K., Westmoreland J., Karthikeyan G., Williamson K., Resnick M.A. (2005). "Use of a restriction endonuclease cytotoxicity assay to identify inducible GAL1 promoter variants with reduced basal activity", *Gene* 363: 183-92

Lemoine F, Degtyareva N.P., Lobachev K.S., Petes T. D. (2005) “Chromosomal translocations in yeast induced by low levels of DNA polymerase: a model for chromosome fragile sites”, *Cell* 120: 587-598 (Featured in the same issue of *Cell* and on the cover of journal) *

Lobachev K.S., Vitriol E., Stemple J., Resnick M.A., Bloom K. (2004). "Chromosome fragmentation following induction of a double-strand break is an active process prevented by the RMX repair complex", *Current Biology* 14: 1-20

Lobachev K.S., Gordenin D.A., Resnick M.A. (2002) “The Mre11 complex is required for repair of hairpin-capped double-strand breaks and prevention of chromosome rearrangements.” *Cell* 108: 183-193. (“NIEHS best paper”)

Bennett C.B., Lewis L.K., Gopalakrishnan K., Lobachev K.S., Jin Y., Sterling J., Snipe J. and Resnick M.A. (2001) “Genes required for ionizing radiation resistance in yeast.” *Nature Genetics* 29: 426-434.

Stenger J.E., Lobachev K.S., Gordenin D.A., Darden T.A., Jurka J., Resnick M.A. (2001) “Biased distribution of inverted and direct Alus in the human genome: implications for insertion, exclusion, and genome stability.” *Genome Research* 11: 12-27.

Lobachev K.S., Stenger J.E., Kozyreva O.G., Jurka J., Gordenin D.A., Resnick MA (2000) “Inverted Alu repeats unstable in yeast are excluded from the human genome.” *EMBO Journal* 19: 3822-3830.

Gary R., Park M.S., Nolan J.P., Cornelius H.L., Kozyreva O.G., Tran H.T., Lobachev K.S., Resnick M.A., Gordenin D.A. (1999) “A novel role in DNA metabolism for the binding of Fen1/Rad27 to PCNA and implications for genetic risk.” *Molecular and Cellular Biology* 19: 5373-5382.

Lobachev K.S., Shor B.M., Tran H.T., Taylor W., Keen J.D., Resnick M.A., Gordenin D.A. (1998). “Factors affecting inverted repeat stimulation of recombination and deletion in *Saccharomyces cerevisiae*.” *Genetics* 148: 1507-1524.

Gordenin D.A., Lobachev K.S., Degtyareva N.P., Malkova A.L., Perkins E., Resnick M.A. (1993). “Inverted DNA repeats: a source of eukaryotic genomic instability.” *Molecular and Cellular Biology* 13: 5315-5322.

B2. Conference Presentation with Proceedings (Refereed)

Saini N, Zhang Y, Usdin K, Lobachev KS. (2013) When secondary comes first--the importance of non-canonical DNA structures. *Biochimie* Feb;95(2):117-23. doi: 10.1016*

B3. Other refereed material

No data

B3. Submitted Journal Articles

Tony M. Mertz, Elizabeth Rice-Reynolds, Ly Nguyen, Ellen MacNary, Mikayla Enstrom, Anna Wood, Nicholas Bray, Debra Mitchell, Kirill Lobachev, and Steven A. Roberts
“Genetic Modifiers of APOBEC-Induced Mutagenesis,” second review, Genome Research

Anissia Ait Saada, Wenying Guo, Alex B. Costa, Jiaxin Yang, Jianrong Wang, Kirill S. Lobachev* “Structural parameters of inverted repeats that suppress their fragility potential are bypassed in single-stranded DNA during a fold-back mechanism” second review, Nucleic Acid Research

C. Other Publications and Creative Products

No data

D. Presentations

Prior joining Georgia Tech

1994 – Scientific session dedicated to the 75th Anniversary of the Department of Genetics of St. Petersburg State University, St. Petersburg, Russia

1999 – Keystone Symposia on Molecular and Cellular Biology, Molecular Mechanisms in DNA Replication and Recombination, Taos, New Mexico:

2001 – FASEB Summer Research Conference on "Genetic Recombination and Chromosome Rearrangements", Snowmass Village, Colorado

2001 – Biology Department, University of North Carolina

After joining Georgia Tech

Invited Talks at National & International Conferences:

2005 - Chairman of the session -National Institute for Basic Biology Conference on "New Aspects of Gene Amplification - Mechanisms and Biological Function", Japan, Okazaki

2006 – Gordon Research Conference on Mutagenesis, Salve Regina University, Newport, Rhode Island,

2006 – 5th International Conference on “Unstable microsatellites and human diseases”, Granada, Spain

2007 – Scientific conference on “System control of genetic and cytogenetic processes”, St. Petersburg State University, St. Petersburg, Russia

2007 – FASEB Summer Research Conference on "Genetic Recombination and Chromosome Rearrangements", Snowmass Village, Colorado

2008 – Chairman of the session - Keystone Symposia on Molecular and Cellular Biology, “Molecular Mechanisms in DNA Replication and Recombination”, Santa-Fe, New Mexico

2008 – EMBO workshop on “Recombination Mechanisms”, Il Ciocco, Italy

2008 – FASEB Summer Research Conference on “DNA Palindromes: Roles, Consequences and Implications of Structural Ambivalent DNA”, Saxtons River, Vermont

2009 – Keystone Symposia on Molecular and Cellular Biology, “Genome Instability and DNA Repair”, Taos, New Mexico

2009 – “The 16th Conversation in Albany”, State University of New York, Albany, New York

- 2010 – Chairman of the session - FASEB Summer Research Conference on “Biological Consequences of Alternatively Structured DNA”, Steamboat Springs, Colorado.
- 2011 – Keystone Symposia on Molecular and Cellular Biology, “Genome Instability and DNA Repair”, Keystone, Colorado
- 2012 – FASEB Summer Research Conference on Dynamic DNA Structures in Biology, Saxtons River, Vermont.
- 2012 – American Society for Microbiology Southeastern Branch meeting, Athens, Georgia
- 2013 – FASEB Summer Research Conference on "Genetic Recombination and Chromosome Rearrangements", Steamboat Springs, Colorado
- 2014 –Suddath Symposium, DNA repair and human diseases, Parker H. Petit Institute for Bioengineering and Bioscience Georgia Institute of Technology, Atlanta, 2014
- 2014 – FASEB Summer Research Conference on Dynamic DNA Structures in Biology, Itasca, Illinois
- 2014 – Abcam Conference on ‘Chromothripsis, Clustered Mutation and Complex Chromosome rearrangements, Cambridge, Massachusetts
- 2016 – Gordon Research Conference on DNA Damage, Mutation & Cancer, Ventura, California
- 2016 – FASEB Summer Research Conference on Dynamic DNA Structures in Biology, Saxtons River, Vermont.
- 2018 - Chairman of the session: FASEB Summer Research Conference on Dynamic DNA Structures in Biology, St. Bonaventure University, New York.
- 2018 – Second International Course on “Genome Instability and Human disease”, Paris, France
- 2019 – VII Congress of Vavilov Society of Geneticists and Breeders, Saint-Petersburg, Russia
- 2019 – “Genome integrity and prions – impact on the evolution and human disease” Eppley Institute for Research in Cancer, University of Nebraska Medical Center
- 2020 - Nucleic acid secondary structures G4s and beyond, Virtual symposium
- 2022 – FASEB Summer Research Conference on “Dynamic DNA Structures in Biology”, Nova Scotia, Canada.

Invited Talks at Universities:

- 2006 – Department of Biochemistry and Molecular Genetics, University of Illinois at Chicago
- 2006 – National Cancer Institute, Bethesda, Maryland
- 2006 – National Cancer Institute, NCI-Frederick, Maryland
- 2006 – Eppley Institute for Research in Cancer, Omaha, Nebraska
- 2006 – The Pasteur Institute, Paris, France
- 2007 – Emory University, Atlanta, Georgia
- 2007 – National Institute Environmental Health Sciences, Research Triangle Park, North Carolina
- 2007 – Duke University, Durham, North Carolina
- 2007 – University of Illinois at Urbana-Champaign, Urbana-Champaign, Illinois
- 2007 – The University of Texas Health Science Center at San Antonio
- 2007 – “Distinguished Lecture Series” of the Center for the Study of Systems Biology at Georgia Tech
- 2008 – National Cancer Research Institute, Genoa, Italy
- 2008 – Institute of Tumorigenesis in Toscana, Florence, Italy
- 2008 – Umea University, Umea, Sweden

2008 – Southern Illinois University, Springfield
2010 – IBB breakfast club, Georgia Tech
2012 – Southern Illinois University, Carbondale
2012 – Arhus University, Denmark
2012 – University of Copenhagen, Denmark
2013 – Brandeis University, Boston
2014 – National Institute Environmental Health Sciences, Research Triangle Park, North Carolina
2015 – University of Georgia
2015 – Tufts University, Boston
2015 – Iowa State University, Ames
2018 – 2 presentations at The Curie Institute, France
2018 - The Pasteur Institute, Paris, France
2018 - The research Institute of cellular and molecular radiobiology, Paris, France
2019 – University of Pennsylvania, Philadelphia
2019 – Kennesaw State University

Co-organizer:

2005 - Southeast Regional Yeast Meeting, Parker H. Petit Institute for Bioengineering and Bioscience Georgia Institute of Technology, Atlanta,

2014 - “DNA repair and human diseases.” Suddath Symposium, Parker H. Petit Institute for Bioengineering and Bioscience Georgia Institute of Technology, Atlanta,

2022 – co-chair of FASEB Summer Research Conference on “Dynamic DNA Structures in Biology”, Nova Scotia, Canada.

2024 – co-chair of FASEB Summer Research Conference on “Dynamic DNA Structures in Biology”, Melbourne, USA.

E. Grants and Contracts

E1. As Principal Investigator (bold: currently funded or about to be funded proposals)

“Mechanisms of Chromosome Breakage and Rearrangements Induced by Repeats that Adopt DNA Secondary Structures”

National Science Foundation, MCB-0417088

\$461,133 (direct cost)

PI

08/01/04-08/31/08

“Mechanisms of Palindrome-Mediated Chromosome Fragility”

National Science Foundation, MCB-0818122

\$504,168 (direct cost)

PI

09/01/08-08/31/11,

“Mechanism and consequences of GAA repeat-mediated chromosomal fragility in yeast“

NIH, R01GM082950

\$800,000 (direct cost)
PI
08/01/08-05/31/13

Abell Junior Faculty Fellowship,
\$40,000
PI
01/01/12-12/31/13

Private donation from the Grinshpun family, 2018
\$15,000

Private donation from Krupko family, 2020-2021
\$30,000

Nakatani Research foundation
\$6,0000
“The development of an assay to study chromosome fragility in human cells”
NIH, R21GM129516
\$275,000 (direct cost)
PI
07/01/2018-06/30/2022

“Identification of distinct pathways for DSB formation at palindromic repeats“
NIH, R01GM129119
\$800,000 (direct cost)
PI
08/01/2018-04/30/2023

Private donation from Ms. E. Krupko, 2022-2023
\$40,000

E2. As Co-Principal Investigator (bold: currently funded or about to be funded proposals)

“Visualization of break-induced replication”
NIH, R03ES016434
\$39,000 (direct cost)
co-PI
Collaborator: Anna Malkova (co-PI)
08/01/08-07/31/10,
Share: 50%

“Mechanism of subtelomeric breaks”
NIH, R01HD059871-01
\$311,885 (direct cost, Georgia Tech part)
co-PI
Collaborator: Katheryn Rudd (Co-PI)
07/01/10-03/31/2014

Share: 30%

"Amplification of risk resulting from mis-routing of double-strand break repair"

NIH, R01GM084242-01

\$380,000 (direct cost, Georgia Tech part)

co-PI

Collaborator: Anna Malkova (co-PI)

08/01/2014 – 07/31/2018

Share: 30%

“Genome-wide DNA Secondary Structure Analysis to Investigate DNA Fragility”

NIH, R01GM101192

Co-PI

Collaborator: Yuh-Hwa Wang

01/01/2021-07/31/2024

\$220,000 (Georgia Tech part).

E3. As Senior Personnel or Contributor

No data

E4. Proposals Submitted But Not Funded

R21 NIH

“Canavanine-based genetic assays to study genome instability in fission yeast”

NSF

“Multiple effects of deficiency in the Cdc13-Stn1-Ten1 complex on genome instability in subtelomeric and difficult-to-replicate non-telomeric regions in yeast”

F. Other Scholarly and Creative Accomplishments

No data

G. Societal and Policy Impact

The PI’s laboratory has been a part of a general public science outreach program with the *Atlanta Science Tavern* where scientists present their discoveries to a general audience. Natalie Saini, a former graduate student from the PI’s laboratory, presented her work on mutagenesis in their Young Research series lecture in 2013. The PI’s laboratory also hosted a tour from the *Atlanta Science Tavern* participants in 2013 and 2015.

H. Other Professional Activities

Summer 2012 –PI worked as a consultant in Anni Anderson’s laboratory in Aarhus University, Denmark

V. Teaching

A. Courses taught

Fall/2022 BIOL 4590, Research Project Lab

21 students

Fall/2021 BIOL 4590, Research Project Lab	18 students
Spring/2021 BIOL 4803/8803 Chromosome Biology and Human Diseases	11 students
Fall/2020 BIOL 4590, Research Project Lab	15 students
Fall/2019 BIOL 4590, Research Project Lab,	10 students
Spring/2019 BIOL 4803/8803 Chromosome Biology and Human Diseases	13 students
Fall/2017 BIOL 4590, Research Project Lab	11 students
Spring/2017 BIOL 4803/8803, Chromosome Biology and Human Diseases	13 students
Fall/2016 BIOL 4590, Research Project Lab	8 students
Spring/ 2016 BIOL 2344, Genetics	61 students
Spring/ 2015 BIOL 4668, BIOL 7668 Eukaryotic Molecular Genetics	12 students
Fall/ 2014 BIOL 4590, Research Project Lab	6 students
Spring /2014 BIOL 4668, BIOL 7668 Eukaryotic Molecular Genetics	28 students
Fall/ 2013 BIOL 4590, Research Project Lab	12 students
Spring /2013 BIOL 4668, BIOL 7668 Eukaryotic Molecular Genetics,	25 students
Fall/ 2012 BIOL 4590, Research Project Lab	12 students
Spring /2012 BIOL 4668, BIOL 7668 Eukaryotic Molecular Genetics	30 students
Fall/2011 BIOL 4590, Research Project Lab,	11 students
Fall/2010 BIOL 2345 HP1,2 Honors Genetics Lab,	42 students

B. Individual Student Guidance

B1. PhD. Students

Graduate students supervised:

Vidhya Narayanan - “Best oral presentation at South East Regional Yeast Meeting” 2005, “Teaching Assistant Award” for BIOL 4290 Spring 2005, The F. L. “Bud” Suddath Memorial Award for significant achievement in research, 2007), defended her PhD in 2008. Title: “Inverted repeats as a source of eukaryotic genome instability”. Currently works as a Product development specialist at Genova Diagnostics, Inc

Hyun-Min Kim - “Sarstedt award”, defended his PhD in 2009. Title: “Genome instability induced by triplex-forming mirror repeats in *S. cerevisiae*”. Currently works as a post-doc at Harvard Medical School

Yu Zhang - Best paper award by School of Biology in 2012, defended her PhD in 2012, Title: “Mechanisms of chromosomal instability induced by unstable DNA repeats in yeast *S. cerevisiae*”. Currently works as a post-doc at Harvard Medical School

Natalie Saini – “Best oral presentation award at SERYM 2013”, “best paper award by School of Biology, 2012”, “Bud” Suddath Memorial Award for significant achievement in research, 2013”, defended her PhD in 2014. Title: Understanding the mechanisms underlying DSB repair-induced mutagenesis at distant loci in yeast.” Currently works as a post-doc at the NIEHS.

Ziwei Sheng – defended her PhD in 2017. Currently works at the biotech company in Atlanta

Wenying Guo – defended her PhD in 2022. Currently works at EY-Parthenon company.

Current graduate students:

Alex Costa – 4th year graduate student

B2. MS Students

Sabelo Khuzwayo - graduated in 2012 Thesis: “Mechanism of subtelomeric breaks” Currently works as a Production Brewer at SABMiller, South Africa

Sweta Singh - graduated in 2015, non-thesis student. Currently works as a Research Scientist at GeneCure, Norcross

Current MS students:

Claudia Ortega-Borda

B3. Undergraduate Students

Clara Moon (“President’s Undergraduate Research Award”, 2004-2005; “Undergraduate Research Scholar Award”, 2005 and “School of Biology Faculty Award”, 2006)

Pedram Javanmard

James Tucker

Sarah Black

Chris Bolen

George Lasker (John H. Ridley award 2007)

Tamara Bodrogi

Amanda James (Spellman College)

Shadeah Suleiman

Alex Zarnitsyn

Erica Okene

Kliffe Kwon

Alexandra Wagner (Spellman College)

Kathleen Heller (best oral presentation award at SERYM 2013)

Matt Tillman

Venessa Williams

Newsha Tivakoli

Kayle Naghshpour

Victoria Herdman

Alia Raad

Su-Yuan (Emily) Yu

Emily Anderson

Audrey Wood

Anastasia Pavluk

Akshara Jayaraman

Detriana Kurzeja-Edwards, (“President’s Undergraduate Research Award”, 2021)

Hongyu Ma (2021)

Huyun Lu (2021)

Anneliese Schroer (“President’s Undergraduate Research Award”, 2022)

Rachel Mason (McCallum Scholar Research Award, 2022)

Tempel Dingman (2022)

Rachel Wong (2022)

Matthew Park (2022)
Octavio Calvo (2022)

B4. Service on thesis or dissertation committees

Hyun-Min Kim (School of Biology)
Vidhya Narayanan (School of Biology)
Buxin Chen (School of Biology)
Mili Shah (School of Biology)
Jia Wei (School of Biology)
Burcu Bakir (School of Biology)
Navin Elango (School of Biology)
Jennifer Hurst-Kennedy (School of Biology)

Ester Paula Tennat (School of Biology)
Jittima Piriyaongsa (School of Biology)
Meng Sun (School of Biology)
Eric Dammer (School of Biology)
Yangquin Shao (School of Biology)
Bhawana Bariar (School of Biology)
Maya Fisher (School of Biology)
Gong He (School of Biology)
Meng Sun (School of Biology)
Taylor Updergrove (School of Biology)
Ying Shen (School of Biology)
Mimi Fang (School of Biomedical Engineering)
Reyhaan Ali Chaudhri (School of Biomedical Engineering)
Ming Zhong (School of Biomedical Engineering)
Ozgul Persil (School of Chemistry&Biochemistry)
Brian Chen (School of Chemistry&Biochemistry)
Reyhaan Chaudhri (School of Biomedical Engineering)
Yu Zhang (School of Biology)
Natalie Saini (School of Biology)
Ziwei Sheng (School of Biology)
Hiro Ichikawa (School of Chemistry&Biochemistry)
Havva Keskin (School of Biology)
Chance Meers (School of Biology)
Kathryn Bruce (School of Biology)
Kyung Duk Koh (School of Biology)
Tawhwan Yang (School of Biology)
Yunzhe Zhang (School of Biology)
Patrick Ruff (School of Biology)
Samantha Stuky (School of Biology)
Sathya Balachander (School of Biology)
Zachery Deckner (School of Biology)
Hiro Ichikawa (School of Chemistry & Biochemistry)
Rakhee Ganti (School of Biology)
Becca Howie (School of Biology)
Chance Meers (School of Biological Sciences)

Youngkyu Jeon (School of Biological Sciences)
Wehying Guo (School of Biological Sciences)
Alex Costa (School of Biological Sciences)
Aspen Hirsch (School of Biological Sciences)
Zachery Deckner (School of Biological Sciences)
Youngkyu Jeon (School of Biological Sciences)
Sui Yang (Duke University)
Brooke Rothschild-Mancinelli (School of Chemistry and Biochemistry)
Smriti Bahl (School of Biological Sciences)
Derek Hart (School of Physics)

B5. Mentorship of postdoctoral fellows or visiting scholars

In the past:

Nikolai Ivanov
Kirill Volkov
Vidhya Narayanan
Yuri Nishida

Current: Anissia Ait Saada

C. Other Teaching Activities

High School students supervised:

Lya Lomsadze
Johnafel Crowe
Harini Indrakrishnan
Janet Xin

High School teachers supervised:

Doug Mathews, Georgia Intern-Fellowships for Teachers (GIFT) participant, Stone Mountain High School biology teacher

Developed Honors Genetics lab course (2006)
Participated in the 2016 Duke TIP program at Georgia Tech

VI. Service

A. Professional Contributions

Co-organizer:

Southeast Regional Yeast Meeting, Parker H. Petit Institute for Bioengineering and Bioscience Georgia Institute of Technology, Atlanta, 2005

“DNA repair and human diseases.” Suddath Symposium, Parker H. Petit Institute for Bioengineering and Bioscience Georgia Institute of Technology, Atlanta, 2014

ad hoc reviewer for National Science Foundation (2008, 2012)
National Science Foundation panelist (2009, 2010)

Reviewer for the following journals:

Human Molecular Genetics, Gene, Journal of Biomedicine and Biotechnology, Nucleic Acid Research, Genetics, Journal of Cellular Biochemistry, Frontiers in Biosciences, Cell, Molecular Cell, Molecular Genetics and Genomics, Mutation Research/Fundamental and Molecular Mechanisms of Mutagenesis, American Journal of Human Genetics, Science, PLOS Biology, PLOS Genetics, DNA repair, PNAS, Journal of Biochemical Chemistry, EMBO Journal, Molecular Biology, Elife, Nature, Communication Biology, Cells, Frontiers in Genetics, PLOS One.

B. Public and Community Service

The PI's laboratory has been a part of a general public science outreach program with the *Atlanta Science Tavern* where scientists present their discoveries to a general audience.

The PI's laboratory was hosting tours for high and middle school students. In an effort to broaden our high school outreach initiative we have entered into a partnership with Warren Township High School.

C. Institute Contributions

Member of the Genetics Search Committee (2006)

Member of the Undergraduate Research Scholars admissions committee (2006, 2008, 2011)

Member of the ad hoc Honors Genetics Committee (2006)

Member of Graduate Affairs/Admissions Committee (2006-2008)

Head of Graduate Affairs/Admissions Committee (2009-2011)

Member of the Macromolecular Assembly Search committee (2010-2011)

Member of the SOB restructuring committee (2010-2011)

Member of the Teaching assignment committee (2010-2011)

Member of IBB equipment committee (2011-2017)

Member of the School of Biology Nomination for the Awards Committee (2014-2016)

Member of the Institutional Biosafety Committee (2012 – present)

School of Biological Sciences Research Faculty Promotion Committee (2021 – present)

IBB Equipment Committee (2020 – present)