Curriculum Vita

Nayun Kim

Assistant Professor

Department of Microbiology and Molecular Genetics
University of Texas Health Science Center
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D.O.B.: August 7th, 1971
Citizenship: U. S.

UNDERGRADUATE EDUCATION:

University of Chicago, Chicago, IL — 1991-1994
B.S. in Chemistry.

GRADUATE EDUCATION:

University of Chicago Ph. D. in Biochemistry and Molecular Genetics — 1994 - 2000
Thesis on " Transcription and DNA Repair In Immunoglobulin Gene Somatic Hypermutations."
Advisor: Dr. Ursula Storb

POSTGRADUATE TRAINING:

University of Pittsburgh, Pittsburgh PA — Sep. 2000 – July 2003
Department of Pharmacology
Mentor: Dr. Richard Wood, FRS.

Emory University, Atlanta GA — Oct. 2003 – Sept. 2006
Department of Biology
Mentor: Dr. Sue Jinks-Robertson

Duke University, Durham NC — Sept. 2006 – July 2013
Department of Molecular Genetics and Microbiology
Mentor: Dr. Sue Jinks-Robertson

ACADEMIC APPOINTMENTS:

Assistant Professor — Aug. 2013 – Present
Department of Microbiology and Molecular Genetics
University of Texas Health Science Center-Houston.

PROFESSIONAL ORGANIZATIONS:

Environmental Mutagenesis and Genomics Society	2015 - present
Genetics Society of America	2011 - present
Korean-American Scientists & Engineers Assn.	2010 - present

HONORS AND AWARDS:

NATIONAL/INTERNATIONAL SERVICE:

Peer Reviewer of manuscripts for:

Nucleic Acids Research
Molecular Carcinogenesis
PLoS Genetics
Proceedings of the National Academy of Sciences USA
Science Advances

Peer Reviewer for grants

NSF CAREER grant (2014)

Organized:

Korean-American Science, Engineering, and Medicine South-Atlantic Regional Conference, Nov. 2011

Korean-American Science, Engineering, and Medicine South-Atlantic Regional Conference, Nov. 2012

Korean-American Scientists and Engineers Association (North Carolina Chapter) Career Development Seminar, May 2012

SERVICE ON UTHSC-HOUSTON COMMITTEES:

Microbiology and Molecular Genetics Program Admissions Committee (2013-present)

SERVICE ON MEDICAL SCHOOL COMMITTEES:

Member Of Graduate Student Education Committee: (2015 – present)

SERVICE ON GRADUATE SCHOOL COMMITTEES:

Member Of GSBS Academic Standards Committee: (October 2015 -)

Chair of advisory committees for the following graduate student:

Norah Owiti, Microbiology and Molecular Genetics Program (2013 - present)

Member of advisory committees for graduate students

Pingping Wang, Genes and Development program (2013 - present)
Elisa Vesely, Microbiology and Molecular Genetics Program (2014 – present)
Sara Martin, Epigenetics and Molecular Carcinogenesis (2015 – present)

Member of advisory committee for master program student:

Surabhi Tyagi, Department of Pathology (2014 – present)

Ad hoc member of advisory committee for the graduate student
Katie McCallum, Microbiology and Molecular Genetics Program (Summer 2014)

Member of Ph.D. candidacy exam committee (October 2014)
Jillian Losh, Microbiology and Molecular Genetics Program

SPONSORSHIP OF CANDIDATES FOR POSTGRADUATE DEGREES:

Norah Owiti, Microbiology and Molecular Genetics Program (2013 – present)

COMMUNITY SERVICE

Fall 2013 Gave presentation at Genome Instability Group Meeting at Baylor College of Medicine.

Fall 2013 Spoke to Houston area graduate students and postdocs about career development at KSEA-KOEA Joint Young Professional Forum.

Served as a member of Student Advisor Committee at Baylor College of Medicine
Fall 2013 to present - Philip Minnick, Molecular and Human Genetics Program

Served as a member of Student Candidacy Exam Committee at Baylor College of Medicine
Spring 2014 – Philip Minnick, Human and Molecular Genetics Program
Fall 2014 – Brittany Barreto, Molecular and Human Genetics Program
Summer 2015 – Nhung Pham, Human and Molecular Genetics Program

Served as a poster Judge at MBID Retreat
Spring 2014

Fall 2014- Organizer, Genome Instability Group Meeting. (Special interest group meetings with weekly seminars presented by research groups located at Baylor College of Medicine, MD Anderson Cancer Center, Methodist Hospitals, and UTHSC Houston)

Fall 2014 Member of organizing committee. American Society for Microbiology Texas Branch Meeting.

Fall 2014 Member of organizing committee. KSEA West Gulf Coast Regional Conference; Korean-American Biomedical Scientists Symposium.

Spring 2015 Review panel member for Dean's excellence award for postdoctoral fellow in UT HSC Houston

TEACHING RESPONSIBILITIES:

Tutorial students supervised:
Norah Owiti (Fall 2013)
Naeh Klages-Mundt (Fall 2015)

Courses taught:

Spring 2014:
Medical Microbiology. Taught 1 lab class (50 minutes each) to approximately 20 medical students. (Substitution for a regular teaching faculty member). The lab covered gram staining technique.

Fall 2014:
Microbial Sensing and Signal Transduction (GS07 1082). Taught 2 discussion-based classes (1 hr each) to 5 second year pre-candidacy students.

Spring 2015:
Medical Microbiology. Taught 2 lab class (50 minutes each) to approximately 20 medical students. (Assistant for a regular teaching faculty member). The lab covered gram staining technique.

Spring 2015:
Microbial Genetics and Physiology (GS07 1015). Taught 4 classes (two lectures and two discussion based classes)

Fall 2015:
Topics in Microbiology. Taught 4 discussion classes.

High School Student research supervised:
Fall 2014 to Spring 2015:
Mahima Ginjupalli – Clements High School, Sugarland TX -

Professional Trainee Supervised:
Summer 2015:
Andrei Stephenson

CURRENT GRANT SUPPORT:

"Locus-specific quantitation of uracil associated with unscheduled DNA synthesis." Welch Foundation Grant AU-1875. 2015 – 2018. $195,000

PAST GRANT SUPPORT:

N/A

PUBLICATIONS:

Peer reviewed original research articles:

As a graduate student:

1. **Kim, N.,** Kage, K., Matsuda, F., Lefranc, M.-P., and Storb, U. "B lymphocytes of xeroderma pigmentosum or Cockayne syndrome patients with inherited defects in nucleotide excision repair are fully capable of somatic hypermutation of immunoglobulin genes." *Journal of Experimental Medicine* 186:413-419, 1997.

2. **Kim, N**., Bozek, G., Lo, J. C., Storb, U. "Different mismatch repair deficiencies all have the same effects on somatic hypermutation: intact primary mechanism accompanied by secondary modifications." *Journal of Experimental Medicine* 190:21-30, 1999. PMCID: PMC2195558

3. Shen, H. M., Michael, **N.,Kim**, N., and Storb, U. "The TATA binding protein, c-MYC and survivin genes are not somatically hypermutated, while Ig and BCL6 genes are hypermutated in human memory B cells." *International Immunology* 12:1085 – 1093, 2000. PMID: 10882420

4. Michael, N., Martin, T. E., Nicolae, D., **Kim, N**., Padjen, K., Zhan, P., Nguyen, H., Pinkert, C., and Storb, U. "Effects of sequence and structure on the hypermutability of immunoglobulin genes." *Immunity* 16:123 – 134, 2002. PMID: 11825571

5. **Kim, N.,** Martin, T. E., Simon, M. C., and Storb, U. "The transcription factor Spi-B is not required for somatic hypermutation" *Molecular Immunology* 39:577 – 583, 2003.

6. Michael, N., Shen, H. M., Longerich, S., Longacre, A., **Kim, N.,** and Storb, U. "'The E-box motif, CAGGTG, is an enhancer of somatic hypermutation without enhancing transcription." *Immunity* 19:235 – 242, 2003. PMID: 1293235

As a postdoctoral fellow:

7. Marini, F., **Kim, N**., Schuffert, A., and Wood, R. "POLN, a nuclear POLA family DNA polymerase homologous to the DNA cross-link sensitivity protein Mus308" *The journal of biological chemistry* 278:32014 – 32019, 2003.

8. **Kim, N**., Abdulovic, A., Gealy, R., Lippert, M., and Jinks-Robertson, S. "Transcription-associated mutagenesis in yeast is directly proportional to the level of gene expression and influenced by the direction of DNA replication" *DNA Repair* 6:1285 – 1296, 2007.

9. **Kim, N.** and Jinks-Robertson, S. "dUTP incorporation into genomic DNA is linked to transcription in yeast." *Nature* 459:1150 – 1153, 2009. PMCID: PMC2730915

10. **Kim, N.** and Jinks-Robertson, S. "Abasic sites in the transcribed strand of yeast DNA are removed by transcription-coupled nucleotide excision repair." *Molecular and Cellular Biology* 30:3206 – 3215, 2010.

11. Lippert, M.J., **Kim, N**., Cho, J-E., Larson, R. P., Schoenly, N. E., O'Shea, S. H. and Jinks-Robertson, S. "Role for Topoisomerase I in transcription-associated mutagenesis in yeast." *Proceedings of the National Academy of Sciences* 108:698 – 703, 2011. PMCID: PMC3021083

12. **Kim, N**. and Huang, S. N., Williams, J. S., Li, Y. C., Clark, A., Cho, J-E., Kunkel, T. A., Pommier, Y. and Jinks-Robertson, S. "Mutagenic procession of ribonucleotides in DNA by yeast Topoisomerase I." *Science* 332:1561 – 1564, 2011. PMID: 21700875

13. **Kim, N.** and Jinks-Robertson, S. "Guanine repeat-containing sequences confer transcription-dependent instability in an orientation-specific manner in yeast." *DNA Repair* 10:953 – 60, 2011. PMID: 21813340

14. **Kim, N.,** Mudrak, S., and Jinks-Robertson, S. "The dCMP transferase activity of yeast Rev1 is biologically relevant during the bypass of endogenously generated AP sites." *DNA Repair* 10:1262 – 71, 2011.

15. **Kim, N.** and Jinks-Robertson, S. "Transcription as a source of genome instability." *Nature Reviews Genetics* 13:204 – 14, 2012. PMID: 22330764

16. Cho, J-E., **Kim, N**., Li, Y. C., and Jinks-Robertson, S. "Two distinct mechanisms of Topoisomerase 1-dependent mutagenesis in yeast." *DNA Repair* 12:205 – 11, 2013.

17. **Kim, N**., Cho, J-E., Li, Y. C., and Jinks-Robertson, S. "RNA:DNA hybrids initiate quasi-palindrome-associated mutations in highly transcribed yeast DNA." *PLoS Genetics* 9(11):e1003924, 2013.

18. Cho, J-E., **Kim, N**., and Jinks-Robertson, S. "Topoisomerase 1-dependent deletions initiated by incision at ribonucleotides are biased to the non-transcribed strand of a highly activated reporter." *Nucleic Acids Research* Epub Aug 2015.

As an assistant professor:

19. Yadav, P., Harcy, V., Argueso, J-L., Dominska, M., Jinks-Robertson, S., and **Kim, N.** "Topoisomerase I plays a critical role in suppressing genome instability at a highly transcribed G-quadruplex-forming sequence" *PLoS Genetics* 10(12): e1004839, 2014.

20. Williams, J. D., Berroyer, A., Fleetwood, S., **Kim, N.** and Larson, E. "Sites of instability in the human TCF3 (E2A) gene adopt G-quadruplex DNA *in vitro*." *Frontiers in Genetics* 6:177, 2015.

21. Yadav, P., Owiti, N., and **Kim, N.** "The role of topoisomerase I in suppressing genome instability associated with a highly transcribed guanine-rich sequence is not restricted to preventing RNA:DNA hybrid accumulation." *Nucleic Acids Research* ePublished Nov. 2015.

Invited and other non-peer reviewed articles and book chapters:

1. Storb, U., Shen, H. M., Michael, N., and **Kim, N**. 2000 "Somatic hypermutation of immunoglobulin and non-immunoglobulin genes." *Philosophical Transactions of the Royal Society* 356:13 – 20.

2. Storb, U., Peters, A., **Kim, N**., Shen, H. M., Bozek, G., Michael, N., Hackett, Jr, J., Klotz, E., Reynolds, J. D., Loeb, L. A., and Martin, T. E. 1999 "Molecular aspects of somatic hypermutation of immunoglobulin genes." *Cold Spring Harbor Symposia on Quantitative Biololgy* 64:227 – 34.

Presentations at meetings:

Gordon Research Conference on DNA Damage, Mutation & Cancer, Mar. 2010

(Short Talk Presentation) *"Abasic Lesion Repair By Transcription-Coupled Nucleotide Excision Repair"*

Environmental Mutagen Society (EMS) Annual Conference, Oct. 2011
(Invited Speaker) *"Transcription Impacts Genomic Stability Via Multiple Mechanisms In Saccharomyces cerevisiae"*

South East Regional Yeast Meeting (SERYM), Feb. 2012
(Short Talk Presentation) *"Topoisomerase I-Mediated Deletion Mutations In Highly Transcribed Genes"*

Gordon Research Conference on Biological Mechanisms in Evolution, June 2013
(Short Talk Presentation) *"Accumulation of RNA/DNA hybrids is a major contributor to transcription-associated mutagenesis"*

Molecular Basis of Infectious Diseases (MBID) Retreat sponsored by MBID Training Program at UTHSC-Houston, March 2014
(Platform Presentation) *"The role of Topoisomerase I in G4-induced recombination."*

FASEB Science Research Conference on Dynamic DNA Structures in Biology, July 2014
(Short Talk Presentation) *"Topoisomerase I plays a critical role in suppressing genome instability at a highly transcribed G-quadruplex-forming sequence."*

Texas Branch American Society for Microbiology (ASM) Fall Meeting, Nov. 2014
"G-quadruplex induced genome instability and Topoisomerase I."

Southeast Regional Yeast Meeting, March 2015 (Short Talk Presentations) "The role of Topoisomerase I in suppressing G4 DNA-associated genome instability"

Environmental Mutagenesis and Genomics Society (EMGS) Annual Meeting, Sept. 2015 "The role of Top1 in Maintaining Genome stability at highly transcribed G4 sequences."
(Co-Chair, Symposium session on "Transcription, Genetic Instability and Mutagenesis.")

Invited seminars:
Florida State University Department of Biomedical Sciences Seminar Series, Nov. 2011
"*Transcription-Associated Genome Instability"*

University of Texas Health Science Center at Houston Department of Microbiology and Molecular Genetics Seminar Series, Nov. 2012
"*Transcription as a source of Genome Instability in Yeast"*

University of Texas MD Anderson Cancer Center Department of Genetics Information Exchange Seminar Series, Mar. 2014
"*Transcription as a source of Genome Instability in Yeast"*

Baylor College of Medicine Molecular and Human Genetics Seminar Series, May 2014
"Transcription and Genome Instability in S. cerevisiae."

Illinois State University School of Biological Sciences Seminar Series, November 2014
"Transcription and Genome Instability."

Storb Symposium sponsored by Molecular Genetics and Cell Biology Department at University of Chicago, May 2015
"Transcription-induced recombination and mutagenesis: Not just for immunoglobulins."