Prof. V. Narry Kim

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Research Interest

RNA-mediated gene regulation

Position

Professor, Seoul National University
Director, Center for RNA Research, Institute for Basic Science

Education

Ph. D., Biochemistry, 1994-1998
Oxford University, *Oxford, UK*

M. S., Microbiology, 1992-1994
Seoul National University, *Seoul, Korea*

B. A., Microbiology, 1988-1992
Seoul National University, *Seoul, Korea*

Professional Experience

***SNU Distinguished Professor**,* 2017-present
Seoul National University

***Professor**, School of Biological Sciences,* 2013-present
Seoul National University

***Director**, Center for RNA Research,* 2012-present
Institute for Basic Science

***SNU Distinguished Fellow**,* 2010-2016
Seoul National University

***Associate Professor**, School of Biological Sciences,* 2008-2013
Seoul National University

***Assistant Professor**, School of Biological Sciences,* 2004-2008
Seoul National University

***Research Associate Professor**, Advanced Training Program for Biological Sciences,* 2001-2004
Seoul National University

***Postdoc Fellow**, Howard Hughes Medical Institute,* 1999-2001
University of Pennsylvania

Professional Services

***Scientific Organiser**,* 2022
EMBO Workshop The Epitranscriptome, Virtual

***Scientific Organiser**,* 2021
EMBO | EMBL Symposium The Non-Coding Genome

***Organizer**,* 2021
IBS-SNU Mini-Symposia on RNA Biology & Therapeutics

***Organizer**,* 2021
The 26th Annual Meeting of the RNA Society

Organizer, 2021
International Conference of The Korean Society for Molecular and Cellular Biology

Organizer, 2020
CSHA COVID19/SARSCoV2 Rapid Research Reports, Virtual

Scientific Organiser, 2019
EMBL Symposia EMBO | EMBL Symposium The Non-Coding Genome

Organizer, 2019
Keystone Symposia

Board of Reviewing Editors, 2015-
Science

Editorial Board, 2014-
Molecular Cell

Co-Organizer, 2014
Keystone Symposia

Council Member, 2013-2014
Presidential Advisory Council on Science and Technology

Meetings Committee, 2013-2014
The RNA Society

Editorial Board, 2012-
Genes & Development

Director, 2011-2012
The RNA Society

Co-Organizer, 2011
Keystone Symposia

Co-Organizer, 2011
Cold Spring Harbor Asia - ISSCR

Editorial Board, 2011-
EMBO Journal

Editorial Board, 2010-
Cell

Co-Organizer, 2009
The RNA Society

Council Member, 2006-2008
Presidential Advisory Council on Science and Technology

Membership

Foreign Member (ForMemRS), 2021-
The Royal Society, UK

Foreign Associate, 2014-
National Academy of Sciences (NAS), USA

Member, 2014-
The Korean Academy of Science Technology

Foreign Associate, 2013-
European Molecular Biology Organization (EMBO)

Awards

The 3rd LIM SUNG KI Researcher Awards (The LIM Foundation), 2024

Lina 50+ Award Grand Prize (LINA Foundation), 2021

Asan Awards in Medicine (ASAN Foundation), 2019

Chen Award (Human Genome Organisation), 2017

KSMCB Award for Women in Life Science (Korean Society for Molecular and Cellular Biology), 2016

S-Oil Leading Scientist (S-Oil Science Prodigy and Culture Foundation), 2013

The Korea S&T Award (The Korean Federation of Science and Technology Societies), 2013

Gwanak Grand Prize Honor Sector (Seoul National University), 2013

National Honor Scientist (Ministry of Education, Science and Technology), 2010

Amore Pacific the Grand Prize (Amore pacific, KOFWST), 2010

Ho-Am Prize in medicine (Ho-Am Foundation), 2009

L'Oreal-UNESCO Women in Science Award (L'Oreal and UNESCO), 2008

Woman Scientist of the Year (Ministry of Science and Technology), 2007

Young Scientist Award (Ministry of Science and Technology), 2007

Thomson Scientific Citation Award (Thomson Corporation), 2007

Publications

1. Y. Choi[1], B. Um[1], Y. Na, J. Kim, J.-S. Kim[*], V. N. Kim[*] (2024) "Time-resolved profiling of RNA binding proteins throughout the mRNA life cycle" ***Molecular Cell***, 84:1-19.
2. S. Baek[1], B. Kim[1], H. Jang[1], K. Kim, I. Park, D.-H. Min, V. N. Kim[*] (2024) "Structural atlas of human primary microRNAs generated by SHAPE-MaP" ***Molecular Cell***, 84, 1158-1172.
3. Y.-S. Lee[1*], Y. Levdansky[1], Y. Jung, V. N. Kim[*], E. Valkov[*] (2024) "Deadenylation kinetics of mixed poly(A) tails at single-nucleotide resolution" ***Nature Structural & Molecular Biology***, doi: 10.1038/s41594-023-01187-1.
4. J. J. Seo[1], S.-J. Jung[1], J. Yang, D.-E. Choi, V. N. Kim[*] (2023) "Functional viromic screens uncover regulatory RNA elements" ***Cell***, 186(15):3291-3306.
5. S. Son[1], B. Kim[1], J. Yang, V. N. Kim[*] (2023) "Role of the proline-rich disordered domain of DROSHA in intronic microRNA processing" ***Genes & Development***, 37(9-10):383-397.
6. J. Park[1], M. Kim[1], H. Yi[1], K. Baeg[1], Y. Choi, Y. Lee, J. Lim, V. N. Kim[*] (2023) "Short poly(A) tails are protected from deadenylation by the LARP1-PABP complex" ***Nature Structural & Molecular Biology***, 30(3):330-338.
7. Y. Lee[1], H. Kim[1], V. N. Kim[*] (2023) "Sequence determinant of small RNA production by DICER" ***Nature***, 615(7951):323–330.
8. Y. Lee[1], H. Lee[1], H. Kim[1], V. N. Kim[*], S. H. Roh[*] (2023) "Structure of the human DICER–pre-miRNA complex in a dicing state" ***Nature***, 615(7951):331–338.

9. K. Kim*, V. N. Kim* (2022) “High-throughput in vitro processing of human primary microRNA by the recombinant Microprocessor” ***STAR Protocols***, 3(1):101042.

10. J. W. Bae, S. Kim, V. N. Kim*, J.-S. Kim* (2021) “Photoactivatable ribonucleosides mark base-specific RNA-binding sites” ***Nature Communications***, 12:6026.

11. S. Kim[1], S. Kim[1], H. R. Chang[1], D. Kim[1], J. Park, N. Son, J. Park, M. Yoon, G. Chae, Y. -K. Kim, V. N. Kim, Y. K. Kim, J. -W. Nam, C. Shin*, D. Baek* (2021) “The regulatory impact of RNA-binding proteins on microRNA targeting” ***Nature Communications***, 12:5057.

12. K. Kim[1], S. Baek[1], Y. Lee, C. Bastiaanssen, J. Kim, H. Kim, V. N. Kim (2021) “A quantitative map of human primary microRNA processing sites” ***Molecular Cell***, 81(16):3422-3439.e11.

13. Y. Hong, H. Jeong, K. Park, S. Lee, J. Y. Shim, H. Kim, Y. Song, S. Park, H. Y. Park, V. N. Kim, K. Ahn (2021) “STING facilitates nuclear import of herpesvirus genome during infection” ***Proceedings of the National Academy of Sciences of the U. S. A.***, 118(33):e2108631118.

14. S. Lee[1], Y. Lee[1], Y. Choi, A. Son, Y. Park, K.-M. Lee, J. Kim, J.-S. Kim, V. N. Kim (2021) “The SARS-CoV-2 RNA interactome” ***Molecular Cell***, 81(13):2838-2850.

15. Y. Lee[1], J. Kim[1], M. Kim[1], Y. Kwon, S. Shin, H. Yi, H. Kim, M. Chang, C. Chang, S. Kang, V. N. Kim, J. Kim, J. Kim, S. J. Elledge, C. Kang* (2021) “Coordinate regulation of the senescent state by selective autophagy” ***Developmental Cell***, 56(10):1512-1525.

16. H. Kim[1], Y. Lee[1], S. -M. Kim, S. Jang, H. Choi, J. -W. Lee, T. -D. Kim, V. N. Kim * (2021) “RNA demethylation by FTO stabilizes the FOXJ1 mRNA for proper motile ciliogenesis” ***Developmental Cell***, 56(8):1118-1130.

17. Y. Na[1], H. Kim, Y. Choi, S. Shin, J. H. Jung,S. C. Kwon, V. N. Kim*, J. S. Kim* (2021) “FAX-RIC enables robust profiling of dynamic RNP complex formation in multicellular organisms in vivo” ***Nucleic Acids Research***, 49(5):e28.

18. C. Kim[1], S. Sung[1], J. -S. Kim[1], H. Lee, Y. Jung, S. Shin, E. Kim, J. J. Seo, J. Kim, D. Kim Hiroyuki Niida, V. N. Kim, D. Park*, J. Lee* (2021) “Telomeres reforged with non-telomeric sequences in mouse embryonic stem cells” ***Nature communications***, 12:1097.

19. S. Hwang[1], H. Jung, S. Mun, S. Lee, K. Park, S. C. Baek, H. Moon, H. Kim, B. Kim, Y. Choi, Y. Go, W. Tang, J. Choi, J. Choi, H. Cha, H. Park, P. Liang, V. N. Kim, K. Han*, K. Ahn* (2021) “L1 retrotransposons exploit RNA m6A modification as an evolutionary driving force” ***Nature communications***, 12:880.

20. S. C. Kwon[1], H. Jang[1], S. Shen[1], S. C. Baek, K. Kim, J. Yang, J. Kim, J.-S. Kim, S. Wang, Y. Shi, F. Li*, V. N. Kim* (2020) “ERH facilitates microRNA maturation through the interaction with the N-terminus of DGCR8” ***Nucleic Acids Research***, 48(19):11097-11112.

21. R. Shang[1], S. C. Baek[1], K. Kim, B. Kim, V. N. Kim, E. C. Lai (2020) “Genomic Clustering Facilitates Nuclear Processing of Suboptimal Pri-miRNA Loci” ***Molecular Cell***, 78(2):303–316.

22. J. W. Bae, S. C. Kwon, Y. Na, V. N. Kim*, and J. S. Kim* (2020) “Chemical RNA digestion enables robust RNA-binding site mapping at single amino acid-resolution” ***Nature Structural & Molecular Biology***, 27:678-682.

23. D. Kim[1], J.-Y. Lee, J.-S. Yang, J. W. Kim, V. N. Kim*, H. Chang* (2020) “The architecture of SARS-CoV-2 transcriptome” ***Cell***, 181(4):914-921.e10.

24. H. Kim[1], J. Kim[1], S. Yu, Y.-Y. Lee, J. Park, R. J. Choi, S.-J. Yoon, S.-G. Kang, V. N. Kim (2020) “A mechanism for microRNA arm switching regulated by uridylation” ***Molecular Cell***, 78(6):1224-1236.e5

25. S. Yu and V. N. Kim (2020) “A tale of noncanonical tails: gene regulation by post-transcriptional RNA tailing” ***Nature Reviews Molecular Cell Biology***, 21:542-556.

26. D. Kim[1], Y. Lee[1], S.-J. Jung[1], J. Yeo[1], J. J. Seo, Y.-Y. Lee, J. Lim, H. Chang, J. Song, J. Yang, J. S. Kim, G. Jung, K. Ahn, V. N. Kim (2020) “Viral hijacking of the TENT4-ZCCHC14 complex protects viral RNAs via mixed tailing” ***Nature Structural & Molecular Biology***, 27:581–588.

27. J. Won, S. Lee, M. Park, T. Y. Kim, M. G. Park, B. Y. Choi, D. Kim, H. Chang, V. N. Kim, C. Justin Lee (2020) “Development of a Laboratory-safe and Low-cost Detection Protocol for SARS-CoV-2 of the Coronavirus Disease 2019 (COVID-19)” ***Exp Neurobiol.***, 29(2):107-119.

28. J. Min, T. S. Han, Y. Sohn, T. Shimizu, B. Choi, S. W. Bae, K. Hur, S. H. Kong, Y. S. Suh, H. J. Lee, J. S. Kim, J. K. Min, W. H. Kim, V. N. Kim, E. Choi, J. R. Goldenring, H. K. Yang (2020) “microRNA-30a arbitrates intestinal-type early gastric carcinogenesis by directly targeting ITGA2.” ***Gastric Cancer.***, 23:600-613.

29. S. Shin, J. H. Hong, Y. Na, M. Lee, W. J. Qian, V. N. Kim, J. S. Kim (2020) “Development of Multiplexed Immuno-N-Terminomics to Reveal the Landscape of Proteolytic Processing in Early Embryogenesis of Drosophila melanogaster” ***Anal. Chem.***, 92(7):4926-4934.

30. Y. Choi[1], K. Jeong[1], S. Shin[1], J. W. Lee[1], Y. Lee, S. Kim, S. A. Kim, J. Jung, K. P. Kim, V. N. Kim[*], J. S. Kim[*];(2020) “MS1-level proteome quantification platform allowing maximally increased multiplexity for SILAC and in vitro chemical labeling” ***Anal. Chem.***, 92(7):4980–4989.

31. S. Shin[1], Y. Jung[1], H. Uhm, M. Song, S. Son, J. Goo, C. Jeong, J.-J. Song, V. N. Kim, S. Hohng (2020) “Quantification of purified endogenous miRNAs with high sensitivity and specificity” ***Nature communications***, 11(6033).

32. J. K. Kim, J. Cho, S. H. Kim, H.C Kang, D.S Kim, V. N. Kim, J.H Lee (2019) “Brain somatic mutations in MTOR reveal translational dysregulations underlying intractable focal epilepsy” ***J Clin Invest.***, 129(10):4207-4223.

33. D. Kang[1], J. Shin[1], Y. Cho, H. S. Kim, Y. R. Gu, H. Kim, K. T. You, M. J. Chang, C. B. Chang, S. B. Kang, J. S. Kim, V. N. Kim, J. H. Kim (2019) “Stress-activated miR-204 governs senescent phenotypes of chondrocytes to promote osteoarthritis development” ***Science Translational Medicine***, 11(486): eaar6659.

34. J. Jung, K. Jeong, Y. Choi, S. A. Kim, H. Kim, J. W. Lee, V. N. Kim, K. P. Kim, J. S. Kim (2019) “Deuterium-Free, Three-Plexed Peptide Diethylation for Highly Accurate Quantitative Proteomics” ***J Proteome Res.***, 18(3):1078-1087.

35. H. Kim[1], J. Kim[1], K. Kim, H. Chang, K. You, V. N. Kim (2019) “Bias-minimized quantification of microRNA reveals widespread alternative processing and 3′ end modification” ***Nucleic Acids Research***, 47(5): 2630-2640.

36. S. C. Kwon, S. C. Baek, Y. G. Choi, J. Yang, Y. Lee, J.-S. Woo[+], V. N. Kim[+] (2019) “Molecular basis for the single-nucleotide precision of primary microRNA processing” ***Molecular Cell***, 73(3):505–518.

37. J. Yeo, V. N. Kim (2018) “U-tail as a guardian against invading RNAs” ***Nature structural & molecular biology***, 25, 903–905.

38. Y. Kim[1], J. Park[1], S. Kim[1], M. Kim, M. G. Kang, C. Kwak, M. Kang, B. Kim, H. W. Rhee, V. N. Kim (2018) “PKR senses nuclear and mitochondrial signals by interacting with endogenous double-stranded RNAs” ***Molecular Cell***, 71(6):1051-1063.e6.

39. J. Lim[1], D. Kim[1], Y. Lee[1], M. Ha, M. Lee, J. Yeo, H. Chang, J. Song, K. Ahn, V. N. Kim (2018) “Mixed tailing by TENT4A and TENT4B shields mRNA from rapid deadenylation” ***Science***, eaam5794.

40. H. Yi[1], J. Park[1], M. Ha, J. Lim, H. Chang, V. N. Kim (2018) “PABP Cooperates with the CCR4-NOT Complex to Promote mRNA Deadenylation and Block Precocious Decay” ***Molecular Cell***, 70(6):1081-1088.e5..

41. B. Kim, V. N. Kim (2018) “fCLIP-seq for transcriptomic footprinting of dsRNA-binding proteins: Lessons from DROSHA” ***Methods***, S1046-2023(18)30064-1.

42. T. A. Nguyen[1], J. Park[1], T. L. Dang, Y. G. Choi, V. N. Kim (2018) “Microprocessor depends on hemin to recognize the apical loop of primary microRNA” ***Nucleic Acids Res.***, 46(11):5726-5736.

43. A. Son[1], J.-E. Park[1], V. N. Kim (2018) “PARN and TOE1 Constitute a 3′ End Maturation Module for Nuclear Non-coding RNAs” ***Cell Reports***, 23(3):888-898.

44. H. Chang[1], J. Yeo[1], J.-g. Kim, H. Kim, J. Lim, M. Lee, H. H. Kim, J. Ohk, H.-Y. Jeon, H. Lee, H. Jung, K.-W. Kim, V. N. Kim (2018) “Terminal Uridylyltransferases Execute Programmed Clearance of Maternal Transcriptome in Vertebrate Embryos” ***Molecular Cell***, 70(1):72-82.e7.

45. V. N. Kim (2018) “RNA-targeting CRISPR comes of age” ***Nature Biotechnology***, 36:44–45.

46. B. Kim[1], K. Jeong[1], V. N. Kim (2017) “Genome-wide Mapping of DROSHA Cleavage Sites on Primary MicroRNAs and Noncanonical Substrates” ***Molecular Cell***, 66(2):258-269.

47. J. Choi, Y.-K. Kim, K. Park, J. Nah, S. S. Yoon, D. W. Kim, V. N. Kim, R. H. Seong (2016) “MicroRNA-139-5p regulates proliferation of hematopoietic progenitors and is repressed during BCR-ABL-mediated leukemogenesis” ***Blood***, 128(17):2117-2129.

48. J. Lim[1], M. Lee[1], A. Son, H. Chang, V. N. Kim (2016) “mTAIL-seq reveals dynamic poly(A) tail regulation in oocyte-to-embryo development” ***Genes & Development***, 30:1671-1682.

49. B. Choi[1], J. Yu[1], T.-S. Han, Y.-K. Kim, K. Hur, B.-C. Kang, W. H. Kim, D.-Y. Kim, H.-J. Lee, V. N. Kim, H.-K. Yang (2016) “Gastric Carcinogenesis in the miR-222/221 Transgenic Mouse Model” ***Cancer Research and Treatment***, 49(1):150-160.

50. J.-E. Park[1], H. Yi[1], Y. Kim[1], H. Chang, V. N. Kim (2016) “Regulation of Poly(A) Tail and Translation during the Somatic Cell Cycle” ***Molecular Cell***, 62(3):462-471.

51. Y.-K. Kim[*], B. Kim, V. N. Kim[*] (2016) “Re-evaluation of the roles of DROSHA, Exportin 5, and DICER in microRNA biogenesis” ***Proceedings of the National Academy of Sciences of the U. S. A.***, 113(13):E1881-E1889.

52. S. C. Kwon[1], T. A. Nguyen[1], Y.-G. Choi[1], M. H. Jo, S. Hohng, V. N. Kim[*], J.-S. Woo[*] (2016) “Structure of Human DROSHA” ***Cell***, 164(1-2):81-90.

53. K. T. You, J. Park, and V. N. Kim (2015) “Role of the small subunit processome in the maintenance of pluripotent stem cells” ***Genes & Development***, 29:2004-2009.

54. J. Cho[1], N.-K. Yu[1], J.-H. Choi, S.-E. Sim, S. J. Kang, C. Kwak, S.-W. Lee, J. Kim, D. I. Choi, V. N. Kim[*], B.-K. Kaang[*] (2015) "Multiple repressive mechanisms in the hippocampus during memory formation" ***Science***, 350(6256):82–87.

55. M. Kampmann, M. A. Horlbeck, Y. Chena, J. C. Tsai, M. C. Bassik, L. A. Gilbert, J. E. Villalta, S. C. Kwon, H. Chang, V. N. Kim, J. S. Weissman (2015) "Next-generation libraries for robust RNA interference-based genome-wide screens" ***Proceedings of the National Academy of Sciences of the U. S. A.***, 112(26):E3384-E3391.

56. S. Kim[1], D. Seo[1], D. Kim, Y. Hong, H. Chang, D. Baek, V. N. Kim, S. Lee, K. Ahn (2015) "Temporal Landscape of MicroRNA-Mediated Host-Virus Crosstalk during Productive Human Cytomegalovirus Infection" ***Cell Host & Microbe***, 17(6):838-851.

57. T. A. Nguyen, M. H. Jo, Y.-G. Choi, J. Park, S. C. Kwon, S. Hohng, V. N. Kim[*], J.-S. Woo[*] (2015) "Functional Anatomy of the Human Microprocessor" ***Cell***, 161(6):1374-1387.

58. B. Kim[1], M. Ha[1], L. Loeff[1], H. Chang, D. K. Simanshu, S. Li, M. Fareh, D. J. Patel, C. Joo[*], V. N. Kim[*] (2015) "TUT7 controls the fate of precursor microRNAs by using three different uridylation mechanisms" ***EMBO Journal***, 35(2):115-236. Suppl.

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63. M. Lee, Y. Choi, K. Kim, H. Jin, J. Lim, T. A. Nguyen, J. Yang, M. Jeong, A. J. Giraldez, H. Yang, D. J. Patel, and V. N. Kim (2014) "Adenylation of maternally inherited microRNAs by ***Wispy***" ***Molecular Cell***, 56(5):696-707.

64. Y. Kim[1], J. Yeo[1], J. H. Lee[1], J. Cho, D. Seo, J. Kim, and V. N. Kim (2014) "Deletion of human tarbp2 reveals cellular microRNA targets and cell cycle function of TRBP" ***Cell Reports***, 9:1061–1074.

65. M. Lee, B. Kim and V. N. Kim (2014) "Emerging roles of RNA modifications: m6A and U-tail" ***Cell***, 158:980-987.

66. M. Ha and V. N. Kim (2014) "Regulation of microRNA biogenesis" ***Nature Reviews Molecular Cell Biology***, 15, 509–524.

67. Y. Kim, J. H. Lee, J.-E. Park, J. Cho, H. Yi and V. N. Kim (2014) "PKR is activated by cellular dsRNAs during mitosis and acts as a mitotic regulator" ***Genes & Development***, 28: 1310-1322.

68. H. Chang[1], J. Lim[1], M. Ha, and V. N. Kim (2014) "TAIL-seq: Genome-wide Determination of Poly(A) Tail Length and 3′ End Modifications" ***Molecular Cell***, 53(6):1044-1052.

69. J.-S. Woo, and V. N. Kim (2014) "MeCP2 Caught Moonlighting as a Suppressor of MicroRNA Processing" ***Developmental Cell***, 28(5):477-478.

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71. Y.-K. Kim[1], G. Wee[1], J. Park, J. Kim, D. Baek, J.-S. Kim[*], and V. N. Kim[*] (2013) "TALEN-based knockout library for human microRNAs" ***Nature Structural and Molecular Biology*****,** 20(12):1458-1464.

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