

Sungchul Kim PhD



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Timeline

- 2021.02-Current** ● **Principal Research Scientist/Young Scientist Fellow (YSF)**
Center for RNA Research (at SNU), **Institute of Basic Science**
Director: *Prof. V. Narry Kim PhD*
- 2018.01-2021.01** ● **Marie Curie Experienced Researcher**
Department of Bionanoscience, **Delft University of Technology**
Supervisor: *Prof. Chirlmin Joo PhD*
- 2016.01-2018.01** ● **NWO-FOM Postdoctoral Research Fellow**
Department of Bionanoscience, **Delft University of Technology**
Supervisor: *Prof. Chirlmin Joo PhD*
- 2013.09-2016.01** ● **Postdoctoral Research Associate**
School of Biological Sciences, **Seoul National University**
Supervisor: *Prof. Kwangseog Ahn PhD*
- 2007.03-2013.08** ● **Doctor of Philosophy in Biological sciences**
Combined Master-Doctoral course
School of Biological Sciences, **Seoul National University**
Supervisor: *Prof. Kwangseog Ahn PhD*
- 2001.03-2007.02** ● **Bachelor of Science in Biological sciences**
School of Biological Sciences, **Seoul National University**

Publications

*Co-first authorship, [§](Co-)corresponding authorship

- **Sungchul Kim***[§], Yong-geun Choi, Kirsten Janssen, Christian Büll, Bhagyashree S. Joshi, Adam Pomorski, Vered Raz, Marvin E. Tanenbaum, Pascal Miesen[§], Zeshi Li[§], Chirlmin Joo[§], N-glycosylated molecules as contaminants in RNA purification (under review in *Cell*)
- **Sungchul Kim***, Viktorija Globyte*, Michel Bengtson*, Jaco van der Torre, Cees Dekker[§] and Chirlmin Joo[§], Small RNA molecules inhibit the catalytic activity of Cas9 in vitro (in preparation)
- Gyeong-Seok Oh, Seongjin An, and **Sungchul Kim**[§], Recording RNA by CRISPR-Cas adaptation: a brief review, *BMB Reports* (in press) (Impact factor 5.041) (URL: [click here](#))
- Hyejun Kim, Jae Won Yun, Gayun Baek, **Sungchul Kim**[§], Mihn-Sook Jue[§], Differential microRNA profiles in elderly males with seborrheic dermatitis, **Scientific Reports**, 12/2022 8;12(1):21241. doi: 10.1038/s41598-022-24383-3 (Impact factor 4.997) (URL: [click here](#))
- Ji-Seon Lee, Seongchan Kim, **Sungchul Kim**, Kwangseog Ahn, and Dal-Hee Min, Fluorometric Viral miRNA Nanosensor for Diagnosis of Productive (Lytic) Human Cytomegalovirus Infection in Living Cells, **ACS Sensors**, 02/2021; doi: 10.1021/acssensors.0c01843. (Impact factor 9.618) (URL: [click here](#)).
- Kwang-Hyun Park*, **Sungchul Kim***, Su-Jin Lee, Jee-Eun Cho, Vinod Vikas Patil, Hyung-Nam Song, Woo-Chan Ahn, Chirlmin Joo[§], Seung-Goo Lee, Victoria Shingler and Eui-Jeon Woo[§], Tetrameric architecture of phenol-bound DmpR, a single-component AAA+ ATPase transcriptional regulator, **Nature Communications**, 06/2020; 11(1):2728., (Impact factor 17.690) (URL: [click here](#)).
- **Sungchul Kim***[§], Luuk Loeff*, Sabina Colombo, Slobodan Jergic, Stan J.J. Brouns, and Chirlmin Joo[§], Selective prespacer loading and processing for precise CRISPR adaptation, **Nature**, 03/2020; 579(7797):141-145., (Impact Factor 69.504) (URL: [click here](#))
- **Sungchul Kim** *[§], Luuk Loeff*, Sabina Colombo, Stan J.J. Brouns, Chirlmin Joo[§], Selective Prespacer Processing Ensures Precise CRISPR-Cas Adaptation, **BioRxiv**, 608976 (URL: [click here](#))
- **Sungchul Kim** and Kwangseog Ahn, ACE-score-based Analysis of Temporal miRNA Targetomes During Human Cytomegalovirus Infection Using AGO-CLIP-seq, **Bio-protocol**, 04/2016; 6(8): e1791. (URL: [click here](#))
- **Sungchul Kim***, Daekwan Seo*, Dongwoo Kim, Yujin Hong, Hyesik Chang, Daehyun Baek, V. Narry Kim, Sungwook Lee, and Kwangseog Ahn, Temporal Landscape of MicroRNA-Mediated Host-Virus Crosstalk during Productive Human Cytomegalovirus Infection, **Cell Host & Microbe**, 06/2015; 17(6):838–851., (Impact Factor 31.316) “Featured Article” (URL: [click here](#))
- Jeongmin Ryoo, Jongsu Choi, Changhoon Oh, **Sungchul Kim**, Minji Seo, Seok-Young Kim, Daekwan Seo, Jongkyu Kim, Tommy E White, Alberto Brandariz-Nuñez, Felipe Diaz-Griffero, Cheol-Heui Yun, Joseph A Hollenbaugh, Baek Kim, Daehyun Baek, Kwangseog Ahn, The ribonuclease activity of SAMHD1 is required for HIV-1 restriction, **Nature Medicine**, 07/2014; 20(8):936-41., (Impact Factor 87.241) “Cover Feature Article” (URL: [click here](#))

- Sanghyun Lee, Jaewon Song, **Sungchul Kim**, Jongkyu Kim, Yujin Hong, Youngkyun Kim, Donghyun Kim, Daehyun Baek, Kwangseog Ahn, Selective Degradation of Host MicroRNAs by an Intergenic HCMV Noncoding RNA Accelerates Virus Production, **Cell Host & Microbe**, 06/2013; 13(6):678-90., (Impact Factor 31.316) “F1000 Prime” (URL: [click here](#))
- Youngkyun Kim, Sanghyun Lee, **Sungchul Kim**, Donghyun Kim, Jin-Hyun Ahn, Kwangseog Ahn, Human cytomegalovirus clinical strain-specific microRNA miR-UL148D targets the human chemokine RANTES during infection, **PLoS Pathogens**, 03/2012; 8(3):e1002577., (Impact Factor 7.01) (URL: [click here](#))
- **Sungchul Kim**, Sanghyun Lee, Jinwook Shin, Youngkyun Kim, Irini Evnouchidou, Donghyun Kim, Young-Kook Kim, Young-Eui Kim, Jin-Hyun Ahn, Stanley R Riddell, Efstratios Stratikos, V Narry Kim, Kwangseog Ahn, Human cytomegalovirus microRNA miR-US4-1 inhibits CD8+ T cell responses by targeting the aminopeptidase ERAP1, **Nature Immunology**, 09/2011; 12(10):984-91., (Impact Factor 31.250) “F1000 Exceptional” (URL: [click here](#))

Presentations

- **CRISPR2022**
2022.06, Poster Presentation (Boston, Massachusetts in US), Title: Small RNA molecules suppress the cleavage activity of CRISPR-Cas9
- **The Korean Physical Society: Section for Biophysics**
2022.01, Oral presentation (Gangneung in Korea), Title: CRISPR adaptation: A hidden story behind the genome editing
- **International Conference: Korean Society for Molecular and Cellular Biology**
2019.10, Oral Presentation (Seoul in Korea), Title: Molecular mechanism for accurate Cas1-Cas2-mediated spacer integration in CRISPR-Cas system
- **CRISPR2019**
2019.06, Oral Presentation (Quebec City, Quebec in Canada), Title: Delayed PAM Trimming Ensures Correct Orientation in CRISPR-Cas Spacer Acquisition
- **CRISPR2017**
2017.06, Poster Presentation (Big Sky, Montana in US), Title: Single-molecule study on cruciform formation of palindromic repeat region in type I-E CRISPR array
- **39th Annual International Herpesvirus Workshop**
2014.07, Oral & Poster Presentation (Kobe in Japan), Title: The Genome-wide Analysis of miRNA Targetome during Productive Human Cytomegalovirus Infection
- **The Global Young Scientist Summit**
2014.01, Participant (GYSS@one-north, Singapore), One of Korean representatives
- **RNA IBS meeting**
2013.07, Oral Presentation (Seoul National University), Title: The MicroRNA Targetome Analysis in Human Cytomegalovirus Infection

- **RNA IBS meeting**
2012.07, Oral Presentation (Seoul National University), Title: Discovery of AGO-interacting Transcriptome in HCMV infection by AGO-CLIPseq Method
- **RCFC symposium**
2011.07, Oral Presentation (Chuncheon in Korea), Title: Subversion of the CD8+ Cytotoxic T Cell Response by a Viral MicroRNA
- **Korean Society for Cell Biology Summer meeting**
2010.07, Oral Presentation (Jungseon in Korea), Title: Human cytomegalovirus-encoded microRNAs inhibit the production of optimal antigenic peptides of MHC class I by targeting ERAP1
- **RNA workshop**
2010.07, Oral Presentation (Buan in Korea), Title: Human cytomegalovirus-encoded microRNAs inhibit the trimming of optimal antigenic peptides for immune evasion
- **RNA workshop**
2009.07, Oral Presentation (Yangyang in Korea), Title: Human cytomegalovirus-encoded microRNAs inhibit the production of optimal antigenic peptides of MHC class I by targeting ERAP1
- **RCFC symposium**
2009.07, Oral Presentation (Chuncheon in Korea), Title: Human cytomegalovirus-encoded microRNAs inhibit the production of optimal antigenic peptides of MHC class I by targeting ERAP1
- **Keystone Symposia (RNAi, MicroRNA, and Non-Coding RNA)**
2008.03, Poster Presentation (Vancouver in Canada), Title: Functional Roles for Human Cytomegalovirus-encoded MicroRNAs in immune Regulation
- **RCFC symposium**
2007.07, Poster Presentation (Chuncheon in Korea), Title: Human Cytomegalovirus-encoded MicroRNAs: The Role as the Regulators of Host Immune System

Main research topics

- Single-molecule study of molecular mechanisms of SARS-CoV-2 RNA-related proteins (2021 - Current)
- Single-molecule study of molecular mechanisms of CRISPR-Cas systems (2016 - Current)
- RNAseq analysis related to the RNase role of SAMDH1 in cells infected with HIV-1 (2013 - 2014)
- Genome-wide analysis of miRNA targetome during productive HCMV infection (2011 - 2015)
- Functional analysis of HCMV-encoded miRNA-human target interaction (2009 - 2011)

- HCMV-encoded miRNA target prediction and validation
(2007 - 2009)

Awards, scholarships, grants and fundings

2021	Young Scientist Fellowship (YSF), Institute of Basic Science (IBS) (KRW 300,000,000/year, 3+2 years)
2019	Korean Society for Molecular and Cellular Biology, Young Investigator Research Award
2017	Marie Skłodowska-Curie Action, Individual Fellowship (IF), Call: H2020-MSCA-IF-2016 (753528) (EUR 177,598.80/year, 2 years)
2016	Basic Science Research Program through the National Research Foundation of Korea (NRF) (2016R1A6A3A03007919) (KRW 30,000,000/year, 1 year)
2010	Lecture & Research Scholarship in School of Biological sciences in Seoul National University
2007	Superior Academic Performance in School of Biological sciences in Seoul National University
2007 - 2010	Brain Korea 21 Scholarship
2005 - 2006	Lotte Foundation Scholarship
2001 - 2005	Seoul National University Scholarship

Extra-academic activities

2017 - 2020	Regional (Delft) Chairperson in Korean Scientists and Engineers Association in the Netherlands
2013	1st Vice president of Graduate student council in Seoul National University (Founder member)
2013	1st President of Graduate student council in School of Biological sciences in Seoul National University (Founder)
2011 - 2013	Student assistant in School of Biological sciences in Seoul National University