

Curriculum Vitae
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Donghyuk Shin

Personal details

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60438, Frankfurt am main, Germany

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Nationality Korean

Speaking Korean and English

Education and Training

03/2012 – 08/2017 **Ph.D**
Department of Biological Sciences, Sungkyunkwan
University, Suwon, Korea
Advisor: Professor Sangho Lee

09/2010 – 02/2012 **M.S.**
Department of Biological Sciences, Sungkyunkwan
University, Suwon, Korea
Advisor: Professor Sangho Lee

03/2007 – 08/2010 **B.S.**
Department of Biological Sciences, Sungkyunkwan
University, Suwon, Korea

Professional Experiences

11/2017 – present **Post-doctoral researcher**
Institute of Biochemistry II, Goethe University-Medical
faculty, University hospital, Frankfurt am main, Germany
PI: Professor Ivan Dikic

09/2017 – 10/2017 **Post-doctoral researcher**
Department of Biological Sciences, Sungkyunkwan
University, Suwon, Korea
PI: Professor Sangho Lee

Publications

1. Sissy Kalayil, Sagar Bhogaraju, Florian Bonn, **Donghyuk Shin**, Yaobin Liu, Ninghai Gan, Jerome Basquin, Paolo Grumati, Zhao-Qing Luo, Ivan Dikic. Insights into catalysis and function of phosphoribosyl-linked serine ubiquitination. *Nature*. (Revised manuscript-Under review)
2. **Donghyuk Shin**, Sangho Lee. Crystallization and preliminary crystallographic analysis of a zincdependent alcohol dehydrogenase from *Streptococcus pneumoniae*. *Biodesign*. 5(4). 132-135 (Dec, 2017)
3. **Donghyuk Shin**, Wooju Na, Ji-Hyung Lee, Gyu Hee Kim, Jiseok Baek, Seok Hee Park, Cheol Yong Choi, Sangho Lee. Site-specific monoubiquitination downregulates Rab5 by disturbing effector binding and guanine nucleotide conversion. *eLife*. 2017(6); e29154 (Oct, 2017)
4. Ji-Hyung Lee, Su Myung Jung, Kyung-Min Yang, Eunjin Bae, Sung Gwe Ahn, Jin Seok Park, Dongyeob Seo, Minbeom Kim, Jihoon Ha, Jaewon Lee, Jun-Hyeong Kim, Jun-Hwan Kim, Akira Ooshima, Jinah Park, **Donghyuk Shin**, Youn Sook Lee, Sangho Lee, Geert van Loo, Joon Jeong, Seong-Jin Kim, Seok Hee Park. A20 promotes metastasis of aggressive basal-like breast cancers through multi-monoubiquitination of Snail1. *Nat. Cell. Biol.* 19(10):1260-1273 (Oct, 2017)
5. Seungsu Han, Myung Ki Min, Su-Youn Lee, Chae Woo Lim, Nikita Bhatnagar, Yeongmok Lee, **Donghyuk Shin**, Ka Young Chung, Sung Chul Lee, Beom-Gi Kim, and Sangho Lee. Modulation of ABA signaling by altering VΦGΦL motif of PP2Cs in *Oryza sativa*. *Mol. Plant*. 10(9); 1190-1205 (Sep, 2017)
6. Erik Norberg, Ana Lako, Pei-Hsuan Chen, Illana A Stanley, Feng Zhou, Scott B Ficarro, Bjoern Chapuy, Linfeng Chen, Scott Rodig, **Donghyuk Shin**, Dong Wook Choi, Sangho Lee, Margaret A Shipp, Jarrod A Marto and Nika N Danial. Differential contribution of the mitochondrial translation pathway to the survival of diffuse large B-cell lymphoma subsets. *Cell Death Differ.* 24(2); 252-262 (Feb, 2017)
7. **Donghyuk Shin**, Seungsu Han, Sangho Lee. Structure determination of biological macromolecular complexes by small-angle X-ray scattering (SAXS) combined with validating tools. *Biodesign*. 4(1); 18-24 (Mar, 2016)
-Review paper-
8. Trung Thanh Thach, **Donghyuk Shin***, Seungsu Han, Sangho Lee. New conformations of linear polyubiquitin chains by crystallographic and solution scattering expand the conformational space of polyubiquitin. *Acta. Cryst. D.* D72; 524-535 (Mar, 2016), ***Equal contribution**
9. Forest H Andrews · Joshua D Horton · **Donghyuk Shin** · Hye-Jin Yoon · Matthew G Logsdon · Ahmed M Malik · Megan P Rogers · Malea M Kneen · Se Won Suh · Michael J McLeish. The kinetic characterization and X-ray structure of a putative benzoylformate decarboxylase from *M. smegmatis*

highlights the difficulties in the functional annotation of ThDP-dependent enzymes. *Biochim Biophys Acta*. 1854(8); 1001-1009 (April, 2015)

10. Trung Thanh Thach, Namsoo Lee, Donghyuk Shin, Seungsu Han, Gyuhee Kim, Hong Tae Kim, Sangho Lee. Molecular determinants of polyubiquitin recognition by continuous ubiquitin binding domains of Rad18. *Biochemistry*. 54(12); 2136-2148 (Mar, 2015)
11. Donghyuk Shin, Gwanho Kim, Gyuhee Kim, Xu Zheng, Yang-Gyun Kim, Sangho Lee. Structural and biochemical characterizations of an intramolecular tandem coiled coil protein. *Biochem. Biophys. Res. Commun.* 455(3-4); 339-346 (Nov, 2014)
12. Shuo Ren, Yuanyuan Jiang, Hye Rim Yoon, Sun Woo Hong, Donghyuk Shin, Sangho Lee, Dong-Ki Lee, Moonsoo M. Jin, Irene M. Min, Soyoun Kim. Label-free Detection of the Transcription Initiation Factor Assembly and Specific Inhibition by Aptamers. *Bull. Korean. Chem. Soc.* 35(5); 1279 -1284 (May, 2014)
13. Doyoun Kim, Jeonghwan Hur, Kwangsoo Park, Sangsu Bae, Donghyuk Shin, Sung Chul Ha, Hye-yeon Hwang, Sungchul Hohng, Joon-Hwa Lee, Sangho Lee, Yang-Gyun Kim, Kyeong Kyu Kim. Distinct Z-DNA binding mode of a PKR-like protein kinase containing a Z-DNA binding domain (PKZ). *Nucleic. Acids. Res.* 42(9); 5937-5948 (May, 2014)
14. Seungsu Han, Donghyuk Shin, Hoon Choi, Sangho Lee. Molecular determinants of the interaction between Doa1 and Hse1 involved in endosomal sorting. *Biochem. Biophys. Res. Commun.* 446; 352-357 (Mar, 2014)
15. Donghyuk Shin, Sei Young Lee , Seungsoo Han , Shuo Ren , Soyoun Kim , Yoshikatsu Aikawa , Sangho Lee. Differential polyubiquitin recognition by tandem ubiquitin binding domains of Rabex-5. *Biochem. Biophys. Res. Commun.* 423; 757–762, (Jul, 2012)
16. Hoon Choi, Seungsoo Han, Donghyuk Shin, Sangho Lee. Polyubiquitin recognition by AtSAP5, an A20-type zinc finger containing protein from Arabidopsis thaliana. *Biochem. Biophys. Res. Commun.* 419; 436-440, (Mar, 2012)
17. Byeong-Gu Han, Kyung-Chae Jeong , Jea-Won Cho , Byung-Cheon Jeong , Hyun Kyu Song , Jae Young Lee, Dong Hyuk Shin , Sangho Lee , Byung Il Lee. Crystal structure of Pyrococcus furiosus PF2050, a member of the DUF2666 protein family. *FEBS Lett.* 586; 1384-1388, (May, 2012)
18. Dong-Wan Kim, Hyun Sung, Donghyuk Shin, Haihong Shen, JooHong Ahn, Sun-Kyung Lee, and Sangho Lee. Differential Physiological Roles of ESCRT Complexes in Caenorhabditis elegans. *Mol. Cells.* 31; 585-592, (Jun, 2011)

Skills

Molecular cloning	- New target gene into plasmid vector (can generate within a week) - Site-directed mutagenesis (can generate within a week)
Protein purification	- His-, GST-, or MBP- fused protein purification (affinity chromatography) - Ion exchange chromatography, Size exclusion chromatography - AkTA system handling (AkTA prime, AkTA FPLC)
Protein Crystallization	- Oil-microbatch screening - Hanging drop/Sitting drop
Protein X-ray crystallography	- Data collection, processing (HKL2000, iMOSflm) - Structure determination (MR, SAD, MAD using Phenix, CCP4, COOT)
SAXS	- Data collection, quality check, envelope modeling (ATSAS package from EMBL) - Flexible molecule analysis (EOM from ATSAS) - Multidomain modeling (SASREF, CORAL from ATSAS)
Biochemical study	- Pull-down assay (Ni-NTA, GST-pull-down, Immuno precipitation) - ITC, SPR, BLI, ELISA, CD, DLS - Enzyme assay
Mammalian Cell culture	- Cell maintenance - Immuno fluorescence - In vivo ubiquitination assay

Conferences and workshops

1. EMBO conference- Ubiquitin and SUMO: From molecular mechanism to system-wide responses 2017 (Sep 15-19, 2017, Dubrovnik, Croatia) – **Poster presentation**
2. The 2nd Annual Symposium of Federation of Korean Societies for Molecular and Biomedical Sciences 2017 (Aug 21-22, 2017, DGIST, Daegu, Korea) – **Oral presentation**
3. 2016 FASEB microsite meeting - **GTPases in Trafficking, Autophagy and Disease** (Sep 18 - 23, 2016, West Palm Beach, FL, USA) – **Poster presentation, selected abstract for short talk**

4. EMBO Global Exchange Lecture Course - **Structural and Biophysical Methods for Biological Macromolecules in Solution** (Jun 19 - 26, 2016, Suwon, Korea)
5. 59th Biophysical Society Annual Meeting (Feb 7 - 11, 2015, Baltimore, USA)- **Poster presentation**
6. 2014 EMBO practical course - **Solution scattering from biological macromolecules** (Oct 27 - Nov 3, 2014, Hamburg, Germany)
7. 2014 American Crystallographic Association Annual meeting (May 24 - 28, 2014, Albuquerque, USA) - **Poster presentation**
8. 2013 American Crystallographic Association Annual meeting (July 20 - 24, 2013, Hawaii, USA) - **Oral presentation**
9. 2013 American Crystallographic Association Annual meeting BioSAXS workshop (July 20, 2013, Hawaii, USA)
10. The 26th symposium of the Protein Society (August 5 - 8, 2012, San Diego, USA) - **Poster presentation**
11. 2011 KSBMB annual meeting (May 16 - 18, 2011, Seoul, Korea) - **Poster presentation**
12. 25th Anniversary symposium of the Protein Society (July 23 - 27, 2011, Boston, USA) - **Poster presentation**

Awards and funding

1. 2017.11.03 Poster award from Annual meeting of Korean Crystallographic Association
2. 2017.08.22 Young scientist award from 2nd Annual Symposium of Federation of Korean Societies for Molecular and Biomedical Sciences
3. 2016.07.05 Poster award from Annual meeting of Korean Society for Structural Biology
4. 2013.07.20 Margaret Etter Student Lecturer Award 2013 from American Crystallographic Association
5. 2010.09 - 2015.08 National Junior Research Fellowship from National Research Foundation (**Role: Principal investigator, ~ 60,000 USD/year - ~30,000 USD for research and ~30,000 USD for salary**)
6. 2010. 10. 11 President award for competent student from Korea

Foundation for the Advancement of Science and Creativity

7. 2010.03
- 2010.08 Undergraduate Research Program from Korea Foundation
for the Advancement of Science and Creativity (**\$10,000**)
8. 2009.05
- 2010.03 Undergraduate Research Program from Korea Foundation
for the Advancement of Science and Creativity (**\$20,000**)
9. 2008.09
- 2009.08 Undergraduate Research Program from Korea Foundation
for the Advancement of Science and Creativity (**\$20,000**)