

Yigong Shi

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Date of Birth: May, 1967
Place of Birth: Zhengzhou, China

Professional Positions:

2018 – present Founding President, Westlake University, Hangzhou, Zhejiang

2015 – 2018 Vice President, Tsinghua University, Beijing

2011 – present Director, Center for Structural Biology (renamed to Beijing Advanced Innovation Center for Structural Biology in 2015), Tsinghua University, Beijing

2011 – 2020 Co-Director, Tsinghua-Peking Joint Center for Life Sciences, Beijing

2009 – 2016 Dean, School of Life Sciences (replacing the Department of Biological Sciences and Biotechnology), Tsinghua University, Beijing

2009 – 2014 Executive Vice Dean, School of Medicine, Tsinghua University, Beijing

2008 – 2009 Vice Chair, Department of Biological Sciences and Biotechnology, Tsinghua University, Beijing

2008 – present University Professor of biomedical research, Tsinghua University, Beijing

2007 – 2008 Warner-Lambert/Parke-Davis Professor, Department of Molecular Biology, Princeton University, Princeton, New Jersey

- 2003 – 2007 Professor, Department of Molecular Biology, Princeton University, Princeton, New Jersey
- 2001 – 2003 Associate Professor (tenured), Department of Molecular Biology, Princeton University, Princeton, New Jersey
- 1998 – 2001 Assistant Professor, Department of Molecular Biology, Princeton University, Princeton, New Jersey
- 1996 – 1997 Postdoctoral fellow in the *Structural Biology Laboratory of Tumor Suppressors and Oncogenes* at Memorial Sloan-Kettering Cancer Center, New York, NY. Advisor: Dr. Nikola P. Pavletich
- 1995 Postdoctoral fellow in the Department of Biophysics and Biophysical Chemistry at Johns Hopkins University School of Medicine, Baltimore, Maryland. Advisor: Dr. Jeremy M. Berg

Education:

- 1990 – 1995 Ph.D. candidate in the Inter-campus Program in Molecular Biophysics (IPMB) and the Department of Biophysics and Biophysical Chemistry at Johns Hopkins University School of Medicine, Baltimore, Maryland. Advisor: Dr. Jeremy M. Berg
- 1985 – 1989 Undergraduate education in the Department of Biological Sciences and Biotechnology, Tsinghua University. Received B.S. Degree with highest honor from Tsinghua University, Beijing, China.

Professional Experience:

- 2016 – present Vice President, China Association of Science and Technology
- 2015 – present Co-founder, President of SAB, Non-executive director, InnoCare Pharm Ltd
- 2013 – present Scientific Advisory Board, Institute of Research in Biotechnology, Barcelona, Spain
- 2013 – present Scientific Advisory Board, Cold Spring Harbor Conferences Asia
- 2012 – present Editorial Board, *Journal of Molecular Biology*
- 2012 – present Editorial Board, *Open Biology*
- 2012 – present Advisory Board, Qiu Shi Science & Technologies Foundation, HK
- 2012 – 2014 Board of Reviewing Editors, *eLife*

2011 – present	Editorial Board, <i>Protein Science</i>
2011 – present	Editorial Board, <i>Cancer Cell</i>
2011 – present	President, Association of Thousand Talent Program, China
2010 – 2013	Member and Co-Chair, Grant Review Committee, Protein Science Key Projects, Ministry of Science and Technology, China
2010 – 2013	Vice Director, Section of Biology and Medicine, Committee on Science and Technology, Ministry of Education, China
2009 – 2011	Member, Scientific Advisory Board, Institute of Molecular and Cell Biology (IMCB), Singapore
2009 – present	Editorial Board, <i>Cell Research</i>
2008 – present	Editorial Board, <i>Science in China</i>
2008 – 2011	Member, Scientific Advisory Board, Roche R&D China
2008 – 2013	Editorial Board, <i>Journal of Biological Chemistry</i>
2005 – present	Member, Scientific Advisory Board, Tetralogic Pharmaceuticals
2006 – 2009	Advisory Committee, MacCHESS
2005 – 2008	President, Chinese Biological Investigators Society (www.CBISociety.org)
2004	Co-founder of Tetralogic Pharmaceuticals
2003 – 2007	Visiting Chair Professor, Department of Biological Sciences and Biotechnology, Tsinghua University
2003 – 2009	Member, NIH Study Sections BBCB, MSFC
2001 – 2008	Member, <i>Faculty of 1000</i>
2000 – 2004	Consultant to Novartis Pharmaceuticals

Awards and Honors:

2023	UNESCO-Equatorial Guinea International Prize for Research in the Life Sciences
2020	The Tan Kah Kee Science Awards, China
2017	VCANBIO Achievement Award for Biosciences and Medicine
2017	Future Science Prize in Life Sciences
2016	The Ho Leung Ho Lee Award for Achievement in Science and Technology, China

- 2015 *Nature* Award for Mentoring in science
- 2014 Bei Shizhang Achievement Award in Biophysics, China
- 2014 Gregori Aminoff Prize, Royal Swedish Academy of Sciences
- 2014 JiePing Wu-Paul Janssen Medical & Pharmaceutical Award, China
- 2013 Academician, Chinese Academy of Sciences, China
- 2013 Foreign Associate, European Molecular Biology Organization (EMBO)
- 2013 Honorary Foreign Member, American Academy of Arts and Sciences
- 2013 Foreign Associate, National Academy of Sciences, USA
- 2013 Honorary Doctoral Degree, The University of York, UK
- 2011 The Ray Wu Award, Chinese Biological Investigators Society
- 2010 The Raymond and Beverly Sackler International Prize in Biophysics, Tel Aviv University, Israel
- 2010 Qiu Shi Outstanding Scientist Award, Qiushi Foundation, Hong Kong
- 2010 CC Tan Life Science Achievement Award, Shanghai, China
- 2009 Fellow, American Association for the Advancement of Science (AAAS)
- 2008 Investigator, Howard Hughes Medical Institute (declined)
- 2003 The 2003 Irving Sigal Young Investigator Award,
The Protein Society
- 2000 The Wilson S. Stone Memorial Award
The University of Texas M. D. Anderson Cancer Center
- 1999 – 2002 Searle Scholar Award
Searle Scholars Program, The Chicago Community Trust
- 1999 – 2002 Rita Allen Scholar Award
Rita Allen Foundation, New York
- 1995 Paul Ehrlich Research Award in Basic Science
The Johns Hopkins University School of Medicine, Baltimore, Maryland
- 1989 *Summa cum laude*

Tsinghua University, Beijing, China

1984 First Prize, National High School Mathematics Competition, China

Courses taught:

<u>Years</u>	<u>Role</u>	<u>Course</u>
<u>Princeton University (1998-2008):</u>		
2000 – 2006	Co-coursemaster	<i>Molecular Basis of Cancer</i>
2002 – 2005	Co-coursemaster	<i>Structure, Function, and Diseases</i>
2006 – 2007	Coursemaster	<i>Structure, Function, and Diseases</i>
2005	Co-coursemaster	<i>Biochemistry</i>
2006 – 2007	Co-coursemaster	<i>Life and Death of A Cell</i>
2007 – 2009	Lecturer	<i>Molecular Basis of Cancer</i>
<u>Tsinghua University (2008-present):</u>		
2008 – present	Lecturer	<i>Frontiers in Biophysics</i>
2010 – present	Co-coursemaster	<i>Introduction to Structural Biology</i>
2011 – present	Coursemaster	<i>Logic and Method of Life Sciences</i>
2011 – present	Lecturer	<i>Ethics in Biomedical Research</i>

Publications:

(Significant research articles are indicated with asterisks “***”)

- (1) (***) Fenghua Yang, Tong Bian, Xiechao Zhan, Zhe Chen, Zhihan Xing, Nicolas A Larsen, Xiaofeng Zhang, and Yigong Shi (2023) Mechanisms of the RNA helicases DDX42 and DDX46 in human U2 snRNP assembly. *Nat Commun.* 14: 897.
- (2) (***) Jiayao Zhou, Yumeng Wang, Gaoxingyu Huang, Min Yang, Yumin Zhu, Chen Jin, Dan Jing, Kai Ji, and Yigong Shi (2023) LILRB3 is a putative cell surface receptor of APOE4. *Cell Res.* doi: 10.1038/s41422-022-00759-y. Online ahead of print.
- (3) Gaoxingyu Huang, Chao Zeng, and Yigong Shi (2023) Structure of the nuclear pore complex goes atomic. *Curr Opin Struct Biol.* 78:102523. (commissioned review)
- (4) (***) Xuefei, Yumeng Wang, Jiayao Zhou, Chen Jin, Jiaoni Wang, Bojun Jia, Dan Jing, Chuangye Yan, Jianlin Lei, Rui Zhou, and Yigong Shi (2022) Molecular basis for isoform-selective inhibition of presenilin-1 by MRK-560. *Nat Commun.* 13: 6299.
- (5) (***) Qiang Su, Mengying Chen, Yan Shi, Xiaofeng Zhang, Gaoxingyu Huang, Bangdong Huang, Dongwei Liu, Zhangsuo Liu, and Yigong Shi (2022) Cryo-EM structure of the human IgM B cell receptor. *Science*, 377(6608):875-880. Epub 2022 Aug 18.
- (6) (***) Xiechao Zhan, Yichen Lu, Xiaofeng Zhang, Chuangye Yan, and Yigong Shi (2022) Mechanism of exon ligation by human spliceosome. *Mol Cell*, 82(15):2769-2778.e4. Epub 2022 Jun 14.
- (7) (***) Xuechen Zhu, Gaoxingyu Huang, Chao Zeng, Xiechao Zhan, Ke Liang, Qikui Xu, Yanyu Zhao, Pan Wang, Qifan Wang, Qiang Zhou, Qinghua Tao, Minhao Liu, Jianlin Lei, Chuangye Yan, and Yigong Shi (2022) Structure of the cytoplasmic ring of the *Xenopus laevis* nuclear pore complex. *Science*, 376(6598):eabl8280. Epub 2022 Jun 10.
- (8) (***) Gaoxingyu Huang, Xiechao Zhan, Chao Zeng, Ke Liang, Xuechen Zhu, Yanyu Zhao, Pan Wang, Qifan Wang, Qiang Zhou, Qinghua Tao, Minhao Liu, Jianlin Lei, Chuangye Yan, and Yigong Shi (2022) Cryo-EM structure of the inner ring from the *Xenopus laevis* nuclear pore complex. *Cell Res.* 32(5):451-460. Epub 2022 Mar 18.
- (9) (***) Chen Jin, Jiaoni Wang, Yumeng Wang, Bojun Jia, Xuefei Guo, Guanghui Yang, Peng Xu, Paul Greengard, Rui Zhou, and Yigong Shi (2022) Modulation of amyloid precursor protein cleavage by γ -secretase activating protein through phase separation. *PNAS*, 119(12):e2122292119. Epub 2022 Mar 17.
- (10) (***) Gaoxingyu Huang, Xiechao Zhan, Chao Zeng, Xuechen Zhu, Ke Liang, Yanyu Zhao, Pan Wang, Qifan Wang, Qiang Zhou, Qinghua Tao, Minhao Liu, Jianlin Lei, Chuangye Yan, and Yigong Shi (2022) Cryo-EM structure of the nuclear ring from *Xenopus laevis* nuclear pore complex. *Cell Res.* 32(4):349-358. Epub 2022 Feb 17.
- (11) (***) Qiang Su[#], Mengying Chen, Yan Wang, Bin Li, Dan Jing, Xiechao Zhan, Yong Yu[#], and Yigong Shi[#] (2021) Structural basis for Ca²⁺ activation of the heteromeric PKD1L3/PKD2L1 channel. *Nat Commun.* 12: 4871.

- (12) (***) Lingyu Liu, Hu Deng, Xiaping Tang, Yingxian Lu, Jiayao Zhou, Xiaofei Wang, Yanyu Zhao, Bing Huang, and Yigong Shi (2021) Specific electromagnetic radiation in the wireless signal range increases wakefulness in mice. *PNAS*, 118(31):e2105838118.
- (13) (***) Rui Bai, Ruixue Wan, Lin Wang, Kui Xu, Qiangfeng Zhang, Jianlin Lei, and Yigong Shi (2021). Structure of the activated human minor spliceosome. *Science* eabg0879; doi: 10.1126/science.abg0879. Epub 2021 Jan 28.
- (14) (***) Guanghui Yang, Rui Zhou, Xuefei Guo, Chuangye Yan, Jianlin Lei, and Yigong Shi (2021). Structural basis of γ -secretase inhibition and modulation by small molecule drugs. *Cell* doi: 10.1016/j.cell.2020.11.049. Epub 2020 Dec 28.
- (15) (***) Rui Bai, Ruixue Wan, Chuangye Yan, Qi Jia, Jianlin Lei, and Yigong Shi (2020). Mechanism of spliceosome remodeling by the ATPase/helicase Prp2 and its coactivator Spp2. *Science* eabe8863. doi: 10.1126/science.abe8863. Epub 2020 Nov 26.
- (16) Hangping Yao, Yutong Song, Yong Chen, Nanping Wu, Jialu Xu, Chujie Sun, Jiaying Zhang, Tianhao Weng, Zheyuan Zhang, Zhigang Wu, Linfang Cheng, Danrong Shi, Xiangyun Lu, Jianlin Lei, Max Crispin, Yigong Shi, Lanjuan Li, Sai Li (2020). Molecular Architecture of the SARS-CoV-2 Virus. *Cell* 183(3):730-738.e13. Epub 2020 Sep 6.
- (17) Elena A Minina,Yigong Shi, Peter V Bozhkov (2020). Classification and Nomenclature of Metacaspases and Paracaspases: No More Confusion with Caspases. *Mol. Cell* 77(5):927-929.
- (18) (***) Gaoxingyu Huang, Yanqing Zhang, Xuechen Zhu, Chao Zeng, Qifan Wang, Qiang Zhou, Qinghua Tao, Minhao Liu, Jianlin Lei, Chuangye Yan, and Yigong Shi (2019). Structure of the cytoplasmic ring of the *Xenopus laevis* nuclear pore complex by cryo-electron microscopy single particle analysis. *Cell Research*. 30(6):532-540. Epub 2020 May 06.
- (19) (***) Yanqing Zhang, Sai Li, Chao Zeng, Gaoxingyu Huang, Xuechen Zhu, Qifan Wang, Kunpeng Wang, Qiang Zhou, Chuangye Yan, Wusheng Zhang, Guangwen Yang, Minhao Liu, Qinghua Tao, Jianlin Lei, and Yigong Shi (2019). Molecular architecture of the luminal ring of the *Xenopus laevis* nuclear pore complex. *Cell Research* 30(6):520-531. Epub 2020 May 4.
- (20) Ruixue Wan, Rui Bai, Xiechao Zhan, and Yigong Shi (2020). How Is Precursor Messenger RNA Spliced by the Spliceosome? *Annu Rev Biochem*. 89:333-358. Epub 2019 Dec 9.
- (21) Rui Zhou, Guanghui Yang, and Yigong Shi (2019). Macromolecular complex in recognition and proteolysis of amyloid precursor protein in Alzheimer's disease. *Curr Opin Struct Biol*. 61:1-8
- (22) Ruixue Wan, Rui Bai, and Yigong Shi (2019). Molecular choreography of pre-mRNA splicing by the spliceosome. *Curr Opin Struct Biol*. 59:124-133
- (23) (***) Ruixue Wan, Rui Bai, Chuangye Yan, Jianlin Lei, and Yigong Shi (2018). Structures of the catalytically activated yeast spliceosome reveal the mechanism of branching. *Cell*. 177(2):339-351. Epub 2019 Mar 14.

- (24) (***) Xiaofeng Zhang, Xiechao Zhan, Chuangye Yan, Wenyu Zhang, Dongliang Liu, Jianlin Lei and Yigong Shi (2018). Structures of the human spliceosomes before and after release of the ligated exon. *Cell Res.* 29(4):274-285. Epub 2019 Feb 6.
- (25) (***) Rui Zhou, Guanghui Yang, Xuefei Guo, Qiang Zhou, Jianling Lei, and Yigong Shi (2019). Recognition of the amyloid precursor protein by human γ -secretase. *Science* pii: eaaw0930. doi: 10.1126/science.aaw0930. [Epub ahead of print]
- (26) (***) Guanghui Yang, Rui Zhou, Qiang Zhou, Xuefei Guo, Chuangye Yan, Meng Ke, Jianling Lei, and Yigong Shi (2019). Structural basis of Notch recognition by human γ -secretase. *Nature* 565(7738):192-197. Epub 2018 Dec 31.
- (27) Chuangye Yan, Ruixue Wang, and Yigong Shi (2019). Molecular Mechanisms of pre-mRNA Splicing through Structural Biology of the Spliceosome. *Cold Spring Harb Perspect Biol.* 11(1). pii: a032409. (commissioned review).
- (28) (***) Shenjie Wu, Wenqi Song, Catherine C. L. Wong, and Yigong Shi (2018). Bax inhibitor 1 is a γ -secretase-independent presenilin-binding protein. *Proc Natl Acad Sci U S A* 116(1):141-147. Epub 2018 Dec 17.
- (29) (***) Xiechao Zhan, Chuangye Yan, Xiaofeng Zhang, Jianlin Lei, and Yigong Shi (2018). Structures of the human pre-catalytic spliceosome and its precursor spliceosome. *Cell Res.* 28(12):1129-1140. Epub 2018 Oct 12.
- (30) (***) Qiang Su, Feizhuo Hu, Xiaofei Ge, Jianlin Lei, Shengqiang Yu, Tingliang Wang, Qiang Zhou, Changlin Mei, and Yigong Shi (2018). Structure of the human PKD1-PKD2 complex. *Science* 361(6406):pii: eaat9819. Epub 2018 Aug 9.
- (31) (***) Rui Bai, Ruixue Wan, Chuangye Yan, Jianlin Lei, and Yigong Shi (2018). Structures of the fully assembled *Saccharomyces cerevisiae* spliceosome before activation. *Science* 360(6396): 1423-1429. Epub 2018 May 24
- (32) Xi Zhang, Qifan Wang, Jianping Wu, Jiawei Wang, Yigong Shi, and Minhao Liu (2018). Crystal structure of human lysyl oxidase-like 2 (hLOXL2) in a precursor state. *Proc Natl Acad Sci U S A* 115(15):3828-3833. Epub 2018 Mar 26.
- (33) (***) Xiaofeng Zhang, Chuangye Yan, Xiechao Zhan, Lijia Li, Jianlin Lei, and Yigong Shi (2018). Structure of the human activated spliceosome in three conformational states. *Cell Res.* 28(3):307-322. Epub 2018 Jan 23.
- (34) (***) Xiechao Zhan, Chuangye Yan, Xiaofeng Zhang, Jianlin Lei, and Yigong Shi (2018). Structure of a human catalytic step I spliceosome. *Science*, 359(6375):537-545. Epub 2018 Jan 4.
- (35) (***) Rui Bai, Chuangye Yan, Ruixue Wan, Jianlin Lei, and Yigong Shi (2017). Structure of the Post-catalytic Spliceosome from *Saccharomyces cerevisiae*. *Cell*, 171(7):1589-1598. Epub 2017 Nov 16.
- (36) (***) Rui Zhou, Guanghui Yang, and Yigong Shi (2017). Dominant negative effect of the loss-of-function γ -secretase mutants on the wild-type enzyme through heterooligomerization. *Proc Natl Acad Sci U S A*. pii: 201713605.

- (37) (***) Ruixue Wan, Chuangye Yan, Rui Bai, Jianlin Lei, and Yigong Shi (2017). Structure of an intron lariat spliceosome from *Saccharomyces cerevisiae*. *Cell*, 171(1):120-132.
- (38) Yigong Shi (2017). Mechanistic insights into precursor messenger RNA splicing by the spliceosome. *Nature Reviews Mol. Cell Biol.*, 18(11):655-670 (commissioned review).
- (39) Yigong Shi (2017). The Spliceosome: A protein-Directed Metalloribozyme. *JMB* 429(17):2640-2653 (commissioned review for the Special issue John Kendrew 100th Birthday).
- (40) Guanghui Yang, Rui Zhou, and Yigong Shi (2017). Cryo-EM structures of human γ - secretase. *Curr Opin Struct Biol.* 46:55-64 (commissioned review).
- (41) (***) Xiaofeng Zhang, Chuangye Yan, Jing Hang, Lorenzo I. Finci, Jianlin Lei, and Yigong Shi (2017). An atomic structure of the human spliceosome. *Cell* 169(5): 918-929. Epub 2017 May 11.
- (42) (***) Yini Li, Mengying Zhou, Qi Hu, Xiaochen Bai, Sjors H. W. Scheres, and Yigong Shi (2017). Mechanistic insights into caspase-9 activation by the structure of the apoptosome holoenzyme. *Proc Natl Acad Sci U S A.* 114(7):1542-1547. Epub 2017 Jan 31.
- (43) (***) Chuangye Yan, Ruixue Wan, Rui Bai, Gaoxingyu Huang, and Yigong Shi (2016). Structure of a yeast step II catalytically activated spliceosome. *Science.* 355(6321):149-155. Epub 2016 Dec 15.
- (44) (***) Linfeng Sun, Rui Zhou, Guanghui Yang, and Yigong Shi (2016). Analysis of 138 pathogenic mutations in presenilin-1 on the in vitro production of A β 42 and A β 40 peptides by γ -secretase. *Proc Natl Acad Sci U S A.* 114(4):E476-E485. doi: 10.1073/pnas.1618657114. Epub 2016 Dec 5.
- (45) (***) Chuangye Yan, Ruixue Wan, Rui Bai, Gaoxingyu Huang, and Yigong Shi (2016). Structure of a yeast catalytically activated spliceosome at 3.5 Å resolution *Science.* 353(6302):904-11. Epub 2016 July 21.
- (46) (***) Ruixue Wan, Chuangye Yan, Rui Bai, Gaoxingyu Huang, and Yigong Shi (2016). Structure of a yeast catalytic step I spliceosome at 3.4 Å resolution. *Science.* 353(6302):895-904. Epub 2016 July 21.
- (47) (***) Xiuliang Huang, Bai Luan, Jianping Wu, and Yigong Shi (2016). An atomic structure of the human 26S proteasome. *Nat Struct Mol Biol.* doi: 10.1038/nsmb.3273. [Epub ahead of print]
- (48) (***) Bai Luan, Xiuliang Huang, Jianping Wu, Ziqing Mei, Yiwei Wang, Xiaobin Xue, Chuangye Yan, Jiawei Wang, Daniel J. Finley, Yigong Shi#, and Feng Wang# (2016). Structure of an endogenous yeast 26S proteasome reveals two major conformational states. *Proc Natl Acad Sci U S A* 113(10):2642-7. Epub 2016 Feb 29. (# corresponding authors)
- (49) Tianyu Jiang, Minhao Liu M, Jianping Wu, and Yigong Shi (2016). Structural and biochemical analysis of Bcl-2 interaction with the hepatitis B virus protein HBx. *Proc Natl Acad Sci U S A* 113(8):2074-9. Epub 2016 Feb 8.

- (50) Linfeng Sun, Xiaochun Li, and Yigong Shi (2016). Structural biology of intramembrane proteases: mechanistic insights from rhomboid and S2P to γ -secretase. *Curr Opin Struct Biol.* 37:97-107. Epub 2016 Jan 24. (Commissioned review)
- (51) (***) Ruixue Wan, Chuangye Yan, Rui Bai, Lin Wang, Min Huang, Catherine C. L. Wong, and Yigong Shi (2016). The 3.8 Å structure of the U4/U6.U5 tri-snRNP: Insights into spliceosome assembly and catalysis. *Science.* 351(6272):466-75. Epub 2016 Jan 7.
- (52) (***) Xiaochen Bai, Eeson Rajendra, Guanghui Yang, Yigong Shi[#], and Sjors H. W. Scheres[#] (2015). Sampling the conformational space of the catalytic subunit of human γ -secretase. *Elife* pii: e11182. (# indicates co-corresponding authors)
- (53) (***) Mengying Zhou, Yini Li, Qi Hu, Xiaochen Bai, Weijiao Huang, Chuangye Yan, Sjors H. W. Scheres[#], and Yigong Shi[#] (2015). Atomic structure of the apoptosome: mechanism of cytochrome c- and dATP-mediated activation of Apaf-1. *Genes Dev.* 29: 2349-61.
- (54) (***) Jing Hang, Ruixue Wan, Chuangye Yan, and Yigong Shi (2015). Structural basis of pre-mRNA splicing. *Science* 349(6253):1191-1198. Epub 2015 Aug 20.
- (55) (***) Chuangye Yan, Jing Hang, Ruixue Wan, Min Huang, Catherine C. L. Wong, and Yigong Shi (2015). Structure of a yeast spliceosome at 3.6-angstrom resolution. *Science* 349(6253):1182-1191. Epub 2015 Aug 20.
- (56) (***) Xiao-chen Bai[#], Chuangye Yan, Guanghui Yang, Peilong Lu, Dan Ma, Linfeng Sun, Rui Zhou, Sjors H. W. Scheres[#], and Yigong Shi[#] (2015). An atomic structure of human γ -secretase. *Nature* 525(7513): 212-7. Epub: August 17 2015. (# indicates co-corresponding authors)
- (57) (***) Linfeng Sun, Lingyun Zhao, Guanghui Yang, Chuangye Yan, Rui Zhou, Xiaoyuan Zhou, Tian Xie, Yanyu Zhao, Shenjie Wu, Xueming Li, and Yigong Shi (2015). Structural basis of human γ -secretase assembly. *Proc Natl Acad Sci USA* 112(19):6003-6008.
- (58) (***) Shangyu Dang, Shenjie Wu, Jiawei Wang, Hongbo Li, Min Huang, Wei He, Yue-Ming Li, Catherine C. L. Wong, and Yigong Shi (2015). Cleavage of amyloid precursor protein by an archaeal presenilin homologue PSH. *Proc Natl Acad Sci USA* 112(11):3344-9.
- (59) (***) Yuxuan Pang, Xiao-chen Bai, Qi Hao, Chuangye Yan, Zheqin Chen, Jia-Wei Wang, Sjors H.W. Scheres[#], and Yigong Shi[#](2015). Structure of the apoptosome: mechanistic insights into activation of an initiator caspase from Drosophila. *Genes Dev.* 29(3):277-87. (# indicates co-corresponding authors)
- (60) Zhen Yan, Xiao-chen Bai, Chuangye Yan, Jianping Wu, Zhangqiang Li, Tian Xie, Wei Peng, Chang-cheng Yin, Xueming Li, Sjors H. W. Scheres[#], Yigong Shi[#], and Nieng Yan[#] (2015). Structure of the rabbit ryanodine receptor RyR1 at near-atomic resolution. *Nature* 517(7532):50-5. (# indicates co-corresponding authors)
- (61) Yigong Shi (2014). A Glimpse of Structural Biology through X-Ray Crystallography. *Cell* 159(5):995-1014

- (62) (***) Qi Hu, Di Wu, Wen Chen, Zhen Yan, Chuangye Yan, Tianxi He, Qionglin Liang, and Yigong Shi (2014) . Molecular determinants of caspase-9 activation by the Apaf-1 apoptosome. *Proc Natl Acad Sci USA* 111(46):16254-61
- (63) (***) Tian Xie, Chuangye Yan, Rui Zhou, Yanyu Zhao, Linfeng Sun, Guanghui Yang, Peilong Lu, Dan Ma, and Yigong Shi (2014) Crystal structure of the γ -secretase component nicastrin. *Proc Natl Acad Sci USA* 111(37):13349-54.
- (64) Sheng Wang, Renhong Yan, Xi Zhang, Qi Chu, and Yigong Shi (2014). Molecular mechanism of pH-dependent substrate transport by an arginine-agmatine antiporter. *Proc Natl Acad Sci USA* 111(35):12734-9.
- (65) (***) Peilong Lu, Xiao-chen Bai, Dan Ma, Tian Xie, Chuangye Yan, Linfeng Sun, Guanghui Yang, Yanyu Zhao, Rui Zhou, Sjors H. W. Scheres[#], and Yigong Shi[#] (2014). Three-dimensional structure of human γ -secretase. *Nature* 512(7513):166-70. (# indicates co-corresponding authors)
- (66) Yigong Shi (2014). Life, career, and structural biology. *Physica Scripta* 89: 068004 (Commissioned Article)
- (67) Jijie Chai and Yigong Shi (2014). Apoptosome and inflammasome: conserved machineries for caspase activation. *National Science Review* 1(1):101-108 (Commissioned Review)
- (68) (***) Lijun Zhou, Yulin Zhou, Jing Hang, Ruixue Wan, Guifeng Lu, Chuangye Yan, and Yigong Shi (2014). Crystal structure and biochemical analysis of the heptameric Lsm1-7 complex. *Cell Res* 24(4):497-500.
- (69) (***) Peilong Lu, Dan Ma, Chuangye Yan, Xinqi Gong, Mingjian Du, and Yigong Shi (2014). Structure and mechanism of a eukaryotic transmembrane ascorbate-dependent oxidoreductase. *Proc Natl Acad Sci USA* 111(5):1813-8.
- (70) (***) Lijun Zhou, Jing Hang, Yulin Zhou, Ruixue Wan, Guifeng Lu, Ping Yin, Chuangye Yan, and Yigong Shi (2013). Crystal structures of the Lsm complex bound to the 3' end sequence of U6 small nuclear RNA. *Nature* 506(7486):116-120.
- (71) Ping Yin, Quanxiu Li, Chuangye Yan, Ying Liu, Junjie Liu, Feng Yu, Zheng Wang, Jiafu Long, Jianhua He, Hong-Wei Wang, Jiawei Wang, Jian-Kang Zhu, Yigong Shi, and Nieng Yan (2013). Structural basis for the modular recognition of single-stranded RNA by PPR proteins. *Nature* 504(7478):168-71.
- (72) (***) Tian Xie, Wei Peng, Chuangye Yan, Jianping Wu, Xin Gong, and Yigong Shi (2013). Structural insights into RIP3-mediated necroptotic signaling. *Cell Rep.* 5(1):70-8.
- (73) (***) Weijiao Huang, Tianyu Jiang, Wooyoung Choi, Shiqian Qi, Yuxuan Pang, Qi Hu, Yanhui Xu, Xinqi Gong, Philip D. Jeffrey, Jiawei Wang, and Yigong Shi (2013). Mechanistic insights into CED-4-mediated activation of CED-3. *Genes Dev.* 27(18):2039-48.
- (74) Yigong Shi (2013). Common folds and transport mechanisms of secondary active transporters. *Annu Rev Biophys.* 42:51-72. (Commissioned Review).

- (75) Jing Liu, Ziqing Mei, Ningning Li, Yutao Qi, Yanji Xu, Yigong Shi, Feng Wang, Jianlin Lei, and Ning Gao (2013). Structural dynamics of the MecA-ClpC complex: a type II AAA+ protein unfolding machine. *J Biol Chem.* 288(21):15148-53.
- (76) Dan Ma, Peilong Lu, and Yigong Shi (2013). Substrate selectivity of the acid-activated glutamate-gaba antiporter gadc from *E. coli*. *J Biol Chem.* 288(21):15148-53.
- (77) (***) Tingliang Wang, Guobin Fu, Xiaojing Pan, Jianping Wu, Xinqi Gong, Jiawei Wang, and Yigong Shi (2013). Structure of a bacterial energy-coupling factor transporter. *Nature* 497(7448):272-6.
- (78) Qi Hu, Di Wu, Wen Chen, Zhen Yan, and Yigong Shi (2013) Proteolytic processing of caspase-9 zymogen is required for apoptosome-mediated activation of caspase-9. *J Biol Chem.* 288(21):15142-7.
- (79) Hanchi Yan, Weiyun Huang, Chuangye Yan, Xinqi Gong, Sirui Jiang, Yu Zhao, Jiawei Wang, and Yigong Shi (2013). Structure and mechanism of a nitrate transporter. *Cell Rep.* 3(3):716-23
- (80) (***) Tian Xie, Wei Peng, Yexing Liu, Chuangye Yan, Jenny Maki, Alexei Degterev, Junying Yuan, and Yigong Shi (2013). Structural Basis of RIP1 Inhibition by Necrostatins. *Structure* 21(3):493-499.
- (81) (***) Weijiao Huang, Wooyoung Choi, Yuling Chen, Qi Zhang, Haiteng Deng, Wei He, and Yigong Shi (2013). A proposed role for glutamine in cancer cell growth through acid resistance. *Cell Res.* 23(5):724-7. Epub 2013 Jan 29.
- (82) (***) Peilong Lu, Dan Ma, Yuling Chen, Yingying Guo, Guo-Qiang Chen, Haiteng Deng1, and Yigong Shi (2013). L-glutamine provides acid resistance for Escherichia coli through enzymatic release of ammonia. *Cell Res.* 23(5):635-44. Epub 2013 Jan 22.
- (83) (***) Xiaochun Li, Shangyu Dang, Chuangye Yan, Xinqi Gong, Jiawei Wang, and Yigong Shi (2013). Structure of a presenilin family intramembrane aspartate protease. *Nature*, 493, 56-61. Epub 2012 Dec 19.
- (84) Ping Yin, Dong Deng, Chuangye Yan, Xiaojing Pan, Jianzhong Jeff Xi, Nieng Yan, and Yigong Shi (2012). Specific DNA-RNA hybrid recognition by TAL effectors. *Cell Rep.* 2, 707-713.
- (85) Dong Deng, Ping Yin, Chuangye Yan, Xiaojing Pan, Xin Gong, Siqian Qi, Tian Xie, Magdy Mahfouz, Jiankang Zhu, Nieng Yan, and Yigong Shi (2012). Recognition of methylated DNA by TAL effectors. *Cell Res.* 22, 1502-1504.
- (86) Ada H. Wong, Chuangye Yan, and Yigong Shi (2012). Crystal structure of the yeast metacaspase yca1. *J Biol Chem.* 287, 29251-29259. Epub 2012 Jul 2.
- (87) (***) Dan Ma, Peilong Lu, Chuangye Yan, Chao Fan, Ping Yin, Jiawei Wang, and Yigong Shi (2012). Structure and mechanism of a glutamate-GABA antiporter. *Nature* 483, 632-636.
- (88) (***) Di Wu, Qi Hu, Zhen Yan, Wen Chen, Chuangye Yan, Xi Huang, Jing Zhang, Panyu Yang, Haiteng Deng, Jiawei Wang, Xing Wang Deng, and Yigong Shi (2012). Structural basis of UV-B perception by UVR8. *Nature* 484, 214-219.

- (89) (***) Weijiao Huang, Wooyoung Choi, Wanqiu Hu, Qiang Guo, Peilong Lu, Meisheng Ma, Feng-Liang Wang, Haiteng Deng, Lei Liu, Ning Gao, Li Yu, and Yigong Shi (2012). Beclin 1 is a novel membrane binding protein. *Cell Research* 22, 473-489. Epub 2012 Feb 7.
- (90) (***) Dong Deng, Chuangye Yan, Xiaojing Pan, Magdy Mahfouz, Jiawei Wang, Jian-Kang Zhu, Yigong Shi, and Nieng Yan (2012) Structural basis for the specific recognition of DNA by TAL effectors. *Science* 335, 720-723. Epub 2012 Jan 5.
- (91) Jong W. Yu, Philip D. Jeffrey, Jun Yong Ha, Xiaolu Yang, and Yigong Shi (2011). Crystal structure of the mucosa-associated lymphoid tissue lymphoma translocation 1 (MALT1) paracaspase region. *Proc Natl Acad Sci USA* 108, 21004-9. Epub 2011 Dec 7.
- (92) (***) Xiaochun Li, Jiawei Wang, and Yigong Shi (2011). Structural mechanisms of DIAP1 auto-inhibition and DIAP1-mediated inhibition of drICE. *Nature Communications* 2, 408. doi: 10.1038/ncomms1418.
- (93) (***) Feng Wang, Ziqing Mei, Yutao Qi, Chuangye Yan, Qi Hu, Jiawei Wang, and Yigong Shi (2011). Structure and mechanism of the hexameric MecA-ClpC molecular machine. *Nature* 471, 331-335. Epub 2011 Mar 2.
- (94) (***) Peng Zhang, Jiawei Wang, and Yigong Shi (2010). Structure and mechanism of the S component of a bacterial ECF transporter. *Nature* 468, 717-720. Epub 2010 Oct 24.
- (95) (***) Shiqian Qi, Yuxun Pang, Qi Hu, Qun Liu, Hua Li, Yulian Zhou, Tianxi He, Qionglin Liang, Yexing Liu, Xiaoqiu Yuan, Guoan Luo, Huilin Li, Jiawei Wang, Nieng Yan, and Yigong Shi (2010). Crystal structure of the *Caenorhabditis elegans* apoptosome reveals an octameric assembly of CED-4. *Cell* 141, 446-457.
- (96) Yide Mei, Jeongsik Yong, Hongtu Liu, Yigong Shi, Judy Meinkoth, Gideon Dreyfuss, and Xiaolu Yang (2010). tRNA binds to cytochrome c and inhibits caspase activation. *Mol Cell* 37, 668-678.
- (97) (***) Xiang Gao, Lijun Zhou, Xuyao Jiao, Feiran Lu, Chuangye Yan, Xin Zeng, Jiawei Wang, and Yigong Shi (2010). Mechanism of substrate recognition and transport by an amino acid antiporter. *Nature* 463, 828-832. Epub 2010 Jan 20.
- (98) David A Gell, Liang Feng, Suiping Zhou, Philip D. Jeffrey, William d'Avigdor, Andrew Gow, Mitchell J. Weiss, Yigong Shi, and Joel P Mackay (2009). Alpha Haemoglobin Stabilizing Protein sets a conformational trap to stabilize alpha haemoglobin. *J. Biol. Chem.* 284, 29462-29469. Epub 2009 Aug 25..
- (99) Yigong Shi (2009). Structure and Mechanism of Protein Serine/Threonine Phosphatases. *Cell* 139, 468-484.
- (100) (***) Yi Wang, Yongjian Huang, Jiawei Wang, Chao Cheng, Weijiao Huang, Peilong Lu, Ya-Nan Xu, Pengye Wang, Nieng Yan, and Yigong Shi (2009). Structure of the formate transporter FocA reveals a pentameric aquaporin-like channel. *Nature* 462, 467-472.
- (101) Huhn J, Jeffrey PD, Larsen K, Rundberget T, Rise F, Cox NR, Arcus V, Yigong Shi, and Miles CO (2009). A structural basis for the reduced toxicity of dinophysistoxin-2. *Chem Res Toxicol.* 22, 1782-1786.

- (102) Roelofs J, Park S, Haas W, Tian G, McAllister FE, Huo Y, Lee BH, Zhang F, Yigong Shi, Gygi SP, and Finley D (2009). Chaperone-mediated pathway of proteasome regulatory particle assembly. *Nature* 459, 861-865.
- (103) Feng Wang, Ziqing Mei, Yutao Qi, Chuangye Yan, Siheng Xiang, Zhiyuan Zhou, Qi Hu, Jiawei Wang, and Yigong Shi. (2009). Crystal structure of the MecA degradation tag. *J. Biol. Chem.* 284, 34376-81 [Epub ahead of print: Oct 2, 2009]
- (104) Ziqing Mei, Feng Wang, Yutao Qi, Zhiyuan Zhou, Qi Hu,, Han Li, Jiawei Wu, and Yigong Shi. (2009). Molecular determinants of MecA as a degradation tag for the ClpCP protease. *J. Biol. Chem.* 284, 34366-75 [Epub ahead of print: Sep 18, 2009]
- (105) (***) Xiaochun Li, Boyuan Wang, Lihui Feng, Hui Kang, Yang Qi, Jiawei Wang, and Yigong Shi (2009). Cleavage of RseA by RseP requires a carboxyl-terminal hydrophobic amino acid following DegS cleavage. *Proc. Natl. Acad. Sci. USA* 106, 14837-42 [Epub 2009 August 18].
- (106) (***) Xiang Gao, Feiran Lu, Lijun Zhou, Shangyu Dang, Linfeng Sun, Xiaochun Li, Jiawei Wang, and Yigong Shi (2009). Structure and Mechanism of an Amino Acid Antipporter. *Science* 324, 1565-1568. Epub 2009 May 28.
- (107) (***) Fan Zhang , Zhuoru Wu, Ping Zhang, Geng Tian, Daniel Finley, and Yigong Shi (2009). Mechanism of substrate unfolding and translocation by the regulatory particle of the proteasome from *Methanocaldococcus jannaschii*. *Mol Cell* 34, 485-496.
- (108) (***) Fan Zhang , Min Hu, Geng Tian, Ping Zhang, Daniel Finley, Philip D. Jeffrey, and Yigong Shi (2009). Structural insights into the regulatory particle of the proteasome from *Methanocaldococcus jannaschii*. *Mol Cell* 34, 473-484.
- (109) David C. Clarke, Meredith L. Brown, Richard A. Erickson, Yigong Shi, and Xuedong Liu (2009) Transforming growth factor β depletion is the primary determinant of Smad signaling kinetics. *Mol Cell Biol.* 29(9):2443-55. Epub 2009 Feb 17.
- (110) (***) Jong W. Yu, Philip D. Jeffrey, and Yigong Shi (2009). Mechanism of procaspase-8 activation by c-FLIPL. *Proc Natl Acad Sci USA* 106, 8169-8174. Epub 2009 May 4.
- (111) Yigong Shi (2009). Assembly and structure of protein phosphatase 2A. *Sci China C Life Sci.* 2009 Feb;52(2):135-46. Epub 2009 Mar 11.
- (112) Xu Zhang, Jiawei Wang, Chao Fan, Hubo Li, Honghong Sun, Shunyou Gong, Youhai H. Chen, and Yigong Shi (2008). Crystal structure of TIPE2 reveals insights into immune homeostasis. *Nature Struct Mol Biol.* 16, 89-90. Epub 2008 Dec 14.
- (113) Jong W. Yu and Yigong Shi (2008). FLIP and the death effector domain family. *Oncogene* 27, 6216-6227.
- (114) (***) Yanhui Xu, Yu Chen, Ping Zhang, Philip D. Jeffrey, and Yigong Shi (2008). Structure of a protein phosphatase 2A holoenzyme: insights into B55-mediated Tau dephosphorylation. *Mol Cell* 31, 873-885.
- (115) Yigong Shi (2008). Apoptosome assembly. *Methods Enzymol.* 442, 141-156.

- (116) Sinisa Urban and Yigong Shi (2008). Core principles of intramembrane proteolysis: comparison of rhomboid and site-2 family proteases. *Curr Opin Struct Biol.* 18, 432-441. 2008 Apr 26. [Epub ahead of print]
- (117) (***) Yongna Xing, Zhu Li, Yu Chen, Philip D. Jeffery, and Yigong Shi (2008). Structural Mechanism of Demethylation and Inactivation of Protein Phosphatase 2A. *Cell* 133, 154-163.
- (118) Yigong Shi (2008). Deubiquitination of Lys63-linkage by a CYLD UBP. *Structure* 16, 338-340.
- (119) (***) Yan Xu, Liang Feng, Philip D. Jeffrey, Yigong Shi*, and Francois M. M. Morel* (2008). Structure and metal exchange in the cadmium-carbonic anhydrase of marine diatoms. *Nature* 452, 56-61. (*co-corresponding authors)
- (120) (***) Liang Feng, Hanchi Yan, Zhuoru Wu, Nieng Yan, Zhe Wang, Philip D. Jeffrey, and Yigong Shi (2007). Structure of a Site-2 Protease Family Intramembrane Metalloprotease. *Science* 318, 1608-1612.
- (121) Nieng Yan and Yigong Shi (2007). Allosteric Activation of a Bacterial Stress Sensor. *Cell* 131, 441-443.
- (122) Guozhou Chen, Philip D. Jeffrey, Clay Fuqua, Yigong Shi, and Lingling Chen (2007). Structural basis for inactivation in bacterial quorum sensing. *Proc Natl Acad Sci USA* 104, 16474-9. Epub 2007 Oct 5.
- (123) Rosanna P Baker, Keith Young, Liang Feng, Yigong Shi, and Sinisa Urban (2007). Enzymatic analysis of a rhomboid intramembrane protease implicates transmembrane helix 5 as the lateral substrate gate. *Proc Natl Acad Sci U S A.* 104, 8257-8262. Epub 2007 Apr 26.
- (124) Brooks CL, Muyang Li, Min Hu, Yigong Shi, and Wei Gu (2007). The p53--Mdm2--HAUSP complex is involved in p53 stabilization by HAUSP. *Oncogene* 26, 7262-7266. Epub 2007 May 21.
- (125) (***) Yu Chen*, Yanhui Xu*, Qing Bao, Yongna Xing, Zhu Li, Zheng Lin, Jeffrey Stock, Philip P. Jeffrey, and Yigong Shi (2007) Structural and biochemical insights into the regulation of protein phosphatase 2A by small t antigen of SV40. *Nature Struct Mol Biol.* 14, 527-534. Epub 2007 May 27.
- (126) Aislyn D. Wist, Lichuan Gu, Stefan J. Riedl, Yigong Shi, and George L. McLendon (2007). Structure-activity based study of the Smac-binding pocket within the BIR3 domain of XIAP. *Bioorg Med Chem.* 15, 2935-2943. Epub 2007 Feb 11.
- (127) Adam Oberstein, Philip D. Jeffrey, and Yigong Shi (2007). Crystal structure of the BCL-X_L-Beclin 1 peptide complex: Beclin 1 is a novel BH3-only protein. *J. Biol. Chem.* 282, 13123-32. Epub 2006 Nov 10.
- (128) (***) Qing Bao, Wenyun Lu, Joshua D. Rabinowitz, and Yigong Shi (2007). Calcium blocks formation of apoptosome by blocking nucleotide exchange in Apaf-1. *Mol. Cell* 25, 181-191.

- (129) (***) Yanhui Xu, Xing Yongna, Yu Chen, Yang Chao, Zheng Lin, Eugene Fan, Jong W. Yu, Stefan Strack, Philip D. Jeffrey, and Yigong Shi (2006). Structure of the Protein Phosphatase 2A Holoenzyme. *Cell* 127, 1239-1251.
- (130) (***) Zhuoru Wu, Nieng Yan, Liang Feng, Adam Oberstein, Hanchi Yan, Rosanna P. Baker, Lichuan Gu, Philip D. Jeffrey, Sinisa Urban, and Yigong Shi (2006). Structural analysis of a rhomboid family intramembrane protease reveals a gating mechanism for substrate entry. *Nature Structural & Molecular Biology* 13, 1084-1091. [Epub ahead of print].
- (131) (***) Xing Yongna, Yanhui Xu, Yu Chen, Philip D. Jeffrey, Yang Chao, Zheng Lin, Zhu Li, Stefan Strack, Jeffrey B Stock, and Yigong Shi (2006). Structure of protein phosphatase 2a bound to tumor-inducing toxins. *Cell* 127, 341-352.
- (132) Qing Bao and Yigong Shi (2006) Apoptosome: a platform for the activation of initiator caspases. *Cell Death Differ.* 14, 56-65. [Epub 2006, Sep 15] (Commissioned Review)
- (133) Yigong Shi (2006). Mechanical aspects of apoptosome assembly. *Curr Opin Cell Biol.* 18, 677-684.
- (134) (***) Yang Chao, Yongna Xing, Yu Chen, Yanhui Xu, Zheng Lin, Zhu Li, Philip D. Jeffrey, Jeffrey B. Stock, and Yigong Shi (2006). Structure and Mechanism of the Phosphotyrosyl Phosphatase Activator. *Mol. Cell* 23, 535-546.
- (135) Chonglin Yang, Nieng Yan, Jay Parish, Xiaochen Wang, Yigong Shi, and Ding Xue (2006). RNA aptamers targeting the cell death inhibitor CED-9 induce cell killing in *C. elegans*. *J. Biol. Chem.* 281, 9137-9144. Epub 2006 Feb 8.
- (136) Yigong Shi (2006). Structural Insights into Smad Function and Specificity. *Smad Signal Transduction: Smads in Proliferation, Differentiation, and Disease*, Edited by Peter ten Dijke and Carl-Henrik Heldin. Springer Press, pages 215-233. Springer publisher. (Book chapter)
- (137) Xia Lin, Xueyan Duan, Yao-Yun Liang, Ying Su, Katharine H. Wrighton, Jianyin Long, Min Hu, Candi M. Davis, Jinrong Wang, F. Charles Brunnicardi, Yigong Shi, Ye-Guang Chen, Anming Meng, and Xin-Hua Feng (2006). PPM1A functions as a Smad phosphatase to terminate TGF β signaling. *Cell* 125, 915-28.
- (138) Nieng Yan, Jun R. Huh, Vrigil Schirf, Borries Demeler, Bruce A. Hay, and Yigong Shi (2006). Structure and activation mechanism of the *Drosophila* initiator caspase Dronc. *J. Biol. Chem.* 281, 8667-8674. Epub 2006 Jan 30.
- (139) Nieng Yan, Yanhui Xu, and Yigong Shi (2006). 2:1 stoichiometry of the CED4–CED9 complex and the tetrameric CED-4: Insights into the regulation of CED-3 activation. *Cell Cycle* 5, 31-34. Epub 2006 Jan 18.
- (140) (***) Min Hu, Lichuan Gu, Muiyang Li, Philip D. Jeffrey, Wei Gu, and Yigong Shi (2006). Structural Basis of Competitive Recognition of p53 and MDM2 by HAUSP/USP7: Implications for the Regulation of the p53/MDM2 Pathway. *PloS Biology* 4, e27.

- (141) Mitchell J. Weiss, Suiping Zhou, Liang Feng, David A. Gell, Joel P. Mackay, Yigong Shi, and Andrew J. Gow (2005). The role of alpha hemoglobin stabilizing protein (AHSP) in normal erythropoiesis and β thalassemia. *Ann N Y Acad Sci.* 1054, 103-17.
- (142) Feng-Yen Li, Philip D. Jeffrey, Jong W. Yu, and Yigong Shi (2005). Crystal Structure of a Viral FLIP: Insights into FLIP-mediated inhibition of death receptor signaling. *J. Biol. Chem.* 281, 2960-2968. Epub 2005 Nov 29.
- (143) Xinchao Yu, Devrim Acehan, Jean-François Ménéret, Christopher R. Booth, Steven J. Ludtke, Stefan J. Riedl, Yigong Shi, Xiaodong Wang, and Christopher W. Akey (2005). A structure of the human apoptosome at 12.8 Å resolution provides insights into this cell death platform. *Structure* 13, 1725-35.
- (144) Yigong Shi (2005). Activation of Initiator Caspases: History, Hypotheses, and Perspectives. *J. Cancer Mol.* 1, 9-18.
- (145) (***) Min Hu*, Pingwei Li*, Ling Song, Philip D. Jeffrey, Tatiana A. Chenova, Keith D. Wilkinson, Robert E. Cohen, and Yigong Shi (2005). Structure and mechanisms of the proteasome-associated deubiquitinating enzyme USP14. *EMBO J.* 24, 3747-3756. Epub 2005 Oct. 6. (*equal contributions)
- (146) (***) Nieng Yan, Jijie Chai, Eui Seung Lee, Lichuan Gu, Qun Liu, Jiaqing He, Jia-Wei Wu, David Kokel, Huilin Li, Quan Hao, Ding Xue, and Yigong Shi (2005). Structure of the CED-4/CED-9 complex provides insights into programmed cell death in *Caenorhabditis elegans*. *Nature* 437, 831-837.
- (147) Nieng Yan and Yigong Shi (2005). Mechanisms of Apoptosis through Structural Biology. *Annu. Rev. Cell Dev. Biol.* 21, 35-56.
- (148) (***) Yang Chao*, Eric N. Shiozaki*, Srinivasa M. Srinivasula, Daniel J. Rigotti, Robert Fairman, and Yigong Shi (2005). Engineering a Dimeric Caspase-9: A Re-evaluation of the Induced Proximity Model for Caspase Activation. *PloS Biology* 3, e183. Epub 2005 May 10. (*equal contributions)
- (149) (***) Liang Feng*, Suiping Zhou*, Lichuan Gu*, David A. Gell, Joel P. Mackay, Mitchell J. Weiss, Andrew J. Gow, and Yigong Shi (2005). Structure of the oxidized α hemoglobin bound to AHSP reveals a protective mechanism for heme. *Nature* 435, 697-701. (*equal contributions)
- (150) Qing Bao, Stefan J. Riedl, and Yigong Shi (2005). Structure of Apaf-1 in the Auto-inhibited Form: A Critical Role for ADP. *Cell Cycle* 4, 1001-1003.
- (151) (***) Stefan J. Riedl, Wenyu Li, Yang Chao, Robert Schwarzenbacher, and Yigong Shi (2005). Structure of the apoptotic protease activating factor 1 (Apaf-1) bound to ADP. *Nature* 434, 926-933.
- (152) Michael D. Tibbetts, Eric N. Shiozaki, Lichuan Gu, E. Robert McDonald III, Wafik S. El-Deiry, and Yigong Shi (2004). Crystal structure of a novel FYVE-type zinc finger domain from the caspase regulator CARP2. *Structure* 12, 2257-2263.
- (153) (***) Liang Feng*, David A. Gell*, Suiping Zhou*, Lichuan Gu, Yi Kong, Jianqing Li, Min Hu, Nieng Yan, Christopher Lee, Anne M. Rich, Robert S. Armstrong, Peter A. Lay, Andrew J. Gow, Mitchell J. Weiss, Joel P. Mackay, and Yigong Shi (2004). Molecular

- Mechanism of AHSP-mediated Stabilization of α -hemoglobin. *Cell* 119, 629–640. (*equal contributions)
- (154) Ping La, Albert C. Silva, Zhaoyuan Hou, Haoren Wang, Robert W. Schnepf, Nieng Yan, Yigong Shi, and Xianxin Hua (2004). Direct Binding of DNA by Tumor Suppressor Menin. *J. Biol. Chem.* 279, 49045-49054.
- (155) Stefan J. Riedl and Yigong Shi (2004). Molecular mechanisms of caspase regulation during apoptosis. *Nature Review – Mol. Cell. Biol.* 5, 897–907.
- (156) (***) Nieng Yan*, Lichuan Gu*, David Kokel, Jijie Chai, Wenyu Li, Aidong Han, Lin Chen, Ding Xue, and Yigong Shi (2004). Structural, Biochemical and Functional Analyses of CED-9 Recognition by the Pro-apoptotic Proteins EGL-1 and CED-4. *Mol. Cell* 15, 999–1006. (*equal contributions)
- (157) Eric N. Shiozaki and Yigong Shi (2004). Caspases, IAPs, and Smac/DIABLO: Mechanisms from Structural Biology. *Trends Biochem. Sci.* 29 (9), 486–494.
- (158) Yigong Shi (2004). Caspase Activation, Inhibition, and Re-activation: A Mechanistic View. *Protein Science* 13, 1979-1987.
- (159) Yigong Shi (2004). Caspase activation: Revisiting the induced proximity model. *Cell* 117, 855–858 (Mini-review).
- (160) (***) Eric N. Shiozaki, Lichuan Gu, Nieng Yan, and Yigong Shi (2004). Structure of the BRCT repeats of BRCA1 bound to a BACH1 phosphopeptide: Implications for signaling. *Mol. Cell* 14, 405-412.
- (161) (***) Nieng Yan, Jia-Wei Wu, Jun R. Huh, Jijie Chai, Wenyu Li, Bruce A. Hay, and Yigong Shi (2004). Molecular mechanisms of DrICE inhibition by DIAP1 and removal of inhibition by Reaper, Hid, and Grim. *Nature-Structural & Molecular Biology* 11 (5), 420-428.
- (162) Joshua P. Frederick, Nicole T. Liberati, David S. Waddell, Yigong Shi, and Xiao-Fan Wang (2004). Transforming growth factor β -mediated transcriptional repression of *c-myc* is dependent on direct binding of smad3 to a novel repressive smad binding element. *Mol. Cell. Biol.* 24 (6), 2546-2559.
- (163) Jun R. Huh, Stephanie Y. Vernooy, Hong Yu, Nieng Yan, Yigong Shi, Ming Guo, and Bruce A. Hay (2004). Multiple apoptotic caspase cascades are required in non-apoptotic roles for *Drosophila* spermatid individualization. *PLoS Biology* 2, 43–53.
- (164) Nieng Yan and Yigong Shi (2003). Histone H1.2 as a trigger for apoptosis. *Nature-Structural Biology* 10, 983-985. (News and Views)
- (165) (***) Jijie Chai*, Nieng Yan*, Jun R. Huh, Jia-Wei Wu, Wenyu Li, Bruce A. Hay, and Yigong Shi (2003). Molecular mechanism of Reaper/Grim/Hid-mediated suppression of DIAP1-dependent Dronc ubiquitination. *Nature-Structural Biology* 10, 892-898 (The single asterisk indicates equal contributions)
- (166) Constance J. Glover, Karen Hite, Renee DeLosh, Dominic A. Scudiero, Matthew J. Fivash, Lindsey R. Smith, Robert J. Fisher, Jia-Wei Wu, Yigong Shi, Rachael A. Kipp, George L. McLendon, Edward A. Sausville, and Robert H. Shoemaker (2003). A high-

- throughput screen for identification of molecular mimics of Smac/DIABLO utilizing a fluorescence polarization assay. *Analytical Biochemistry* 320, 157-169.
- (167) Yigong Shi and Joan Massagué (2003). Mechanisms of TGF- β signaling from Cell Membrane to the Nucleus. (commissioned review article) *Cell* 113, 685-700.
- (168) Jijie Chai, Jia-Wu Wu, Nieng Yan, Joan Massagué, Nikola P. Pavletich, and Yigong Shi (2003). Features of a Smad3 MH1-DNA complex: Roles of water and zinc in DNA binding. *J. Biol. Chem.* 278, 20327-20331.
- (169) Yigong Shi (2003). Structural Biology of Programmed Cell Death. (Book chapter) *Essentials of Apoptosis: A Guide for Basic and Clinical Research*, Humana Press, pages 47-66.
- (170) (***) Eric N. Shiozaki, Jijie Chai, Daniel J. Rigotti, Stefan J. Riedl, Pingwei Li, Srinivasa M. Srinivasula, Emad S. Alnemri, Robert Fairman, and Yigong Shi (2003). Mechanism of XIAP-mediated inhibition of Caspase-9. *Mol. Cell* 11, 519-527. (COVER of the February issue).
- (171) (***) Min Hu, Pingwei Li, Muyang Li, Wenyu Li, Tingting Yao, Jia-Wei Wu, Wei Gu, Robert E. Cohen, and Yigong Shi (2002). Crystal structure of a UBP-family deubiquitinating enzyme in isolation and in complex with ubiquitin aldehyde. *Cell* 111, 1041-1054.
- (172) Xiaochen Wang, Chonglin Yang, Jijie Chai, Yigong Shi, and Ding Xue (2002). Mechanisms of AIF-mediated apoptotic DNA degradation in *Caenorhabditis elegans*. *Science* 298, 1587-1592.
- (173) (***) Jia-Wei Wu, Ariel R. Krawitz, Jijie Chai, Wenyu Li, Fangjiu Zhang, Kunxin Luo, and Yigong Shi (2002). Structural Mechanism of Smad4 Recognition by the Nuclear Oncoprotein Ski: Insight on Ski-Mediated Repression of TGF- β Signaling. *Cell* 111, 357-367.
- (174) Rachael A. Kipp, Martin A. Case, Aislyn D. Wist, Catherine M. Cresson, Maria Carrell, Erin Griner, Arun Wiita, Philip A. Albinak, Yigong Shi, Martin F. Semmelhack, and George L. McLendon (2002). Molecular targeting of inhibitor of apoptosis proteins based on small molecule mimics of natural binding partners. *Biochem.* 41, 7344-7349.
- (175) (***) Wenyu Li, Jijie Chai, Srinivasa M. Srinivasula, Emad S. Alnemri, and Yigong Shi (2002). Structure of the Mitochondrial Serine Protease Omi/HtrA2: Insights for Its Proapoptotic Function. *Nature Struct. Biol.* 9, 436-441.
- (176) (***) Eric Shiozaki, Jijie Chai, and Yigong Shi (2002). Oligomerization and Activation of Caspase-9 Induced by the CARD Domain of Apaf-1. *Proc. Natl. Acad. Sci. USA* 99, 4197-4202.
- (177) Yigong Shi (2002). Mechanisms of caspase activation and inhibition during apoptosis. *Mol Cell* 9, 459-470. (commissioned review article)
- (178) Yigong Shi (2002). Apoptosome: the cellular engine for the activation of caspase-9. (Mini-review). *Structure* 10, 285-288.

- (179) Srinivasa M. Srinivasula, Pinaki Datta, Masatomo Kobayashi, Miki Fujioka, Jia-Wei Wu, Ramesh Hegde, ZhiJia Zhang, Rula Mukattash, Teresa Fernandes-Alnemri, Yigong Shi, James B. Jaynes, and Emad S. Alnemri (2002). *Sickle*, a novel *Drosophila* death gene in the *reaper/hid/grim* region encodes an IAP-inhibitory protein. ***Curr. Biol.*** 12, 125-130.
- (180) Yigong Shi (2002). A conserved tetrapeptide motif: Potentiating apoptosis through IAP-binding. ***Cell Death Differ.*** 9, 93-95.
- (181) (***) Jia-Wei Wu, Min Hu, Jijie Chai, Morgan Huse, Carey Li, Saw Kyin, Robert Fairman, Tom Muir, Joan Massagué, and Yigong Shi (2001). Crystal Structure of a Phosphorylated Smad2: Recognition of Phosphoserine Motif and Insights on Smad Function in TGF- β Signaling. ***Mol. Cell*** 8, 1277-1289. (COVER of the December issue)
- (182) Stephen W. Fesik and Yigong Shi (2001). Controlling the Caspases. ***Science*** 294, 1477-1478. (Perspectives)
- (183) (***) Jijie Chai Qi Wu, Eric Shiozaki, Srinivasa M. Srinivasula, Emad S. Alnemri, and Yigong Shi (2001). Crystal Structure of a Caspase Zymogen: Mechanisms of Activation and Substrate Binding. ***Cell*** 107, 399-407.
- (184) (***) Jia-Wei Wu, Amy Cocina, Jijie Chai, Bruce Hay, and Yigong Shi (2001). Structural Analysis of a Functional DIAP1 Fragment Bound to Grim and Hid Peptides. ***Mol. Cell*** 8, 95-104.
- (185) Jia-Wei Wu, Jack Penry, Robert Fairman, and Yigong Shi (2001). Formation of a Stable Heterodimer between Smad2 and Smad4. ***J. Biol. Chem.*** 276, 20688-20694.
- (186) Yigong Shi (2001). A Structural View of the Mitochondria-mediated Apoptosis. ***Nature-Structural Biology*** 8, 394-401. (Commissioned review article)
- (187) (***) Jijie Chai, Eric Shiozaki, Srinivasa M. Srinivasula, Qi Wu, Pinaki Datta, Emad S. Alnemri, and Yigong Shi (2001). Structural Basis of Caspase-7 Inhibition by XIAP. ***Cell*** 104, 769-780.
- (188) Srinivasa M. Srinivasula, Ayman Saleh, Ramesh Hedge, Pinaki Datta, Eric Shiozaki, Paul D. Robbins, Teresa Fernandes-Alnemri, Yigong Shi, and Emad S. Alnemri (2001). A conserved XIAP-interaction motif in caspase-9 and Smac/DIABLO mediates opposing effects on caspase activity and apoptosis. ***Nature*** 409, 112-111.
- (189) Yigong Shi (2001). Structural Insights on Smad Function in TGF- β signaling. ***BioEssays*** 23, 223-232. (Commissioned review article)
- (190) (***) Geng Wu*, Jijie Chai*, Tomeka Suber, Jia-Wei Wu, Chunying Du, Xiaodong Wang, and Yigong Shi (2000). Structural Basis of IAP Recognition by Smac/DIABLO. ***Nature*** 408, 1008-1012. (*These authors contributed equally)
- (191) (***) Jijie Chai, Chunying Du, Jia-Wei Wu, Saw Kyin, Xiaodong Wang, and Yigong Shi (2000). Structural and Biochemical Basis of Apoptotic Activation by Smac/DIABLO. ***Nature*** 406, 855-862. (COVER of the August 24th issue)
- (192) Yigong Shi (2000). Survivin structure: crystal unclear. ***Nature-Structural Biology*** 7, 620-623. (News and Views)

- (193) Sha Ha, Debbie Walker, Yigong Shi, and Suzanne Walker (2000). The 1.9 Å crystal structure of Escherichia coli MurG, a membrane-associated glycosyltransferase involved in peptidoglycan biosynthesis. *Protein Sci.* 9, 1045-1052.
- (194) (***) Geng Wu, Ye-Guang Chen, Barish Ozdamar, Cassie Gyuricza, P. Andrew Chong, Jeffrey L. Wrana, Joan Massagué, and Yigong Shi (2000). Structural basis of Smad2 recruitment by the Smad Anchor for Receptor Activation (SARA). *Science* 287, 92-97.
- (195) Xianxin Hua, Zachary Miller, Geng Wu, Yigong Shi, and Harvey F. Lodish (1999). Specificity in TGF- β -induced transcription: interactions of promoter DNA, Smad3 and TFE3. *Proc. Natl. Acad. Sci.* 96, 13130-13135.
- (196) (***) Hongxu Qin, Srinivasa M. Srinivasula, Geng Wu, Emad S. Alnemri, and Yigong Shi (1999). Structural basis of procaspase-9 recruitment by the apoptotic protease activating factor 1. *Nature* 399, 549-557.
- (197) Shi-Du Yan, Yigong Shi, et al. (1999). Role of ERAB/L-3-hydroxyacyl-coenzyme A dehydrogenase type II activity in β -Amyloid-induced cytotoxicity. *J. Biol. Chem.* 274, 2145-2156.
- (198) (***) Yigong Shi, Yan-Fei Wang, Lata Jayaraman, Haijuan Yang, Joan Massagué, and Nikola Pavletich (1998). Crystal structure of a Smad MH1 domain bound to DNA: insights on DNA-binding in TGF- β signaling. *Cell* 94, 585-594.
- (199) Jie-Oh Lee, Haijuan Yang, Maria-Magdalena, Antonio Di Cristofano, Tomohiko Maehama, Yigong Shi, Jack E. Dixon, Pier P. Pandolfi, and Nikola P. Pavletich (1999). Crystal structure of the PTEN tumor suppressor: implications for its phosphoinositide phosphatase activity and membrane association. *Cell* 99, 323-334.
- (200) Akiko Hata, Yigong Shi, and Joan Massagué (1998). TGF- β signaling and cancer: structural and functional consequences of mutations in smads. *Molecular Medicine Today* 4, 257-262.
- (201) Ye-Guang Chen, Akiko Hata, Roger S. Lo, David Wotton, Yigong Shi, Nikola P. Pavletich, and Joan Massagué (1998). Determinants of Specificity in TGF- β Signal Transduction. *Genes and Development* 12, 2144-2152.
- (202) Roger S. Lo, Ye-Guang Chen, Yigong Shi, Nikola P. Pavletich, and Joan Massagué (1997). The L3 loop: a structural motif determining specific interactions between SMAD proteins and TGF- β receptors. *EMBO J.* 17, 996-1005.
- (203) (***) Yigong Shi, Akiko Hata, Joan Massagué, and Nikola P. Pavletich (1997). A structural basis for mutational inactivation of the tumour suppressor Smad4. *Nature* 388, 87-93.
- (204) Yang-Gyun Kim, Yigong Shi, Jeremy M. Berg, and Srinivasan Chandrasegaran (1997). Site-specific cleavage of DNA-RNA hybrids by zinc finger/Fok I cleavage domain fusions. *Gene* 203, 43-49.
- (205) Yigong Shi and Jeremy M. Berg (1996). DNA unwinding induced by zinc finger protein binding. *Biochemistry* 35, 3845-3848.

- (206) Jeremy M. Berg and Yigong Shi (1996). The galvanization of biology: a growing appreciation for the roles of zinc. *Science* 271, 1081-1085.
- (207) (***) Yigong Shi and Jeremy M. Berg (1995). Specific dna-rna hybrid binding by zinc finger proteins. *Science* 268, 282-284.
- (208) Yigong Shi and Jeremy M. Berg (1995). A direct comparison of the properties of natural and designed zinc finger proteins. *Chemistry and Biology* 2, 83-89.
- (209) Yigong Shi, Richard D. Berger and Jeremy M. Berg (1993). Metal binding properties of single amino acid deletion mutants of zinc finger peptides: studies using cobalt(ii) as a spectroscopic probe. *Biophysical J.* 64, 749-753.