



Hong-Wei Wang

Professor, School of Life Sciences, Tsinghua University
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Contact

Mailing address Room 353, Life Sciences Building
School of Life Sciences, Tsinghua University
Haidian District, Beijing 100084,
China

Phone 86-10-62798651
86-10-62792083 (Administrative Assistant)

Email hongweiwang@tsinghua.edu.cn

Lab website <http://cryoem.life.tsinghua.edu.cn/>

Professional Positions

2022.09 – present Vice President, Tsinghua University, Beijing, China.

2010.12 - present Professor, School of Life Sciences, Tsinghua University, Beijing, China.

2021.10 – 2022.09 Assistant President, Tsinghua University, Beijing, China.

2021.03 – 2022.10 Dean of Institute of Biomedicine, Tsinghua University, Beijing, China.

2020.07 – 2022.01 Director, Human Resources Office, Tsinghua University, Beijing, China.

2016.04 – 2021.04 Dean, School of Life Sciences, Tsinghua University, Beijing, China.

2009.01 - 2011.07 Tenure-Track Assistant Professor, Department of Molecular Biophysics and Biochemistry, Yale University, New Haven, CT, USA.

2006.06 - 2008.12 Research Scientist, Life Sciences Division, Lawrence Berkeley National Laboratory, Berkeley, CA, USA.

2001.08 - 2006.05 Postdoctoral Fellow, Life Sciences Division, Lawrence Berkeley National Laboratory, Berkeley, CA, USA.

Education

1996.08 – 2001.07 Ph.D. in Biophysics, Department of Biological Sciences and Biotechnology, Tsinghua University, Beijing, China.

1992.09 – 1996.07 B.S. in Biological Sciences & Biotechnology, Department of Biological Sciences and Biotechnology, Tsinghua University, Beijing, China.



Honors and Awards

- 2020 Outstanding Science and Technology Achievement Prize, Chinese Academy of Sciences for the Significant Achievement in Research Group of Plant Immunity Mechanism.
- 2019 2019 Science and Technology Breakthrough Award (with Jijie Chai), School of Life Sciences, Tsinghua University.
- 2019 The project “Structural and functional research on a plant NLR resistosome” (with Jijie Chai and Jianmin Zhou) was selected as “2019 Top Ten Progresses in Life Sciences in China”.
- 2019 1st XPLOERER PRIZE, Tencent Foundation.
- 2019 2nd Chinese Cryo-EM Outstanding Contribution Award, Cryo-Electron Microscopy Subsociety of The Biophysical Society of China.
- 2019 Chair-Elected, 2017 Gordon Research Conference on Three-Dimensional Electron Microscopy.
- 2019 Young and Middle-aged Leading Scientists, Engineers and Innovators, Ten Thousand Talent Program, The Ministry of Science and Technology.
- 2018 The National Science Fund for Distinguished Young Scholars, National Science Foundation of China.
- 2018 11th Tan Jiazhen Life Sciences Innovation Award, Tan Jiazhen Life Sciences Foundation.
- 2018 16th "The Best Mentor Like A Friend", Tsinghua University.
- 2018 Beijing Teachers' Role Model.
- 2017 Beijing Outstanding Teacher Award.
- 2016 15th "The Best Mentor Like A Friend", Tsinghua University.
- 2012 Youth One-Thousand Talent Program, State Council of China.
- 2009 Smith Family Award for Excellence in Biomedical Research, the Smith Family Foundation.
- 2005 National Award of Natural Science (2nd rank) by State Council of China.
- 2005 Outstanding Performance Award, Lawrence Berkeley National Laboratory.
(Berkeley Lab's highest award to employee's significant one-time achievement)
- 2004 On the SPOT Recognition Award, Lawrence Berkeley National Laboratory.
- 2001 Distinguished Ph.D. Dissertation Award, Tsinghua University.
(Less than 20 out of 500 Ph.D. Dissertations each year are awarded by the university)
- 1996 Distinguished Graduation Award, Tsinghua University.



Professional Society Experience

2021 – present	Vice President, The Biophysical Society of China.
2020 – present	Editorial Board Member, <i>Ultramicroscopy</i> .
2020 – present	Advisory Board Member, <i>Cell</i> .
2017 – present	Executive Editor, <i>Biochemistry</i> .
2017 - present	Chair, Cryo-Electron Microscopy Subsociety of The Biophysical Society of China.
2014 - present	Editorial Board Member, <i>Biophysics Reports</i> .
2020 – 2023	Vice President, Chinese Electron Microscopy Society.
2018 – 2023	Council Member, China Instrument and Control Society.
2017 -2021	Editorial Board Member, <i>Journal of Biological Chemistry</i> .
2013 - 2021	Council Member, The Biophysical Society of China.
2012 - 2020	Council Member, Chinese Electron Microscopy Society.
2009 - 2019	Member and Reviewer, Faculty of 1000, Cytoskeleton Section.
2009 - present	Member, American Physical Society.
2005 - present	Member, Sigma Xi Society.
2002 - present	Member, Biophysical Society.

Ad Hoc Reviewers for Human Frontier Science Program; Netherland Organization for Scientific Research; Jeffress Research Grant; Indo-US Science and Technology Forum; *Cell*, *Nature*, *Science*, *Nature Structural & Molecular Biology*, *Genes & Development*, *PNAS*, *Journal of Molecular Biology*, *Structure*, *Journal of Structural Biology*, *Experimental Cell Research*.

Research Interests

In the very crowded inner environment of a cell, most macromolecules function in the form of complexes, many being described as “molecular machines.” To understand the machines’ structures and structural changes that occur during the working cycle, we employ cryo-electron microscopy to visualize them as “single particles” or ordered functional assemblies. The micrographs are analyzed by computational image processing to reveal the structures and conformational variations of these molecules. We then combine the structural information with data from accompanying biophysical and biochemical techniques to elucidate the mechanisms of these large macromolecular machines.

Our current research focuses on:

- (1) Methodology development for more efficient and high resolution cryo-electron microscopy
- (2) The mechanism and regulations of nucleic acid quality control
- (3) The coordination mechanisms of cytoskeleton and membrane systems



Publications

1. Xu J, Gao XY, Zheng LM, Jia X, Xu K, Ma Y, Wei XD, Liu N*, Peng HL*, **Wang HW***. (2024) Graphene sandwich-based biological specimen preparation for cryo-EM analysis. *Proc. Natl. Acad. Sci. USA*, 121(5):e2309384121.
2. Ji QS, Zhang K, Cao N, You X, Cao S, Wang M, Guo J, **Wang HW**, Mei KR*. (2023) Highly efficient overexpression and purification of multisubunit tethering complexes in *Saccharomyces cerevisiae*. *Protein Expr. Purif.*, 212:106351.
3. Zhou J, Wang A, Song Y, Liu N, Wang J, Li Y, Liang X, Li GH, Chu HY, **Wang HW***. (2023) Structural insights into the mechanism of GTP initiation of microtubule assembly. *Nat. Commun.*, 14(1):5980.
4. Liu SM, Wang J, Song B, Gong XQ, Liu HH, Hu QL, Zhang JH, Li QQ, Zheng J, **Wang HW***, Xu HE*, Li JY*, Wang B*. (2023) Conformational Dynamics of the D53-D3-D14 Complex in Strigolactone Signaling. *Plant Cell Physiol.*, 64(9):1046-1056.
5. Liu N, **Wang HW***. (2023) Better cryo-EM specimen preparation: How to deal with the air-water interface? *J. Mol. Biol.*, 435(9):167926 (Review).
6. Cheng H, Zheng LM, Liu N, Huang CY, Xu J, Lu Y, Cui XY, Xu K, Hou Y, Tang JC, Zhang Z, Li J, Ni XD, Chen YN*, Peng HL*, **Wang HW***. (2023) Dual-Affinity Graphene Sheets for High-Resolution Cryo-Electron Microscopy. *J. Am. Chem. Soc.*, 145(14):8073-8081.
7. You X, Zhang X, Cheng J, Xiao YN, Ma JF, Sun S, Zhang XZ*, **Wang HW***, Sui SF*. (2023) In situ structure of the red algal phycobilisome-PSII-PSI-LHC megacomplex. *Nature*, 616(7955):199-206.
8. Zheng LM, Liu N*, Gao XY, Zhu WQ, Liu K, Wu C, Yan R, Zhang JC, Gao X, Yao YT, Deng B, Xu J, Lu Y, Liu, ZM, Li MS, Wei XD*, **Wang HW***, Peng HL*. (2023) Uniform thin ice on ultraflat graphene for high-resolution cryo-EM. *Nat. Methods*, 20(1):123-130.
9. Lu Y, Liu N*, Liu Y, Zheng LM, Yang JH, Wang J, Jia X, Zi QR, Peng HL*, Rao Y*, **Wang HW***. (2022) Functionalized graphene grids with various charges for single-particle cryo-EM. *Nat. Commun.*, 13(1):6718.
10. Yan A, Xiong J, Zhu J, Li X, Xu S, Feng X, Ke X, Wang Z, Chen Y, **Wang HW**, Zhang MQ*, Kee K*. (2022) DAZL regulates proliferation of human primordial germ cells by direct binding to precursor miRNAs and enhances DICER processing activity. *Nucleic Acids. Res.*, 50(19):11255-11272.



11. Su S, Wang J, Deng T, Yuan X, He J, Liu N, Li XM, Huang Y, **Wang HW***, Ma JB*. (2022) Structural insights into dsRNA processing by *Drosophila* Dicer-2-Loqs-PD. *Nature*, 607(7918):399-406.
12. Huang Y, Zhang X, **Wang HW**, Yu L*. (2022) Assembly of Tetraspanin-enriched macrodomains contains membrane damage to facilitate repair. *Nat. Cell Biol.*, 24(6):825-832.
13. Wang X, Hu CX, Ye W, Wang J, Dong X, Xu J, Li X, Zhang M, Lu H, Zhang F, Wu W, Dai S, **Wang HW***, Chen Z*. (2022) Structure of Rift Valley fever virus RNA-dependent RNA polymerase. *J. Virol.*, 96(3):e0171321.
14. Xu JF, Zhao LY, Peng SJ, Chu HY, Liang R, Tian M, Connell PP, Li G, Chen CL*, **Wang HW***. (2021) Mechanisms of distinctive mismatch tolerance between Rad51 and Dmc1 in homologous recombination. *Nucleic Acids Res.*, 49(22): 13135–13149.
15. Zhang J, Jia K, Huang Y, Wang Y, Liu N, Chen YN, Liu X, Liu X, Zhu Y, Zheng L, Chen H, Liang F, Zhang M, Duan X, **Wang HW**, Lin L*, Peng HL*, Liu ZF*. (2021) Hydrophilic, Clean Graphene for Cell Culture and Cryo-EM Imaging. *Nano Lett.*, 21(22):9587-9593.
16. Chen J, Liu N, Huang Y, Wang Y, Sun Y, Wu Q, Li D, Gao S, **Wang HW***, Huang N*, Qi X*, Wang XD*. (2021) Structure of PDE3A-SLFN12 complex and structure-based design for a potent apoptosis inducer of tumor cells. *Nat. Commun.*, 12(1):6204.
17. Zheng L, Liu N, Liu Y, Li N, Zhang J, Wang C, Zhu W, Chen Y, Ying D, Xu J, Yang Z, Gao X, Tang J, Wang X, Liang Z, Zou R, Li Y, Gao P, Wei X*, **Wang HW***, Peng HL*. (2021) Atomically Thin Bilayer Janus Membranes for Cryo-electron Microscopy. *ACS Nano*, 15(10):16562-16571.
18. Niu S, Wang J, Bai B, Wu L, Zheng A, Chen Q, Du P, Han P, Zhang Y, Jia Y, Qiao C, Qi J, Tian WX*, **Wang HW***, Wang Q*, Gao GF*. (2021) Molecular basis of cross-species ACE₂ interactions with SARS-CoV-2-like viruses of pangolin origin. *EMBO J.*, 40(16):e107786.
19. Nie J, Xie J, Liu S, Wu J, Liu C, Li J, Liu Y, Wang M, Zhao H, Zhang Y, Yao J, Chen L, Shen Y, Yang Y, **Wang HW***, Wang Y*, Huang W*. (2021) Three epitope-distinct human antibodies from RenMab mice neutralize SARS-CoV-2 and cooperatively minimize the escape of mutants. *Cell Discov.*, 7(1):53.
20. Liu N, Zheng LM, Xu J, Wang J, Hu CX, Lan J, Zhang X, Zhang J, Xu K, Cheng H, Yang Z, Gao X, Wang X, Peng HL*, Chen YN*, **Wang HW***. (2021) Reduced graphene oxide membrane as supporting film for high-resolution cryo-EM. *Biophysics Reports*, 7(3):



21. Zhang S, Liu N, **Wang HW**, Lu Q, Shi W*, Wang X*. (2021) Sub-Nanometer Nanobelts Based on Titanium Dioxide/Zirconium Dioxide-Polyoxometalate Heterostructures. *Adv. Mater.*, 33(23):e2100576.
22. Xu J, Cui XY, Liu N, Chen YN*, **Wang HW***. (2021) Structural engineering of graphene for high-resolution cryo-electron microscopy. *SmartMat.*, 2:202–212 (Review).
23. Xu K, Liu N, Xu J, Guo CL, Zhao LY, **Wang HW**, Zhang QF*. (2021) VRmol: an Integrative Web-Based Virtual Reality System to Explore Macromolecular Structure. *Bioinformatics*, 37(7):1029-1031.
24. Yan R, Wang R, Ju B, Yu J, Zhang Y, Liu N, Wang J, Zhang Q, Chen P, Zhou B, Li Y, Shen Y, Zhang S, Tian L, Guo Y, Xia L, Zhong X, Cheng L, Ge X, Zhao J, **Wang HW**, Wang XQ, Zhang Z*, Zhang LQ* and Zhou Q*. (2021) Structural basis for bivalent binding and inhibition of SARS-CoV-2 infection by human potent neutralizing antibodies. *Cell Res.*, 31(5):517-525.
25. Liu K, Tan S, Niu S, Wang J, Wu L, Sun H, Zhang Y, Pan X, Qu X, Du P, Meng Y, Jia Y, Chen Q, Deng C, Yan J, **Wang HW**, Wang Q*, Qi J*, Gao G*. (2021) Cross-species recognition of SARS-CoV-2 to bat ACE2. *Proc. Natl. Acad. Sci. USA*, 118(1):e2020216118.
26. Liu JL, Wang SB, Liu N, Yang DR, **Wang HW***, Hu HS*, Zhuang J, Wang X*. (2021) Au-Polyoxometalates A-B-A-B Type Copolymer-Analogue Sub-1 nm Nanowires. *Small*, 17(4):e2006260.
27. Liu N, Dong XL, Hu CX, Zeng J, Wang JW, Wang J, **Wang HW***, Belfort M*. (2020) Exon and protein positioning in a pre-catalytic group II intron RNP primed for splicing. *Nucleic Acids. Res.*, 48(19):11185-11198.
28. Liu JL, Liu N, **Wang HW***, Shi WX*, Zhuang J, Xun Wang*. (2020) Hybrid MoO₃-Polyoxometallate Sub-1 nm Nanobelt Superstructures. *J. Am. Chem. Soc.*, 142(41):17557-17563.
29. Wu LL, Chen Q, Liu KF, Wang J, Han PC, Zhang YF, Hu Y, Meng YM, Pan XQ, Qiao CP, Tian SY, Du P, Song H, Shi WF, Qi JX, **Wang HW***, Yan JH*, Gao GF, Wang QH*. (2020) Broad host range of SARS-CoV-2 and the molecular basis for SARS-CoV-2 binding to cat ACE₂. *Cell Discov.*, 6:68.
30. Jin W, Wang J, Liu CP, **Wang HW***, Xu RM*. (2020) Structural Basis for pri-miRNA



- Recognition by Droscha. *Mol. Cell*, 78(3): 423-433.
31. Wang J, Song X, Zhang D, Chen X, Li X, Sun Y, Li C, Song Y, Ding Y, Ren R, Harrington EH, Hu LA, Zhong W, Xu C, Huang X, **Wang HW***, Ma Y*. (2020) Cryo-EM structures of PAC1 receptor reveal ligand binding mechanism. *Cell Res.*, 30(5): 436-455.
 32. Yuan D, Liu Z, Kaindl J, Maeda S, Zhao J, Sun X, Xu J, Gmeiner P*, **Wang HW***, Kobilka BK*. (2020) Activation of the α_{2B} adrenoceptor by the sedative sympatholytic dexmedetomidine. *Nat. Chem. Biol.*, 16(5): 507-+.
 33. Shen W, Wang QW, Liu YN, Marchetto MC, Linker S, Lu SY, Chen Y, Liu C, Guo C, Xing Z, Shi W, Kelsoe JR, Alda M, **Wang HW**, Zhong Y, Sui SF, Zhao M, Yang Y, Mi S, Cao L, Gage FH*, Yao J*. (2020) Synaptotagmin-7 is a key factor for bipolar-like behavioral abnormalities in mice. *Proc. Natl. Acad. Sci. USA*, 117(8):4392-4399.
 34. Liu C, Ma J, Wang J, **Wang HW**, Zhang L*. (2020) Cryo-EM Structure of a Bacterial Lipid Transporter YebT. *J. Mol. Biol.*, 432(4):1008-1019.
 35. Zheng L, Chen Y, Li N, Zhang J, Liu N, Liu J, Dang W, Deng B, Li Y, Gao X, Tan C, Yang Z, Xu S, Wang M, Yang H, Sun L, Cui Y, Wei X, Gao P*, **Wang HW***, Peng H*. (2020) Robust ultraclean atomically thin membranes for atomic-resolution electron microscopy. *Nat. Commun.*, 11(1):541.
 36. Liu JJ*, **Wang HW***. (2020) Cryo-Electron Microscopy of Endogenous Yeast Exosomes. *Methods Mol Biol.*, 2062:401-415. (Book Chapter)
 37. Hu Y, Desimmie BA, Nguyen HC, Ziegler SJ, Cheng TC, Chen J, Wang J, **Wang HW**, Zhang K, Pathak VK*, Xiong Y*. (2019) Structural basis of antagonism of human APOBEC3F by HIV-1 Vif. *Nat. Struct. Mol. Biol.*, 26(12):1176-1183.
 38. Carragher B, Cheng Y, Frost A, Glaeser RM*, Lander GC, Nogales E, **Wang HW**. (2019) Current outcomes when optimizing 'standard' sample preparation for single-particle cryo-EM. *J Microsc.*, 276(1):39-45.
 39. Dai A, Yu L*, **Wang HW***. (2019) WHAMM initiates autolysosome tubulation by promoting actin polymerization on autolysosomes. *Nat. Commun.*, 10(1): 3699.
 40. **Wang HW***, Fan X. (2019) Challenges and opportunities in cryo-EM with phase plate. *Curr. Opin. Struct. Biol.*, 58:175-182. (Review)
 41. Zhang R, Qu X, Zhang M, Jiang Y, Dai A, Zhao W, Cao D, Lan Y, Yu R, **Wang HW**, Huang S*. (2019) The Balance between Actin-Bundling Factors Controls Actin



- Architecture in Pollen Tubes. *iScience*, 16:162-176.
42. Fan X, Wang J, Zhang X, Yang Z, Zhang JC, Zhao L, Peng HL, Lei J*, **Wang HW***. (2019) Single particle cryo-EM reconstruction of 52 kDa streptavidin at 3.2 Angstrom resolution. *Nat. Commun.*, 10(1):2386.
43. Liu Y, Hu H, Wang J, Zhou Q, Wu P, Yan N, **Wang HW**, Wu JW, Sun L*. (2019) Cryo-EM structure of L-fucokinase/GDP-fucose pyrophosphorylase (FKP) in *Bacteroides fragilis*. *Protein Cell*, 10(5):365-369.
44. **Wang HW***. (2019) A Link between Intronic Polyadenylation and HR Maintenance Discovered. *Biochemistry*, 58(14):1835-1836.
45. Wang J, Wang J, Hu M, Wu S, Qi J, Wang G, Han Z, Qi Y, Gao N, **Wang HW***, Zhou JM*, Chai J*. (2019) Ligand-triggered allosteric ADP release primes a plant NLR complex. *Science*, 364(6435). pii: eaav5868.
46. Wang J, Hu M, Wang J, Qi J, Han Z, Wang G, Qi Y, **Wang HW***, Zhou JM*, Chai J*. (2019) Reconstitution and structure of a plant NLR resistosome conferring immunity. *Science*, 364(6435). pii: eaav5870.
47. Liu N, Zhang J, Chen Y*, Liu C, Zhang X, Xu K, Wen J, Luo Z, Chen S, Gao P, Jia K, Liu Z, Peng H*, **Wang HW***. (2019) Bioactive Functionalized Monolayer Graphene for High-Resolution Cryo-Electron Microscopy. *J. Am. Chem. Soc.*, 141(9):4016-4025.
48. Li XM, Lei JL*, and **Wang HW***. (2018) The application of CorrSight™ in correlative light and electron microscopy of vitrified biological specimens. *Biophys Rep.*, 4(3):143-152.
49. Liu Z, Wang J, Cheng H, Ke X, Sun L, Zhang Q, **Wang HW***. (2018) Cryo-EM Structure of Human Dicer and Its Complexes with a Pre-miRNA Substrate. *Cell*, 173(5):1191-1203.
50. Chen X, Liu M, Tian Y, Li J, Qi Y, Zhao D, Wu Z, Huang M, Wong CC, **Wang HW**, Wang J, Yang H*, Xu Y*. (2018) Cryo-EM structure of human mTOR complex 2. *Cell Research*, 28(5):518-528.
51. Zhao L, Xu J, Zhao W, Sung P, **Wang HW***. (2018) Determining the RAD51-DNA Nucleoprotein Filament Structure and Function by Cryo-Electron Microscopy. *Methods Enzymol.*, 600:179-199.
52. Rao Q, Liu M, Tian Y, Wu Z, Hao Y, Song L, Qin Z, Ding C, **Wang HW***, Wang J*, Xu Y*. (2018) Cryo-EM structure of human ATR-ATRIP complex. *Cell Research*,



53. Mei K, Li Y, Wang S, Shao G, Wang J, Ding Y, Luo G, Yue P, Liu JJ, Wang X, Dong MQ, **Wang HW***, Guo W*. (2018) Cryo-EM structure of the exocyst complex. *Nat. Struct. Mol. Biol.*, 25(2):139-146. (Cover)
54. Fan X, Zhao L, Liu C, Zhang JC, Fan K, Yan X, Peng HL, Lei JL*, **Wang HW***. (2017) Near-Atomic Resolution Structure Determination in Over-Focus with Volta Phase Plate by Cs-Corrected Cryo-EM. *Structure*, 25(10):1623-1630.
55. Zhou Q*, Zhou N, **Wang HW***. (2017) Particle segmentation algorithm for flexible single particle reconstruction. *Biophys. Rep.*, 3(1):43-55.
56. Guan Z, Cai T, Liu Z, Dou Y, Hu X, Zhang P, Sun X, Li H, Kuang Y, Zhai Q, Ruan H, Li X, Li Z, Zhu Q, Mai J, Wang Q, Lai L, Ji J, Liu H, Xia B, Jiang T, Luo SJ, **Wang HW**, Xie C*. (2017) Origin of the Reflectin Gene and Hierarchical Assembly of Its Protein. *Curr. Biol.*, 27(18):2833-2842.
57. Ma M, Liu JJ, Li Y, Huang Y, Ta N, Chen Y, Fu H, Ye MD, Ding Y, Huang W, Wang J, Dong MQ, Yu L*, **Wang HW***. (2017) Cryo-EM structure and biochemical analysis reveal the basis of the functional difference between human PI3KC3-C1 and -C2. *Cell Research*, 27(8):989-1001.
58. Zheng JX, Li Y, Ding YH, Liu JJ, Zhang MJ, Dong MQ, **Wang HW***, Yu L*. (2017) Architecture of the ATG2B-WDR45 complex and an aromatic Y/HF motif crucial for complex formation. *Autophagy*, 13(11):1870-1883.
59. Sun S, Li L, Yang F, Wang X, Fan F, Yang M, Chen C, Li X, **Wang HW**, Sui SF*. (2017) Cryo-EM structures of the ATP-bound Vps4^{E233Q} hexamer and its complex with Vta1 at near-atomic resolution. *Nat. Commun.*, 8:16064.
60. Zhou N, **Wang HW***, Wang J*. (2017) EMBuilder: A Template Matching-based Automatic Model-building Program for High-resolution Cryo-Electron Microscopy Maps. *Sci Rep.*, 7(1):2664.
61. Liu T, Dai A, Cao Y, Zhang R, Dong MQ, **Wang HW***. (2017) Structural Insights of WHAMM's Interaction with Microtubules by Cryo-EM. *J. Mol. Biol.*, 429(9):1352-1363.
62. Zhang L, Wang X, Fan F, **Wang HW**, Wang J*, Li X*, Sui SF*. (2017) Cryo-EM structure of Nma111p, a unique HtrA protease composed of two protease domains and four PDZ domains. *Cell Research*, 27(4):582-585.



63. Xu J, Zhao L, Xu Y, Zhao W, Sung P*, **Wang HW***. (2017) Cryo-EM structures of human RAD51 recombinase filaments during catalysis of DNA-strand exchange. *Nat. Struct. Mol. Biol.*, 24(1):40-46.
64. **Wang HW***, Wang JW. (2017) How cryo-electron microscopy and X-ray crystallography complement each other. *Protein Sci.*, 26(1):32-39. (Review)
65. **Wang HW***, Lei J*, Shi Y*. (2017) Biological cryo-electron microscopy in China. *Protein Sci.*, 26(1):16-31. (Review)
66. Yang H, Wang J, Liu M, Chen X, Huang M, Tan D, Dong MQ, Wong CC, Wang J*, Xu Y*, **Wang HW***. (2016) 4.4 Å Resolution Cryo-EM structure of human mTOR Complex 1. *Protein Cell*, 7(12):878-887.
67. Agrawal RK*, **Wang HW***, Belfort M*. (2016) Forks in the tracks: Group II introns, spliceosomes, telomeres and beyond. *RNA Biol.*, 13(12):1218-1222.
68. Gong X, Qian H, Shao W, Li J, Wu J, Liu JJ, Li W, **Wang HW**, Espenshade P*, Yan N*. (2016) Complex structure of the fission yeast SREBP-SCAP binding domains reveals an oligomeric organization. *Cell Research*, 26(11):1197-1211.
69. Liu JJ, Niu CY, Wu Y, Tan D, Wang Y, Ye MD, Liu Y, Zhao W, Zhou K, Liu QS, Dai J, Yang X, Dong MQ, Huang N, **Wang HW***. (2016) CryoEM structure of yeast cytoplasmic exosome complex. *Cell Research*, 26(7):822-837.
70. Qu G, Kaushal PS, Wang J, Shigematsu H, Piazza CL, Agrawal RK*, Belfort M*, **Wang HW***. (2016) Structure of a group II intron in complex with its reverse transcriptase. *Nat. Struct. Mol. Biol.*, 23(6):549-557.
71. Wang J*, Chai J, **Wang HW**. (2016) Structure of the mouse Toll-like receptor 13 ectodomain in complex with a conserved sequence from bacterial 23S ribosomal RNA. *FEBS J.*, 283(9):1631-1635.
72. Tan D, Li Q, Zhang MJ, Liu C, Ma C, Zhang P, Ding YH, Fan SB, Tao L, Yang B, Li X, Ma S, Liu J, Feng B, Liu X, **Wang HW**, He SM, Gao N, Ye K, Dong MQ* Lei X*. (2016) Trifunctional cross-linker for mapping protein-protein interaction networks and comparing protein conformational states. *Elife*, pii: e12509.
73. Qin S, Yin H, Yang C, Dou Y, Liu Z, Zhang P, Yu H, Huang Y, Feng J, Hao J, Hao J, Deng L, Yan X, Dong X, Zhao Z, Jiang T, **Wang HW**, Luo SJ, Xie C*. (2016) A magnetic protein biocompass. *Nat. Mater.*, 15(2):217-226.



74. Jia N, Liu N, Cheng W, Jiang YL, Sun H, Chen LL, Peng J, Zhang Y, Ding YH, Zhang ZH, Wang X, Cai G, Wang J, Dong MQ, Zhang Z, Wu H, **Wang HW***, Chen Y*, Zhou CZ*. (2016) Structural basis for receptor recognition and pore formation of a zebrafish aerolysin-like protein. *EMBO Reports*, 17(2):235-248
75. Wang J, Wang W, Song W, Han Z, Zhang H, Chai J*, **Wang HW***, Wang J*. (2015) An improved method for phasing crystal structures with low non-crystallographic symmetry using cryo-electron microscopy data. *Protein Cell*, 6(12):919-923. (Letter)
76. **Wang HW***. (2015) Opening new doors for understanding eukaryotic RNA splicing. *Sci. China Life Sci.*, 58(11):1171-1172. (Editorial Material)
77. Hu Z, Zhou Q, Zhang C, Fan S, Cheng W, Zhao Y, Shao F, **Wang HW**, Sui SF*, Chai J*. (2015) Structural and biochemical basis for induced self-propagation of NLRC4. *Science*, 350(6259):399-404.
78. Tomko RJ Jr*, Taylor DW, Chen ZA, **Wang HW**, Rappsilber J, Hochstrasser M*. (2015) A single α helix drives extensive remodeling of the proteasome lid and completion of regulatory particle assembly. *Cell*, 163(2):432-444.
79. Song W, Wang J, Han Z, Zhang Y, Zhang H, Wang W, Chang J, Xia B, Fan S, Zhang D, Wang J*, **Wang HW***, Chai J*. (2015) Structural basis for specific recognition of single-stranded RNA by Toll-like receptor 13. *Nat. Struct. Mol. Biol.*, 22(10):782-787.
80. Chang HY, Liao CY, Su GC, Lin SW, **Wang HW**, Chi P*. (2015) Functional Relationship of ATP Hydrolysis, Presynaptic Filament Stability, and Homologous DNA Pairing Activity of the Human Meiotic Recombinase DMC1. *J. Biol. Chem.*, 290(32):19863-19873
81. Tagare HD*, Kucukelbir A, Sigworth FJ, **Wang HW**, Rao M. (2015) Directly reconstructing principal components of heterogeneous particles from cryo-EM images. *J. Struct. Biol.*, 191(2):245-262.
82. **Wang HW***. (2015) Cryo-electron microscopy for structural biology: current status and future perspectives. *Sci. China Life Sci.*, 58(8):750-756. (Review)
83. Zhou Q, Huang X, Sun S, Li X, **Wang HW***, Sui SF*. (2015) Cryo-EM structure of SNAP-SNARE assembly in 20S particle. *Cell Research*, 25(5):551-560.
84. Chang S, Sun D, Liang H, Wang J, Li J, Guo L, Wang X, Guan C, Boruah BM, Yuan L, Feng F, Yang M, Wang L, Wang Y, Wojdyla J, Li L, Wang J, Wang M, Cheng G, **Wang HW***, Liu Y*. (2015) Cryo-EM Structure of Influenza Virus RNA Polymerase Complex at 4.3 Å Resolution. *Mol. Cell*, 57(5):925-935.



85. Liu Z, Wang J, Li G*, **Wang HW***. (2015) Structure of precursor microRNA's terminal loop regulates human Dicer's dicing activity by switching DExH/D domain. *Protein Cell*, 6(3):185-193.
86. Liu JJ, Bratkowski MA, Liu X, Niu CY, Ke A*, **Wang HW***. (2014) Visualization of distinct substrate-recruitment pathways in the yeast exosome by EM. *Nat. Struct. Mol. Biol.*, 21(1):95-102.
87. Zhao W, Saro D, Hammel M, Kwon Y, Xu Y, Rambo RP, Williams GJ, Chi P, Lu L, Pezza RJ, Camerini-Otero RD, Tainer JA, **Wang HW**, Sung P*. (2014) Mechanistic insights into the role of Hop2-Mnd1 in meiotic homologous DNA pairing. *Nucleic Acids Res.*, 42(2):906-917.
88. Yin P, Li Q, Yan C, Liu Y, Liu J, Yu F, Wang Z, Long J, He J, **Wang HW**, Wang J, Zhu JK, Shi Y, Yan N*. (2013) Structural basis for the modular recognition of single-stranded RNA by PPR proteins. *Nature*, 504(7478):168-171.
89. Wolin SL*, Belair C, Boccitto M, Chen X, Sim S, Taylor DW, **Wang HW**. (2013) Non-coding Y RNAs as tethers and gates: Insights from bacteria. *RNA Biol.*, 10(10):1602-1608.
90. Busygina V, Gaines WA, Xu Y, Kwon Y, Williams GJ, Lin SW, Chang HY, Chi P, **Wang HW**, Sung P*. (2013) Functional attributes of the *Saccharomyces cerevisiae* meiotic recombinase Dmc1. *DNA Repair (Amst)*, 12(9):707-712.
91. Li Y, Hsin J, Zhao L, Cheng Y, Shang W, Huang KC, **Wang HW**, Ye S*. (2013) FtsZ protofilaments use a hinge-opening mechanism for constrictive force generation. *Science*, 341(6144):392-295.
92. Taylor DW, Ma E, Shigematsu H, Cianfrocco MA, Noland CL, Nagayama K, Nogales E, Doudna JA*, **Wang HW***. (2013) Substrate-specific structural rearrangements of human Dicer. *Nat. Struct. Mol. Biol.*, 20(6):662-670.
93. Chen X, Taylor DW, Fowler CC, Galan JE, **Wang HW**, Wolin SL*. (2013) An RNA degradation machine sculpted by Ro autoantigen and noncoding RNA. *Cell*, 153(1):166-177.
94. Li B, Li N, Wang F, Guo L, Huang Y, Liu X, Wei T, Zhu D, Liu C, Pan H, Xu S, **Wang HW**, Gu L*. (2012) Structural insight of a concentration-dependent mechanism by which YdiV inhibits *Escherichia coli* flagellum biogenesis and motility. *Nucleic Acids Res.*, 40(21):11073-11085.



95. Shen QT, Hsiue PP, Sindelar CV, Welch MD, Campellone KG*, **Wang HW***. (2012) Structural insights into WHAMM-mediated cytoskeletal coordination during membrane remodeling. *J. Cell Biol.*, 199(1):111-124.
96. Nam KH, Haitjema C, Liu X, Ding F, **Wang HW**, DeLisa MP*, Ke A*. (2012) Cas5d protein processes pre-crRNA and assemblies into a Cascade-like interference complex in subtype I-C/Dvulg CRISPR-Cas system. *Structure*, 20(9):1574-1584.
97. Bower-Phipps KR, Taylor DW, **Wang HW**, Baserga SJ*. (2012) The box C/D sRNP dimeric architecture is conserved across domain Archaea. *RNA*, 18(8):1527-1540.
98. Shi L, Shen QT, Kiel A, Wang J, **Wang HW**, Melia TJ, Rothman JE*, Pincet F*. (2012) SNARE proteins: one to fuse and three to keep the nascent fusion pore open. *Science*, 335(6074):1355-1359.
99. Chang LF, Chen S, Liu CC, Pan XJ, Jian JS, Bai XC, Xie X, **Wang HW**, Sui SF*. (2012) Structural characterization of full-length NSF and 20S particles. *Nat. Struct. Mol. Biol.*, 19(3):268-275.
100. Zhou K, Kanai R, Lee P, **Wang HW***, Modis Y*. (2012) Toll-like receptor 5 forms asymmetric dimers in the absence of flagellin. *J. Struct. Biol.*, 177(2):402-409.
101. Chandramouli P, Hernandez-Lopez R, **Wang HW**, Leschziner AE*. (2011) Validation of the orthogonal tilt reconstruction method with a biological test sample. *J. Struct. Biol.*, 175(1):85-96.
102. Liu XQ, **Wang HW***. (2011) Single particle electron microscopy reconstruction of the exosome complex using the random conical tilt method. *J. Vis. Exp.*, doi: 10.3791/2574.
103. Ramey VH, **Wang HW**, Nakajima Y, Wong A, Liu J, Drubin D, Barnes G, Nogales E*. (2011) The Dam1 ring binds to the E-hook of tubulin and diffuses along the microtubule. *Mol. Biol. Cell*, 22(4):457-466.
104. Wu X, Shen QT, Stokes N, Lu C, Zheng Q, Polak L, **Wang HW**, Fuchs E*. (2011) Skin stem cells orchestrate directional migration by regulating microtubule-ACF7 connections through GSK3 β . *Cell*, 144(3):341-352.
105. Yang H, Wang J, Jia X, McNatt M, Zang T, Pan B, Meng W, **Wang HW**, Bieniasz P, Xiong Y*. (2010) Structural insight into the mechanisms of enveloped virus tethering by Tetherin. *Proc. Natl. Acad. Sci. USA*, 107(43):18428-18432.



106. Nogales E*, Ramey VH, **Wang HW**. (2010) Cryo-EM studies of microtubule structural intermediates and kinetochore-microtubule interactions. *Methods Cell Biol.*, 95:129-156. (Review; Book Chapter)
107. **Wang HW***, Noland C, Siridechadilok B, Taylor DW, Ma E, Felderer K, Doudna JA*, Nogales E*. (2009) Structural insights into RNA processing by the human RISC-loading complex. *Nat. Struct. Mol. Biol.*, 16(11):1148-1153.
108. Wu Z, **Wang HW**, Mu W, Quyang Z, Nogales E, Xing J*. (2009) Simulations of tubulin sheet polymers as possible structural intermediates in microtubule assembly. *PLoS One*, 4(10):e7291.
109. Ramey VH, **Wang HW**, Nogales E*. (2009) Ab initio reconstruction of helical samples with heterogeneity, disorder and coexisting symmetries. *J. Struct. Biol.*, 167(2):97-105.
110. Shen QT, Bai XC, Chang LF, Wu Y, **Wang HW**, Sui SF*. (2009) Bowl-shaped oligomeric structures on membranes as DegP's new functional forms in protein quality control. *Proc. Natl. Acad. Sci. USA*, 106(12):4858-4863.
111. **Wang HW**, Long S, Ciferri C, Westermann S, Drubin DG, Barnes G, Nogales E*. (2008) Architecture and flexibility of the yeast Ndc80 kinetochore complex. *J. Mol. Biol.*, 383(4):894-903.
112. **Wang HW***, Wang J, Ding F, Callahan K, Bratkowski MA, Bulter JS, Nogales E, Ke A*. (2007) Architecture of the yeast Rrp44-exosome complex suggests routes of RNA recruitment for 3'-end processing. *Proc. Natl. Acad. Sci. USA*, 104(43):16844-16849.
113. **Wang HW**, Ramey VH, Westermann S, Leschziner AE, Welburn JPI, Nakajima Y, Drubin DG, Barnes G, Nogales E*. (2007) Architecture of the Dam1 kinetochore ring complex and implications for microtubule-driven assembly and force-coupling mechanisms. *Nat. Struct. Mol. Biol.*, 14(8):721-726.
114. Nogales E*, **Wang HW**. (2006) Structural mechanisms underlying nucleotide-dependent self-assembly of tubulin and its relatives. *Curr. Opin. Struct. Biol.*, 16(2):221-229. (Review)
115. Nogales E*, **Wang HW**. (2006) Structural intermediates in microtubule assembly and disassembly: how and why? *Curr. Opin. Cell Biol.*, 18(2):179-284. (Review)
116. Westermann S, **Wang HW**, Avila-Sakar A, Drubin DG, Nogales E, Barnes G*. (2006) The Dam1 kinetochore ring complex moves processively on depolymerizing microtubule ends. *Nature*, 440(7083):565-563.



117. **Wang HW***, Long S, Finley KR, Nogales E. (2005) Assembly of GMPCPP-bound tubulin into helical ribbons and tubes and effect of colchicine. *Cell Cycle*, 4(9):1157-1160.
118. **Wang HW**, Nogales E*. (2005) Nucleotide-dependent bending flexibility of tubulin regulates microtubule assembly. *Nature*, 435(7044):911-915.
119. Westermann S, Avila-Sakar A, **Wang HW**, Niederstrasser H, Wong J, Drubin DG, Nogales E, Barnes G*. (2005) Formation of a dynamic kinetochore-microtubule interface through assembly of the Dam1 ring complex. *Mol. Cell*, 17(2):277-290.
120. **Wang HW**, Nogales E*. (2005) An iterative Fourier-Bessel algorithm for reconstruction of helical structures with severe Bessel overlap. *J. Struct. Biol.*, 149(1):65-78. (Cover)
121. Chen Y, Lu YJ, **Wang HW**, Yuan S, Chang Z, Sui SF*. (2003) Two-dimensional crystallization of a small heat shock protein HSP16.3 on lipid layer. *Biochem. Biophysic. Res. Commun.*, 310(2):360-366.
122. Wu Y, **Wang HW**, Ji SR, Sui SF*. (2003) Two-dimensional crystallization of rabbit C-reactive protein monomeric subunits. *Acta. Crystallogr. D. Biol. Crystallogr.*, 5959(Pt 5):922-926.
123. Nogales E*, **Wang HW**, Niederstrasser H. (2003) Tubulin rings: which way do they curve? *Curr. Opin. Struct. Biol.*, 13(2):256-261. (Review)
124. **Wang HW**, Chen Y, Yang H, Chen X, Duan MX, Tai PC*, Sui SF*. (2003) Ring-like pore structures of SecA: implication for bacteria protein-conducting channels. *Proc. Natl. Acad. Sci. USA*, 100(7):4221-4226.
125. Wu Y, Ji SR, **Wang HW**, Sui SF*. (2002) Study of the spontaneous dissociation of rabbit C-reactive protein. *Biochemistry (Mosc.)*, 67(12):1377-1382.
126. **Wang HW**, Wu Y, Chen Y, Sui SF*. (2002) Polymorphism of structural forms of C-reactive protein. *Int. J. Mol. Med.*, 9(6):665-671.
127. **Wang HW**, Sui SF*. (2001) Dissociation and subunit rearrangement of membrane-bound human C-reactive protein. *Biochem. Biophysic. Res. Commun.*, 288(1):75-79.
128. **Wang HW**, Sui SF*. (2001) Two-dimensional assembly of pentameric C-reactive proteins on lipid monolayers. *J. Struct. Biol.*, 134(1):46-55.



129. **Wang HW**, Lu YJ, Li LJ, Liu S, Wang DN, Sui SF*. (2000) Trimeric ring-like structure of ArsA ATPase. *FEBS Lett.*, 496(1):105-110.
130. Zhou H, **Wang HW**, Zhu K, Sui SF, Xu P, Yang SF, Li N*. (1999) The multiple roles of conserved arginine 286 of 1-aminocyclopropane-1-carboxylate synthase. Coenzyme binding, substrate binding, and beyond. *Plant Physiol.*, 121(3):913-919.
131. **Wang HW**, Sui SF*. (1999) Pentameric two-dimensional crystallization of rabbit C-reactive protein on lipid monolayers. *J. Struct. Biol.*, 127(3):283-286.
132. Mi LZ, **Wang HW**, Sui SF*. (1997) Interaction of Rabbit C-Reactive Protein with Phospholipid Monolayers Studied by Micro- fluorescence Film Balance with an Externally Applied Electric Field. *Biophys. J.*, 73(1):446-451.