

1. Small angle X-ray Scattering facility, Protein-Nucleic Acid Interaction Section, Center for Structural Biology

High impact publications of SAXS Facility (Impact factor>10) generated using the data from the SAXS facility. This list does not include the high-impact papers (**Nature**) that have been accepted, or in press.

=====2025=====

1 Stagno, J. R., Deme, J. C., Dwivedi, V., Lee, Y. T., Lee, H. K., Yu, P., Chen, S. Y., Fan, L., Degenhardt, M. F. S., Chari, R., Young, H. A., Lea, S. M. & Wang, Y. X. Structural investigation of an RNA device that regulates PD-1 expression in mammalian cells. **Nucleic Acids Res** 53, doi:10.1093/nar/gkaf156 (2025)

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2 Lee, Y. T., Degenhardt, M. F. S., Skeparnias, I., Degenhardt, H. F., Bhandari, Y. R., Yu, P., Stagno, J. R., Fan, L., Zhang, J. & Wang, Y. X. The conformational space of RNase P RNA in solution. **Nature**, doi:10.1038/s41586-024-08336-6 (2024).

3 Degenhardt, M. F. S., Degenhardt, H. F., Bhandari, Y. R., Lee, Y. T., Ding, J., Yu, P., Heinz, W. F., Stagno, J. R., Schwieters, C. D., Watts, N. R., Wingfield, P. T., Rein, A., Zhang, J. & Wang, Y. X. Determining structures of RNA conformers using AFM and deep neural networks. **Nature**, doi:10.1038/s41586-024-07559-x (2024).

4 Zhang, Y., Xu, Z., Xiao, Y., Jiang, H., Zuo, X., Li, X. & Fang, X. Structural mechanisms for binding and activation of a contact-quenched fluorophore by RhoBAST. **Nat Commun** 15, 4206, doi:10.1038/s41467-024-48478-9 (2024).

5 Skeparnias, I., Bou-Nader, C., Anastasakis, D. G., Fan, L., Wang, Y. X., Hafner, M. & Zhang, J. Structural basis of MALAT1 RNA maturation and mascRNA biogenesis. **Nat Struct Mol Biol**, doi:10.1038/s41594-024-01340-4 (2024).

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6 Xu, L., Xiao, Y., Zhang, J. & Fang, X. Structural insights into translation regulation by the THF-II riboswitch. **Nucleic Acids Res** 51, 952-965, doi:10.1093/nar/gkac1257 (2023).

7 Suddala, K. C., Yoo, J., Fan, L., Zuo, X., Wang, Y. X., Chung, H. S. & Zhang, J. Direct observation of tRNA-chaperoned folding of a dynamic mRNA ensemble. **Nat Commun** 14, 5438, doi:10.1038/s41467-023-41155-3 (2023).

8 Niu, X., Xu, Z., Zhang, Y., Zuo, X., Chen, C. & Fang, X. Structural and dynamic mechanisms for coupled folding and tRNA recognition of a translational T-box riboswitch. **Nat Commun** 14, 7394, doi:10.1038/s41467-023-43232-z (2023).

9 Ding, J., Lee, Y. T., Bhandari, Y., Schwieters, C. D., Fan, L., Yu, P., Tarosov, S. G., Stagno, J. R., Ma, B., Nussinov, R., Rein, A., Zhang, J. & Wang, Y. X. Visualizing RNA conformational and architectural heterogeneity in solution. **Nat Commun** 14, 714, doi:10.1038/s41467-023-36184-x (2023).

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=====2022=====

11 Truong, L., Kooshapur, H., Dey, S. K., Li, X., Tjandra, N., Jaffrey, S. R. & Ferre-D'Amare, A. R. The fluorescent aptamer Squash extensively repurposes the adenine riboswitch fold. **Nat Chem Biol** 18, 191-198, doi:10.1038/s41589-021-00931-2 (2022).

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15 Truong, L., Kooshapur, H., Dey, S. K., Li, X., Tjandra, N., Jaffrey, S. R. & Ferre-D'Amare, A. R. The fluorescent aptamer Squash extensively repurposes the adenine riboswitch fold. **Nat Chem Biol**, doi:10.1038/s41589-021-00931-2 (2021).

16 Ramakrishnan, S., Stagno, J. R., Conrad, C. E., Ding, J., Yu, P., Bhandari, Y. R., Lee, Y. T., Pauly, G., Yefanov, O., Wiedorn, M. O., Knoska, J., Oberthur, D., White, T. A., Barty, A., Mariani, V., Li, C., Brehm, W., Heinz, W. F., Magidson, V., Lockett, S., Hunter, M. S., Boutet, S., Zatsepin, N. A., Zuo, X., Grant, T. D., Pandey, S., Schmidt, M., Spence, J. C. H., Chapman, H. N. & Wang, Y. X. Synchronous RNA conformational changes trigger ordered phase transitions in crystals. **Nat Commun** 12, 1762, doi:10.1038/s41467-021-21838-5 (2021).

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biofilm formation by Staphylococcal Bap protein switch. **Embo J** 40, doi:ARTN e10750010.15252/embj.2020107500 (2021).

20 Fakhoury, J. N., Zhang, Y., Edmonds, K. A., Bringas, M., Luebke, J. L., Gonzalez-Gutierrez, G., Capdevila, D. A. & Giedroc, D. P. Functional asymmetry and chemical reactivity of CsoR family persulfide sensors. **Nucleic Acids Res** 49, 12556-12576, doi:10.1093/nar/gkab1040 (2021).

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21 Wang, Y., Kathiresan, V., Chen, Y. Y., Hu, Y. P., Jiang, W., Bai, G. C., Liu, G. Q., Qin, P. Z. & Fang, X. Y. Posttranscriptional site-directed spin labeling of large RNAs with an unnatural base pair system under non-denaturing conditions. **Chem Sci** 11, 9655-9664, doi:10.1039/d0sc01717e (2020).

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- 28 Hauseman, Z. J., Harvey, E. P., Newman, C. E., Wales, T. E., Bucci, J. C., Mintseris, J., Schweppe, D. K., David, L., Fan, L., Cohen, D. T., Herce, H. D., Mourtada, R., Ben-Nun, Y., Bloch, N. B., Hansen, S. B., Wu, H., Gygi, S. P., Engen, J. R. & Walensky, L. D. Homogeneous Oligomers of Pro-apoptotic BAX Reveal Structural Determinants of Mitochondrial Membrane Permeabilization. **Mol Cell** 79, 68-83 e67, doi:10.1016/j.molcel.2020.05.029 (2020).
- 29 Chen, M. R., Pan, H., Sun, L. F., Shi, P., Zhang, Y. K., Li, L., Huang, Y. X., Chen, J. H., Jiang, P., Fang, X. Y., Wu, C. Y. & Chen, Z. C. Structure and regulation of human epithelial cell transforming 2 protein. **P Natl Acad Sci USA** 117, 1027-1035, doi:10.1073/pnas.1913054117 (2020).

The following is the high impact papers published before 2020.

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- 31 Martin, J. E., Le, M. T., Bhattarai, N., Capdevila, D. A., Shen, J. C., Winkler, M. E. & Giedroc, D. P. A Mn-sensing riboswitch activates expression of a Mn²⁺/Ca²⁺ ATPase transporter in Streptococcus. **Nucleic Acids Research** 47, 6885-6899, doi:10.1093/nar/gkz494 (2019).
- 32 Li, S., Su, Z., Lehmann, J., Stamatopoulou, V., Giarimoglou, N., Henderson, F. E., Fan, L., Pintilie, G. D., Zhang, K., Chen, M., Ludtke, S. J., Wang, Y. X., Stathopoulos, C., Chiu, W. & Zhang, J. Structural basis of amino acid surveillance by higher-order tRNA-mRNA interactions. **Nat Struct Mol Biol** 26, 1094-1105, doi:10.1038/s41594-019-0326-7 (2019).
- 33 Kim, T.-S., Zhang, L., Il Ahn, J., Meng, L., Chen, Y., Lee, E., Bang, J. K., Lim, J. M., Ghirlando, R., Fan, L., Wang, Y.-X., Kim, B. Y., Park, J.-E. & Lee, K. S. Molecular architecture of a cylindrical self-assembly at human centrosomes. **Nat Commun** 10, 1151-1166, doi:10.1038/s41467-019-08838-2 (2019).
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=====2018=====

- 35 Glauninger, H., Zhang, Y., Higgins, K. A., Jacobs, A. D., Martin, J. E., Fu, Y., Coyne Rd, H. J., Bruce, K. E., Maroney, M. J., Clemmer, D. E., Capdevila, D. A. & Giedroc, D. P. Metal-dependent allosteric activation and inhibition on the same molecular scaffold: the copper sensor CopY from Streptococcus pneumoniae. **Chem Sci** 9, 105-118, doi:10.1039/c7sc04396a (2018).

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=====2017=====

37 Zehr, E., Szyk, A., Piszczek, G., Szczesna, E., Zuo, X. & Roll-Mecak, A. Katanin spiral and ring structures shed light on power stroke for microtubule severing. **Nat Struct Mol Biol** 24, 717-725, doi:10.1038/nsmb.3448 (2017).

38 Warner, K. D., Sjekloca, L., Song, W., Filonov, G. S., Jaffrey, S. R. & Ferre-D'Amare, A. R. A homodimer interface without base pairs in an RNA mimic of red fluorescent protein. **Nat Chem Biol** 13, 1195-1201, doi:10.1038/nchembio.2475 (2017).

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- 53 Hickman, A. B., Ewis, H. E., Li, X., Knapp, J. A., Laver, T., Doss, A. L., Tolun, G., Steven, A. C., Grishaev, A., Bax, A., Atkinson, P. W., Craig, N. L. & Dyda, F. Structural basis of hAT transposon end recognition by Hermes, an octameric DNA transposase from *Musca domestica*. **Cell** 158, 353-367, doi:10.1016/j.cell.2014.05.037 (2014).
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of the 128 kDa enzyme I dimer. **J Am Chem Soc** 133, 424-427, doi:10.1021/ja109866w (2011).

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2. Cryo-EM facility (under Dr. Susan Lea), Center for structural biology

High impact papers that were generated using data from the facility. The short list of the high impact papers is because the facility was only established recently in the last two years.

- 1 Ding, J., Deme, J. C., Stagno, J. R., Yu, P., Lea, S. M. & Wang, Y. X. Capturing heterogeneous conformers of cobalamin riboswitch by cryo-EM. **Nucleic Acids Res** **51**, 9952-9960, doi:10.1093/nar/gkad651 (2023).

3. CCR Optical Microscopy and Analysis (OMAL)

High impact papers.

- 1 Ding, J., Lee, Y. T., Bhandari, Y., Schwieters, C. D., Fan, L., Yu, P., Tarosov, S. G., Stagno, J. R., Ma, B., Nussinov, R., Rein, A., Zhang, J. & Wang, Y. X. Visualizing RNA conformational and architectural heterogeneity in solution. **Nat Commun** **14**, 714, doi:10.1038/s41467-023-36184-x (2023).
- 2 Ramakrishnan, S., Stagno, J. R., Conrad, C. E., Ding, J., Yu, P., Bhandari, Y. R., Lee, Y. T., Pauly, G., Yefanov, O., Wiedorn, M. O., Knoska, J., Oberthur, D., White, T. A., Barty, A., Mariani, V., Li, C., Brehm, W., Heinz, W. F., Magidson, V., Lockett, S., Hunter, M. S., Boutet, S., Zatsepin, N. A., Zuo, X., Grant, T. D., Pandey, S., Schmidt, M., Spence, J. C. H., Chapman, H. N. & Wang, Y. X. Synchronous RNA conformational changes trigger ordered phase transitions in crystals. **Nat Commun** **12**, 1762, doi:10.1038/s41467-021-21838-5 (2021).
- 3 Liu, Y., Holmstrom, E., Zhang, J., Yu, P., Wang, J., Dyba, M. A., Chen, D., Ying, J., Lockett, S., Nesbitt, D. J., Ferre-D'Amare, A. R., Sousa, R., Stagno, J. R. & Wang, Y. X. Synthesis and applications of RNAs with position-selective labelling and mosaic composition. **Nature** **522**, 368-372, doi:10.1038/nature14352 (2015).