



Sandra T. M. Mous

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Bio

BIO

I am a researcher at the Linac Coherent Light Source, focused on structural biology and protein dynamics. My work leverages advanced techniques such as time-resolved serial crystallography at X-ray Free Electron Lasers (XFELs) and synchrotrons to probe protein structure, dynamics, and function.

PERSONAL INTERESTS

- Structural biology at X-ray free-electron lasers and synchrotron light sources
- Time-resolved studies of macromolecular dynamics
- Mechanism of (light-driven) protein catalysis
- Transport of mass and charge over biological membranes
- Application of structural and functional understanding of protein catalysis in biomedicine and green chemistry

Publications

PUBLICATIONS

- **Structural Mechanism of an Efficacy Photoswitch Targeting the β 2-adrenergic Receptor.** *Angewandte Chemie (International ed. in English)*
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- **Can ferric-oxyl excited states explain elongated iron-oxygen bonds in heme peroxidase catalytic intermediates?** *NATURE COMMUNICATIONS*
Williams, L. J., Kamps, J. G., Branzanic, A. M. V., Lehene, M., Lundgren, K. J. M., Ryde, U., Chatterjee, K., Doyle, M. D., Simon, P. S., Makita, H., Thompson, A. J., Brewster, A. S., Zhou, et al
2026; 17 (1)
- **Macromolecular crystallography and biology at the Linac Coherent Light Source.** *Journal of synchrotron radiation*
Mous, S., Hunter, M. S., Poitevin, F., Boutet, S., Gee, L. B.
2025
- **Structural effects of high laser power densities on an early bacteriorhodopsin photocycle intermediate.** *Nature communications*
Bertrand, Q., Nogly, P., Nango, E., Kekilli, D., Khusainov, G., Furrer, A., James, D., Dworkowski, F., Skopintsev, P., Mous, S., Martiel, I., Börjesson, P., Ortolani, et al
2024; 15 (1): 10278
- **Capturing the blue-light activated state of the Phot-LOV1 domain from *Chlamydomonas reinhardtii* using time-resolved serial synchrotron crystallography.** *IUCrJ*
Gotthard, G., Mous, S., Weinert, T., Maia, R. N., James, D., Dworkowski, F., Gashi, D., Furrer, A., Ozerov, D., Panepucci, E., Wang, M., Schertler, G. F., Heberle, et al

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- **Structural biology in the age of X-ray free-electron lasers and exascale computing.** *Current opinion in structural biology*
Mous, S., Poitevin, F., Hunter, M. S., Asthagiri, D. N., Beck, T. L.
2024; 86: 102808
- **Demonstrating the importance of porcine reproductive and respiratory syndrome virus papain-like protease 2 deubiquitinating activity in viral replication by structure-guided mutagenesis** *PLOS PATHOGENS*
Bailey-Elkin, B. A., Knaap, R. C. M., De Silva, A., Boekhoud, I. M., Mous, S., van Vught, N., Khajehpour, M., van den Born, E., Kikkert, M., Mark, B. L.
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- **Ultrafast structural changes direct the first molecular events of vision** *NATURE*
Gruhl, T., Weinert, T., Rodrigues, M. J., Milne, C. J., Ortolani, G., Nass, K., Nango, E., Sen, S., Johnson, P. J. M., Cirelli, C., Furrer, A., Mous, S., Skopintsev, et al
2023; 615 (7954): 939-+
- **Dynamics and mechanism of a light-driven chloride pump** *SCIENCE*
Mous, S., Gotthard, G., Ehrenberg, D., Sen, S., Weinert, T., Johnson, P. J. M., James, D., Nass, K., Furrer, A., Kekilli, D., Ma, P., Bruenle, S., Casadei, et al
2022; 375 (6583): 845-+
- **Femtosecond-to-millisecond structural changes in a light-driven sodium pump** *NATURE*
Skopintsev, P., Ehrenberg, D., Weinert, T., James, D., Kar, R. K., Johnson, P. J. M., Ozerov, D., Furrer, A., Martiel, I., Dworkowski, F., Nass, K., Knopp, G., Cirelli, et al
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- **Proton uptake mechanism in bacteriorhodopsin captured by serial synchrotron crystallography** *SCIENCE*
Weinert, T., Skopintsev, P., James, D., Dworkowski, F., Panepucci, E., Kekilli, D., Furrer, A., Brunle, S., Mous, S., Ozerov, D., Nogly, P., Wang, M., Standfuss, et al
2019; 365 (6448): 61-+
- **Functional and structural characterization of an ECF-type ABC transporter for vitamin B12** *ELIFE*
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