

Single-molecule localization techniques provide high spatial resolution in protein labeling

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Protein labeling with synthetic fluorescent probes is a key technology in chemical biology and biomedical research. The target proximity achieved by small-molecule probes is essential to exploit the full potential of super-resolution fluorescence microscopy.

Single-molecule [localization](#) techniques provide [high spatial resolution](#) by reporting on the position of the fluorophore and thus only indirectly on the target molecule itself. Large labels, such as antibodies, can misleadingly position a fluorophore tens of nanometers away from the target. Since single-molecule localization [microscopy](#) can achieve almost the ultimate spatial precision.

To overcome these limitations while at the same time achieving a labeling specificity comparable to that of antibodies, a team of Frankfurt scientists has developed the small labeling pair (SLAP) technology, which fulfills all necessary requirements for single-molecule localization microscopy.

This highly sensitive and efficient modular [labeling](#) approach, published in the latest issue of the journal *Angewandte Chemie*, is based on a synthetic small-molecule recognition unit and the genetically encoded minimal protein His6-10-tag. It avoids masking by large probes and supplies sensitive, precise, and robust size analysis of protein clusters. The efficient and modular technique will pave the way to high-

throughput high-resolution localization analysis of almost the entire His-tagged proteome.

More information: "SLAP: Small Labeling Pair for Single-Molecule Super-Resolution Imaging." *Angew Chem Int Ed Engl.* 2015 Aug 24;54(35):10216-9. [DOI: 10.1002/anie.201503215](https://doi.org/10.1002/anie.201503215)

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