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PATTERN-GENERATING FLUORESCENT MOLECULAR PROBES FOR CHEMICAL BIOLOGY

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Fluorescent molecular probes have become a powerful tool in protein research. However, these probes are less suitable for analysing specific populations of proteins in their native environment. In this talk I will give an overview of a new class of fluorescent molecular probes that we have developed in recent years and show how they can be used to detect individual proteins, protein combinations, as well as binding interactions and dynamic changes that occur on their surfaces. In the second part of this talk, I will describe a new class of fluorescent molecular sensors that combines the properties of small molecule-based probes cross-reactive sensor arrays (the so-called chemical nose/tongue. On the one hand, the probe can detect different protein families by generating unique identification patterns, akin to the cross-reactive arrays. On the other hand, its unimolecular structure and selective binding allows identifying combinations of specific protein isoforms in complex mixtures and inside living cells, where macroscopic arrays cannot access.

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