

## Development of Molecular Probes for the Study of Atherosclerosis

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### Abstract

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Conventional sensor development requires defining the target and design of sensor, which is so-called hypothesis driven approach. While powerful, this approach cannot be applied to unknown target or difficult to be applied to complex of analytes. To overcome the limitation, we have devised a Diversity Oriented Fluorescence Library Approach (DOFLA) where a combinatorial synthesis of fluorescent dye is combined with unbiased screening to accelerate the sensor development. More than 10,000 synthetic organic dyes were constructed as a tool box, and numerous analytes have been tested, yielding systematic platform for sensor development for almost everything. Complex or unknown target problem with biological systems were also challenged, and various cell type selective probes for live bioimaging were developed. In this presentation, especially the recently developed probe CDg16 for activated macrophages and its application to atherosclerosis will be mainly discussed with a novel gate-oriented mechanisms. The sensors and probes developed in this study will be freely available for the chemical and biological community for common usage

### Keywords

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*Fluorescence, Bioimaging, Chemical Biology, Sensor, Probe, Artificial Cell, Molecular Evolution*