

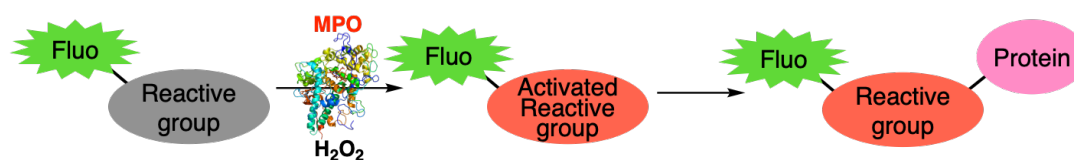
Inflammation 3D imaging: Synthesis and evaluation of myeloperoxidase activity-based fluorescent probes for tissue-clearing-based imaging

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Keywords: Fluorescent probe; 3D imaging; Tissue clearing; Inflammation; Myeloperoxidase

Myeloperoxidase (MPO) is highly expressed in phagocytes and plays an important role in mammalian immune defense system by generating reactive oxygen species. MPO only shows such function under specific conditions like inflammation condition. Active MPOs are involved in various diseases such as stroke, cancer and Alzheimer's disease.¹ As a result, 3D mapping of MPO activity with high resolution would contribute to pathology. Conventional imaging methods of MPO suffer from low resolution or low signal transparency, which cannot meet the requirement of high-resolution 3D imaging.

In this study, we are attempting to combine fluorescent probes with tissue clearing method^{2,3} in order to achieve high-resolution 3D mapping. To this end, MPO activity-based fluorescent probes which are compatible with tissue clearing method were developed. Several candidate probes were designed basing on a known substrate of MPO. The MPO activity-based staining ability of the probes were confirmed by cell staining experiments. Furthermore, tumor staining ability of the probes was also confirmed by animal experiment.



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