Endogenous Hydrogen Peroxide Assisted Proximal Cell Labeling

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In the proximity labeling field, the application of peroxidase is largely limited to in vitro models due to the toxicity of excessive hydrogen peroxide (H_2O_2) treatment. In this study, we demonstrate that membrane-localized HRP efficiently utilizes endogenously generated extracellular H_2O_2. With the assistance of endogenous H_2O_2, we observed that HRP-TM-expressed cells sufficiently label contacting cells without requiring exogenous H_2O_2 treatment. Additionally, we confirmed HRP-TM labels proximal cells in an interaction-dependent manner. This study will contribute to elucidating cell-cell interaction networks under more physiological conditions in various model organisms.
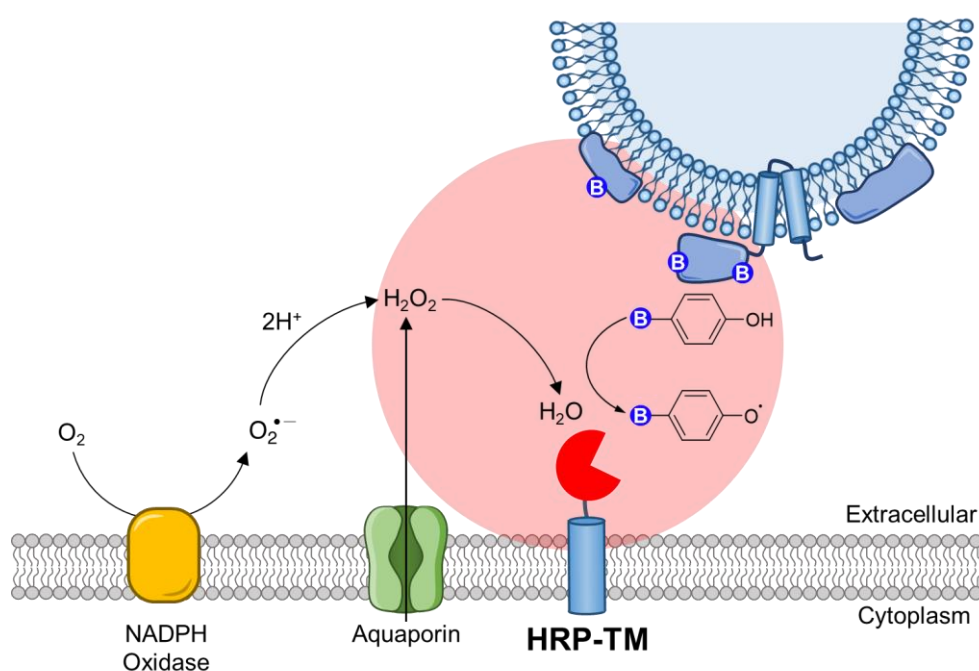
Figure 1. Scheme of endogenous hydrogen peroxide-assisted proximal cell labeling.