

Title (en)
FLUOROGENIC PROBES FOR REACTIVE OXYGEN SPECIES

Title (de)
FLUOROGENE SONDEN FÜR REAKTIVE SAUERSTOFFSPEZIES

Title (fr)
SONDES FLUOROGÉNIQUES POUR ESPÈCES OXYGÉNÉES RADICALAIRES

Publication
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Application
EP 06826796 A 20061027

Priority
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Abstract (en)
[origin: WO2007050810A2] The present invention provides a novel class of fluorogenic probes for reactive oxygen species. Exemplary probes of the invention utilize a boronate deprotection mechanism to provide high selectivity and optical dynamic range for detecting H₂/SUB>O₂ in aqueous solution over similar reactive oxygen species (ROS) including superoxide, nitric oxide, tert-butyl hydroperoxide, and hydroxyl radical; Peroxyresorufin-1 (PRI), Peroxyfluor- 1 (PFI), and Peroxyxanthone-1 (PXI) are first-generation probes that respond to H₂/SUB>O₂ by an increase in red, green, and blue fluorescence, respectively. The boronate dyes are cell- permeable and can detect micromolar changes in H₂/SUB>O₂ concentrations in living cells, including hippocampal neurons, using confocal and two-photon microscopy. The unique combination of ROS selectivity, membrane permeability, and a range of available excitation/emission colors establishes the potential value of PRI, PFI, PXI, and related probes for interrogating the physiology and pathology of cellular H₂/SUB>O₂.

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Citation (search report)
• [XP] MILLER, E.W. ET AL.: "Boronate-based fluorescent probes for imaging cellular hydrogen peroxide", JOURNAL OF THE AMERICAN CHEMICAL SOCIETY, vol. 127, no. 47, 2005, pages 16652 - 16659, XP002595515
• [XI] CHANG, M.C.Y. ET AL.: "A selective cell-permeable optical probe for hydrogen peroxide in living cells", JOURNAL OF THE AMERICAN CHEMICAL SOCIETY, vol. 126, no. 47, 2004, pages 15392 - 15393, XP002595517
• [I] ZHU, Y. ET AL.: "Phenoxazine-based conjugated polymers: a new class of organic semiconductors for field effect transistors", MACROMOLECULES, 2005, pages 7983 - 7991, XP002595518
• See references of WO 2007050810A2

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