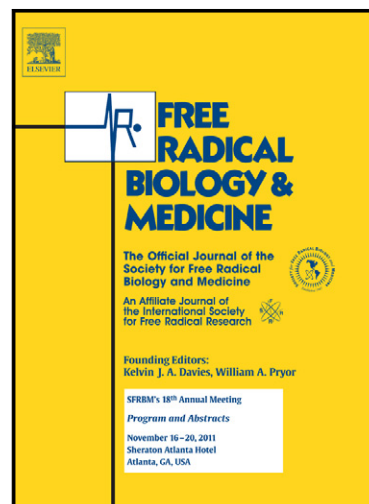


# Author's Accepted Manuscript

Stereospecific Oxidation of Calmodulin by  
Methionine Sulfoxide Reductase A

Jung Chae Lim, Geumsoo Kim, Rodney L. Levine



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**FRBM-D-13-00200 Revised****Stereospecific Oxidation of Calmodulin by Methionine Sulfoxide Reductase A**

Jung Chae Lim, Geumsoo Kim, and Rodney L. Levine\*

Laboratory of Biochemistry, National Heart, Lung, and Blood Institute,

Bethesda, Maryland 20892, United States

\* **Corresponding author:** Rodney L. Levine

Phone: +1 (301) 496-230

Email: rlevine@nih.gov

**KEYWORDS:** Calmodulin, methionine oxidation, methionine reduction, methionine sulfoxide reductase, signaling

**ABBREVIATIONS:** DTPA, diethylene triamine pentaacetic acid; metO, methionine sulfoxide; MLCK, myosin light chain kinase; MsrA, methionine sulfoxide reductase A; PDE1, phosphodiesterase 1.

**ABSTRACT:** Methionine sulfoxide reductase A has long been known to reduce S-methionine sulfoxide, both as a free amino acid and within proteins. Recently the enzyme was shown to be bidirectional, capable of oxidizing free methionine and methionine in proteins to S-methionine sulfoxide. A feasible mechanism for controlling the directionality has been proposed, raising the possibility that reversible oxidation and reduction of methionine residues within proteins is a

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