CTL CENTER FOR TECHNOLOGY LICENSING AT CORNELL UNIVERSITY

THE TECHNOLOGY

Peroxiredoxins (Prxs) are antioxidant enzymes expressed by most free-living organisms, often in multiple isoforms. It was desirable to learn how much they contribute to antioxidant defense and whether the multiple isoforms afford redundant or additive antioxidant protection. The development of antibodies specific to each of four human isoforms classified as 2-Cysteine Prxs, peroxiredoxin 1, peroxiredoxin 2, peroxiredoxin 3, and peroxiredoxin 4, has enabled studies which can dissect the contributions of each specific isoform.

Inventor	Carl Nathan
Licensees	Affinity BioReagents, Inc.
	Enzo Life Sciences International, Inc.
	Millipore Corporation

THE PRODUCTS

Anti-Peroxiredoxins 1-4

Using these antibodies it has been determined that peroxiredoxin 1 and peroxiredoxin 2 are present in the cytoplasm, peroxiredoxin 3 is present in the mitochondria and peroxiredoxin 4 is in the endoplasmic reticulum and secreted. Further, studies in human tumor cell lines which produce these four isoforms and which could be stably transfected to genetically suppress a specific isoform, have shown that these four Prxs act in a mutually nonredundant and sometimes stress-specific fashion to protect human cells from oxidant injury. The substantial resistance of human cells to hydroperoxides may result in part from the additive action of multiple Prxs. These antibodies are useful in research concerning redox signaling, cancer, and apoptosis.