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Sommario/riassunto	This Special Issue features recent data concerning thioredoxins and glutaredoxins from various biological systems, including bacteria, mammals, and plants. Four of the sixteen articles are review papers that deal with the regulation of development of the effect of hydrogen peroxide and the interactions between oxidants and reductants, the description of methionine sulfoxide reductases, detoxification enzymes that require thioredoxin or glutaredoxin, and the response of plants to cold stress, respectively. This is followed by eleven research articles that focus on a reductant of thioredoxin in bacteria, a thioredoxin reductase, and a variety of plant and bacterial thioredoxins, including the m, f, o, and h isoforms and their targets. Various parameters are studied, including genetic, structural, and physiological properties of these systems. The redox regulation of monodehydroascorbate reductase, aminolevulinic acid dehydratase, and cytosolic isocitrate dehydrogenase could have very important consequences in plant metabolism. Also, the properties of the mitochondrial o-type thioredoxins and their unexpected capacity to bind iron–sulfur center (ISC) structures open new developments concerning the redox mitochondrial function and possibly ISC assembly in mitochondria. The final paper discusses interesting biotechnological applications of thioredoxin for breadmaking.