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I am Professor of Biochemistry and Molecular Biology at the University of Seville (Spain) and Director of the Institute for Plant Biochemistry and Photosynthesis (IBVF, the Spanish acronym), a joint Center of CSIC and Seville University. My group at IBVF is interested in the study of redox regulatory mechanisms in plant adaptation to environmental factors, in particular to changes in light intensity. Plant chloroplasts harbor a complex set of thioredoxins (Trxs), which are responsible of the redox regulation of a large number of enzymes. These Trxs rely on ferredoxin (Fdx) reduced by the photosynthetic electron transport chain with the participation of a chloroplast-specific Fdx-dependent Trx reductase (FTR). Thus, the FTR-Trx system links redox regulation to light. A few years ago, our group described an NADPH-dependent Trx reductase with a joint Trx domain at its C-terminus, termed NTRC, which is localized in chloroplasts and shows that NADPH is also used in the redox network of this organelle. Currently, we are using a combination of genetic and biochemical approaches to unravel the functional interrelationship between the chloroplast redox systems and its impact on the rapid adaptation of plants to unpredictable changes of light intensity. Moreover, we study the function of redox regulation in chloroplast biogenesis and early stages of plant development.

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