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# A broader look at regulation and photoprotection by non-photochemical quenching

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**Slatyer Seminar room** R N Robertson Building, Research School of Biology, ANU



Non-photochemical quenching (NPQ) is considered to be the main mechanism for protecting photosynthetic organisms in natural environments against light-induced damage due to excessive excitation by rapidly varying solar radiation. NPQ is generally considered to be localized in the antenna system of photosystem (PS) II, whereby the transthylakoid proton gradient activates a small protein, psbS, as well as the xanthophyll cycle producing zeaxanthin, which both play key roles in inducing the antenna quenching. We will review shortly the present ideas on quenching, which so far is considered in the literature to be more or less a localized effect on the antenna of PSII. The presently established molecular mechanisms of quenching at the local antenna level will also be discussed.

However, the overall present view on the quenching regulation mechanism(s) is in many ways far too restrictive, if not simply inappropriate, since in the intact photosynthetic organism (NPQ) quenching cannot be considered to be an isolated phenomenon, independent more or less of all other photosynthetic processes and regulation. For this reason in the talk a model will be discussed which – albeit in some parts still somewhat hypothetical – provides a unified view of NPQ in the context of general regulation and optimisation of photosynthetic processes occurring in the intact organism.

Presented by

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STAFF LECTURE