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(54) Title: OXIDATION-REDUCTION SENSITIVE GREEN FLUORESCENT PROTEIN VARIANTS

(57) Abstract: The disclosure provides proteins that can be used to determine the redox status of an environment (such as the environment within a cell or subcellular compartment). These proteins are green fluorescent protein (GFP) variants (also referred to as redox sensitive GFP (rosGFP) mutants), which have been engineering to have two cysteine amino acids near the chromophore and within disulfide bonding distance of each other. Also provided are nucleic acid molecules that encode rosGFPs, vectors containing such encoding molecules, and cells transformed therewith. The disclosure further provides methods of using the rosGFPs (and encoding molecules) to analyze the redox status of an environment, such as a cell, or a subcellular compartment within a cell. In certain embodiments, both redox status and pH are analyzed concurrently.









































































































































