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Title:	Study of Photoinduced Phenomena in different Coloured Fluorescent Proteins
Authors:	Lakshmiraj, Saragadam Jeevan
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Abstract:	The discovery of wild type green fluorescent protein from a jellyfish <i>Aequorea victoria</i> by Osamu Shimomura in 1962 and the subsequent recombinant expression from several other sea species opened the possibilities of vast applications enabling many research fields. Fluorescent proteins (FPs) technology has emerged as a critical tool in various fields of cellular and developmental biology, and modern biomedical research. Engineered FPs that cover the entire visible spectrum have evolved tremendously. Numerous light-induced processes in fluorescent proteins (FPs) are known, including photoactivation, photoswitching, photoconversion, photoisomerization, and photobleaching. In my MS dissertation, I investigated photoconversion studies in different coloured (green and red) FPs, where some of the FPs experience bleaching and/or photoconversion due to chromophore oxidation or reduction, which is followed by chemical alterations in the surrounding environment. In wt-GFP, photoconversion is driven by an electron transfer process in which a nearby residue (Glu222) serves as an electron donor (an unstable carboxylate radical releases a molecule of CO ₂) and the chromophore serves as an acceptor via a radical intermediate. Thus, our primary goal was to conduct photoconversion studies in various coloured FPs to evaluate the involvement of different forms and their photostability.
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