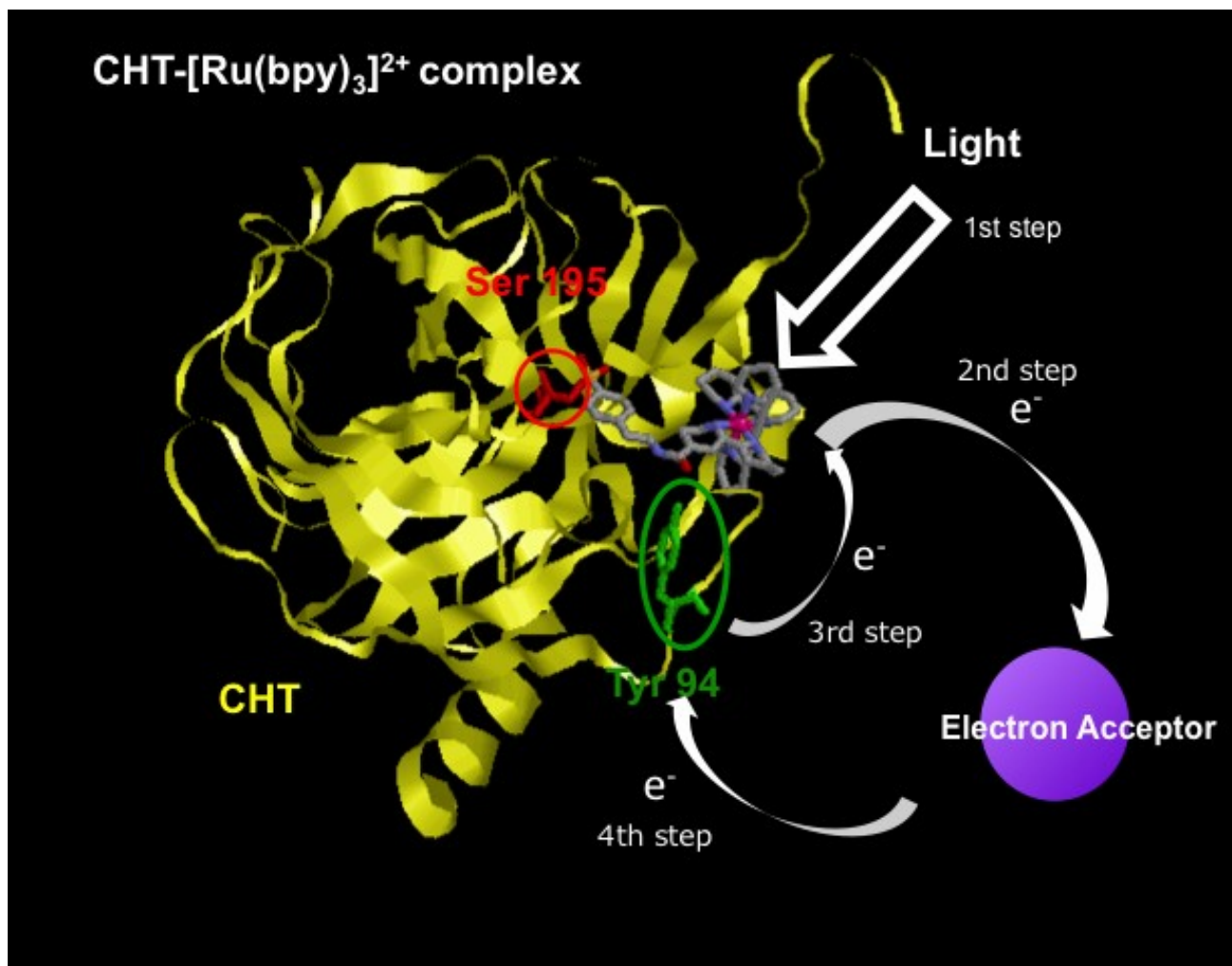


# Design and photofunctionalization of metalloproteins

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Photoinduced electron transfer of CHT-[Ru(bpy)<sub>3</sub>]<sup>2+</sup> complex in the presence of electron acceptor.

In the biological photosynthetic reaction systems, many multi-step electron and/or energy transfer initiated by visible light are observed. It is known that metalloproteins and enzymes play important roles. We have designed artificial metalloproteins by synthetic methods and also constructed the models of the biological photoinduced electron transfer systems of proteins by using several photofunctional molecules. For example, we newly prepared the protein-ligand complex, comprising chymotrypsin (CHT) and ruthenium complex, Ru(bpy)<sub>3</sub>, as a photosensitizer. The stepwise photoinduced electron transfer reactions of the CHT-Ru(bpy)<sub>3</sub> complex in the presence of electron acceptor are observed as shown in Figure. The time-resolved spectroscopic measurements reveal the formation of the protein radical species after the photoinduced reactions.

Keywords : Metalloprotein, Photofunctional molecule, Photoinduced electron transfer