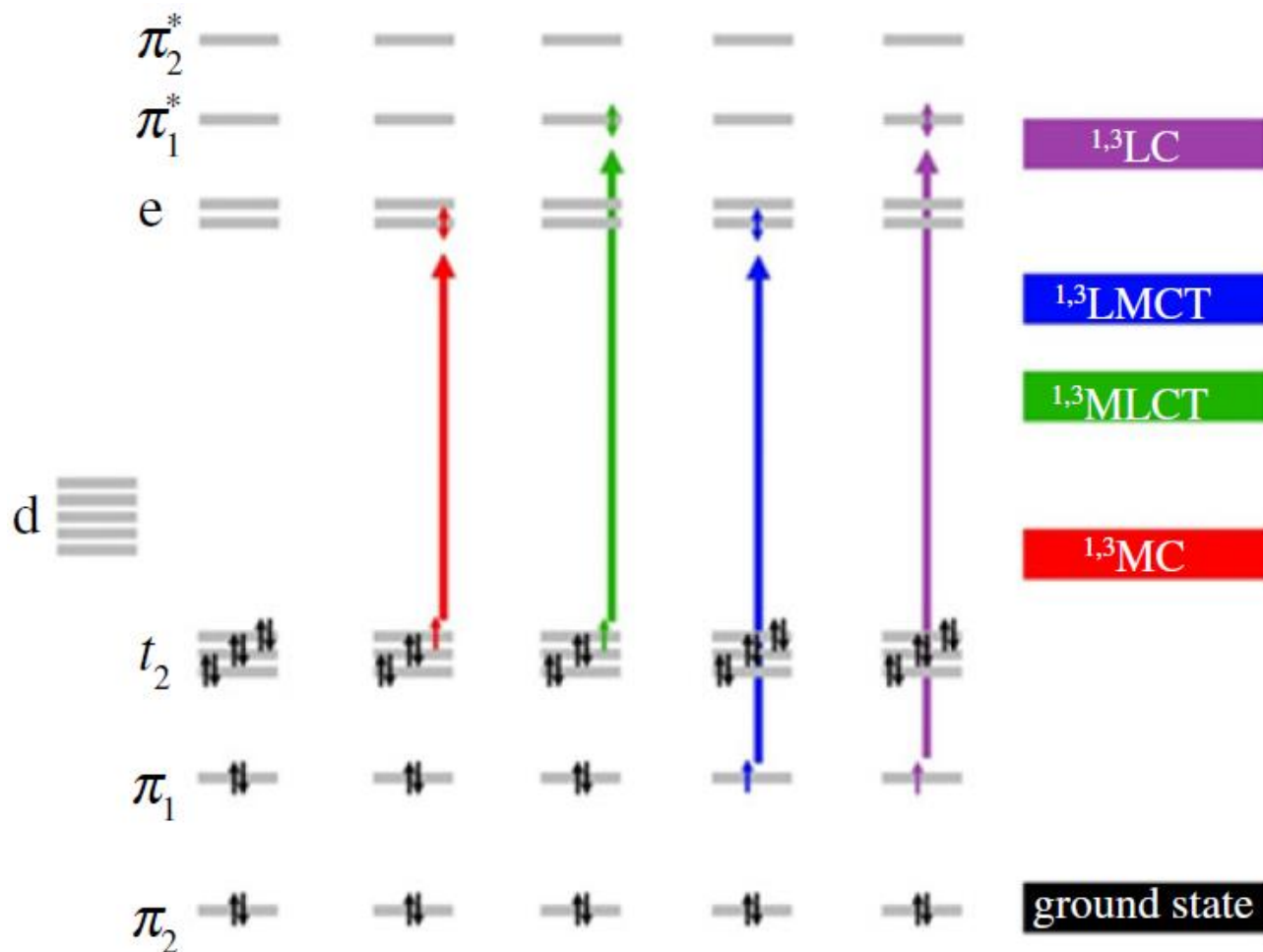


# Photoactivatable metal compounds



# Photoactivatable metal compounds

These complexes are inert and non-toxic to cells in the dark.

Upon irradiation at the tumor site, they undergo various **photochemical reactions**, including **isomerization**, **substitution**, and **reduction**.

The photoactivation pathway of metal complexes **does not rely on  $O_2$** , which is a significant advantage over the photosensitizers used in current PDT. However, photoactivation – contrary to PDT – is a stoichiometric process.

Photoinduced ligand  
dissociation

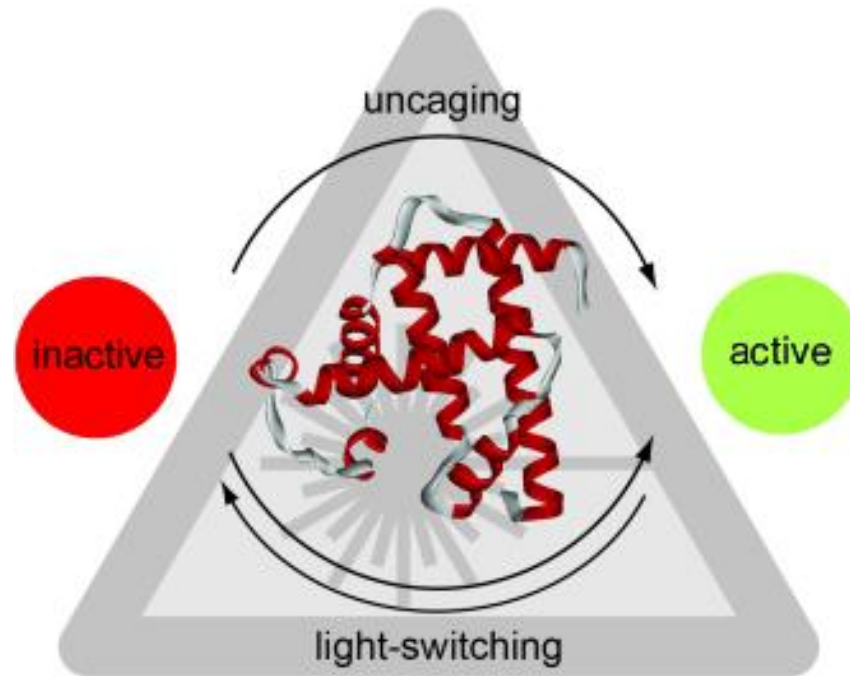
```
graph TD; A[Photoinduced ligand dissociation] --> B[Activation of the metal center]; A --> C[Selective release of active ligands (photo-uncaging)];
```

The diagram is a flowchart with a yellow rectangular box at the top containing the text 'Photoinduced ligand dissociation'. Two red arrows originate from the bottom of this box. The left arrow points to a light blue oval containing the text 'Activation of the metal center'. The right arrow points to a light green oval containing the text 'Selective release of active ligands (photo-uncaging)'.

Activation of the  
metal center

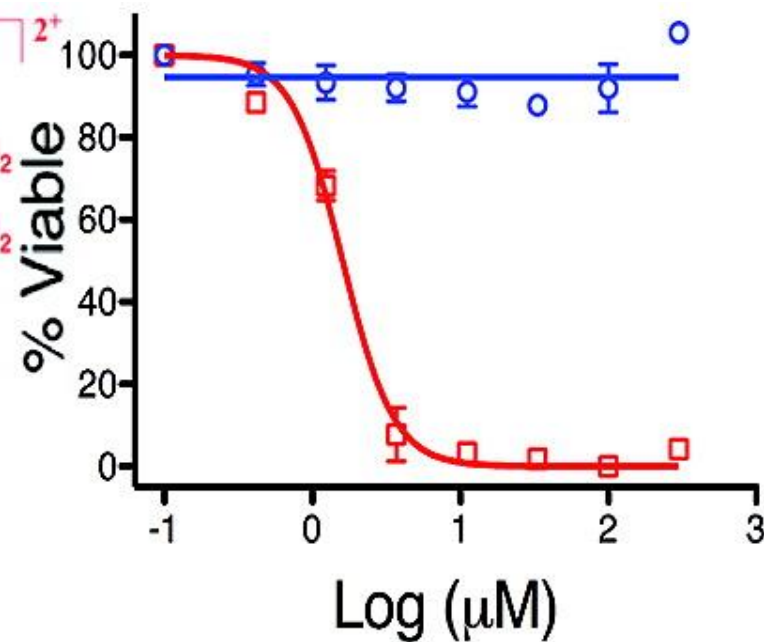
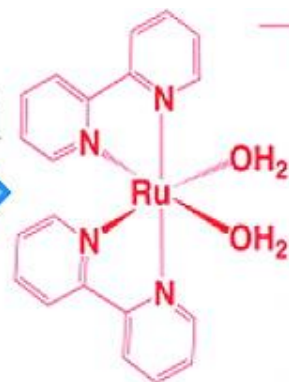
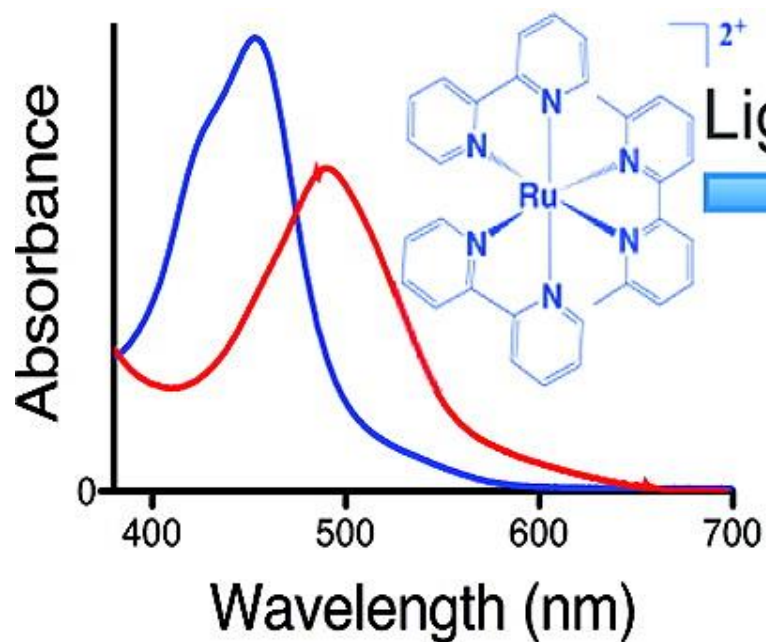
Selective release  
of active ligands  
(*photo-uncaging*)

# Caged compounds and photo-uncaging



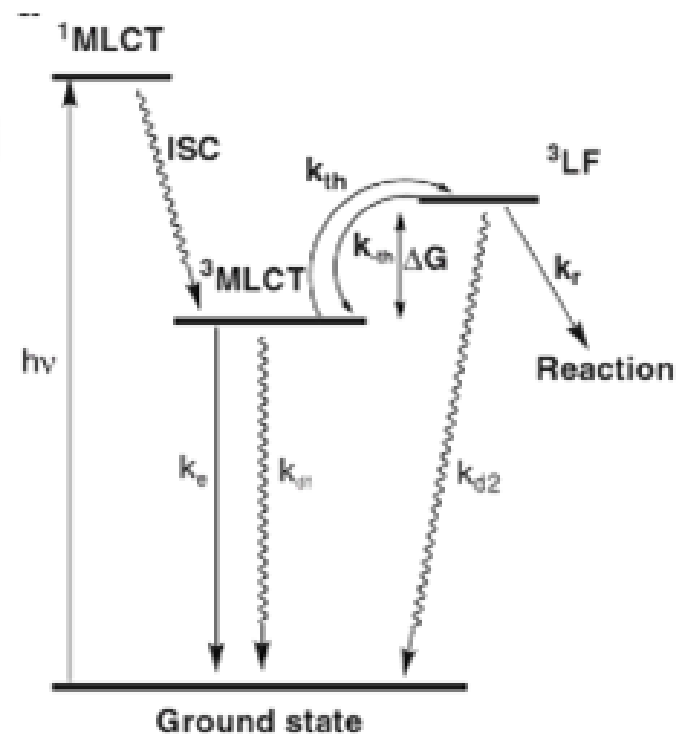
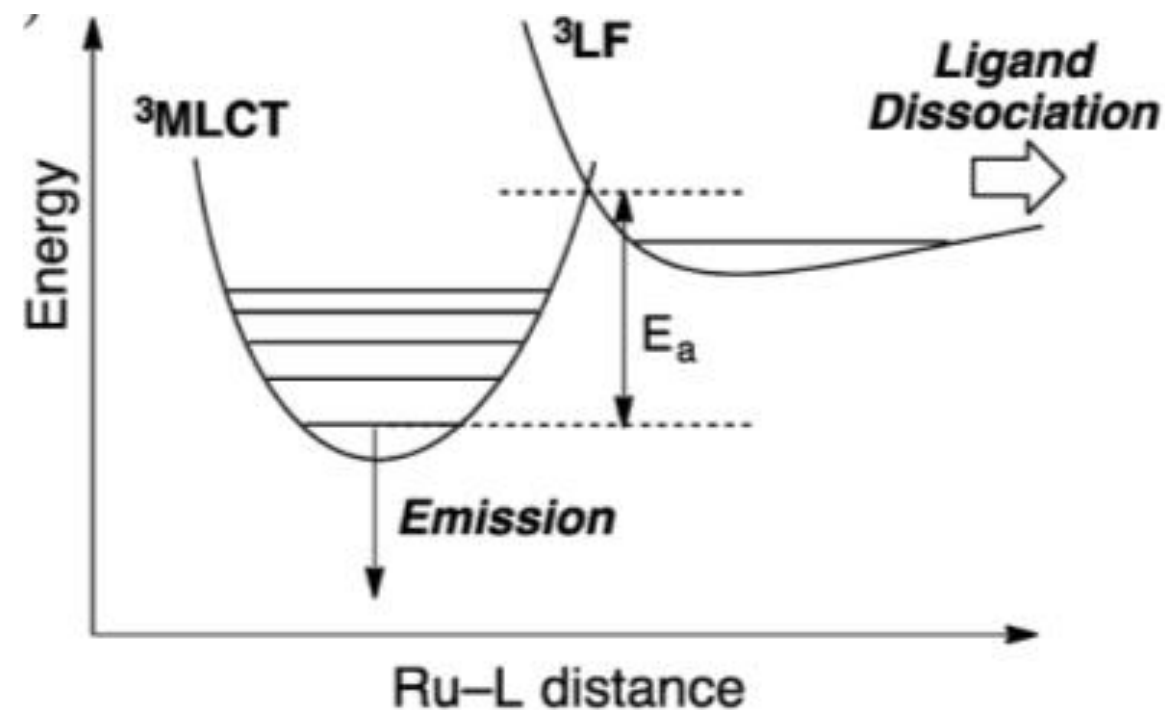
Photolabile protecting groups, attached to a defined position of a molecule, can be used to gain spatio-temporal control over the concentration of the active form of a molecule.

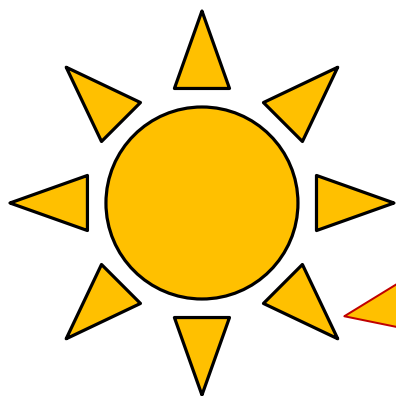
# Photoactivatable Ru compounds



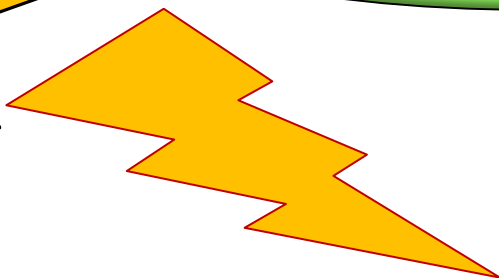
*Phototoxicity Index, PI*

# Photoactivatable Ru compounds



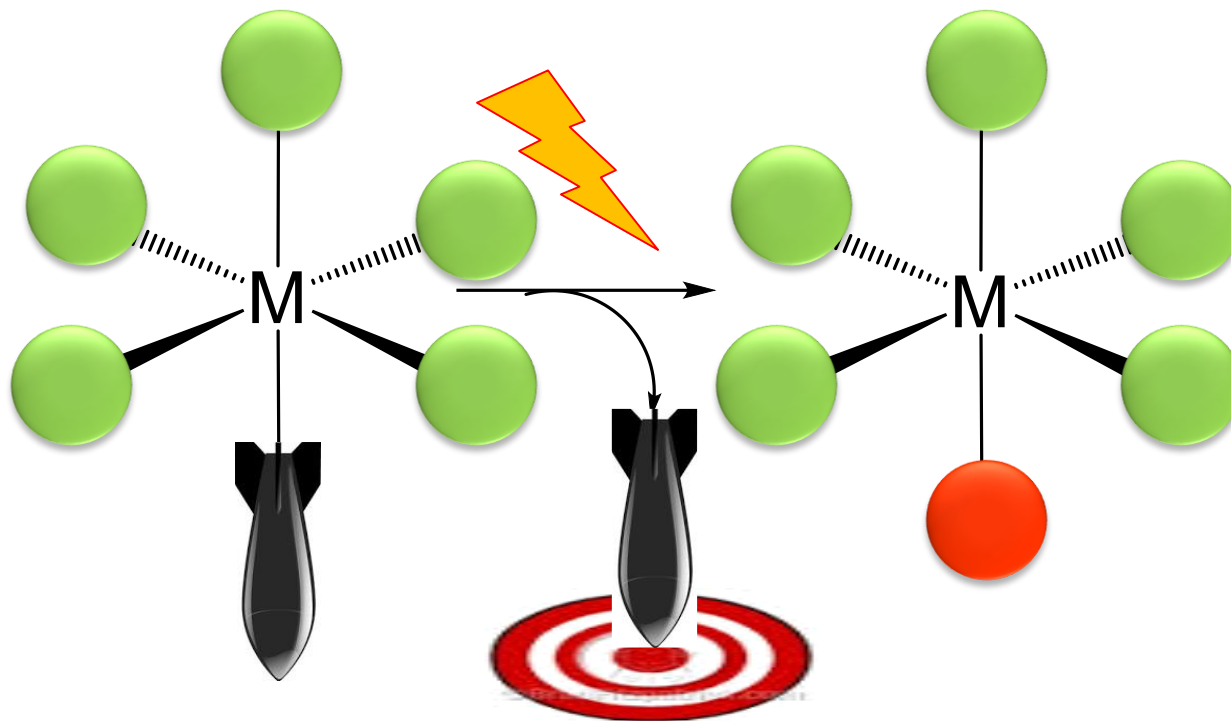



Structural compound



Functional compound

# Metal compounds for the delivery of active molecules



 = NO, CO, 4-aminopyridine (4-AP, K<sup>+</sup> channel blocker),  $\gamma$ -aminobutyric acid (GABA, a neurotransmitter),...



# Caged compounds and photo-uncaging

*NO Releasing Molecules = NORM*

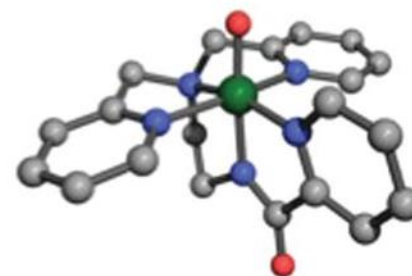
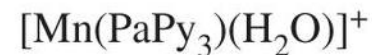
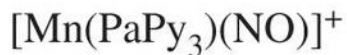
*CO Releasing Molecules = CORM*

*Photo-NORM*

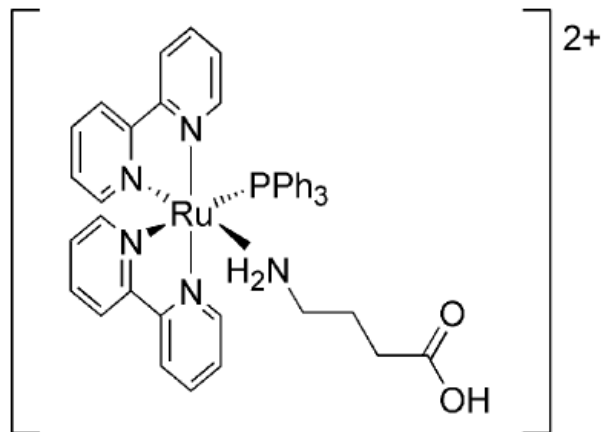
*Photo-CORM*



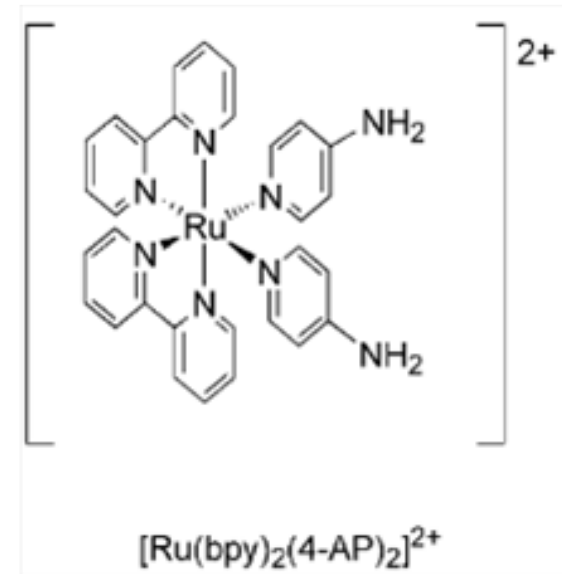
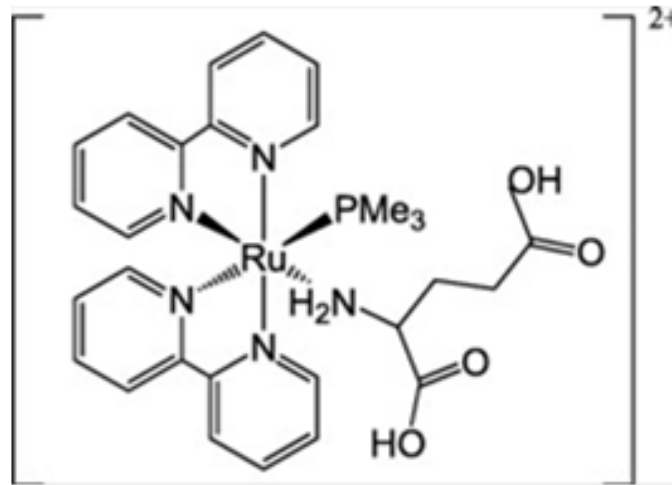
$h\nu$



# Photo-release of neurotransmitters



$[Ru(bpy)_2(PPh_3)(GABA)]^{2+}$



$[Ru(bpy)_2(4-AP)_2]^{2+}$

GABA =  $\gamma$ -aminobutyric acid: inhibitory neurotransmitter

Glutamic acid: excitatory neurotransmitter

4-AP = 4-aminopyridine: K<sup>+</sup> channel blocker

