Luminescent self-assemblies of Pt(II) complexes *in vivo*

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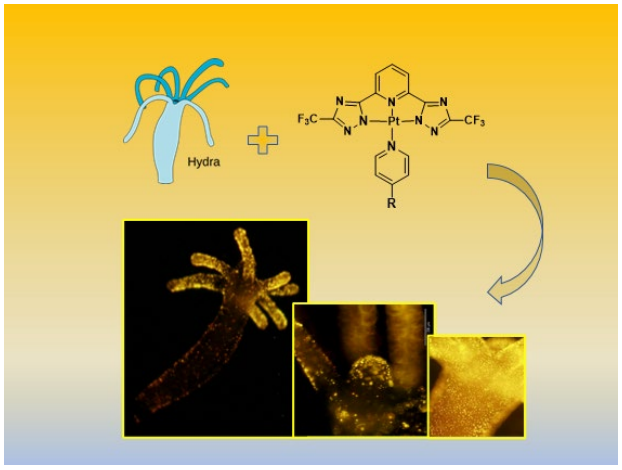
Recently, significant research efforts have been focused on the development of new Pt(II) complexes for their application as luminescent probe for cellular imaging. This application is limited by the quenching exerted by dioxygen in water and biological fluids because of the long lived luminescent excited states. This severe drawback could however be overcome by exploiting the high tendency of such square planar compounds, containing conjugated ligands, to self-assembly in supramolecular structures. This phenomenon can significantly enhance the emissive properties of Pt(II) compounds, because of the formation of new excited states (metal-metal ligand charge transfer, MMLCT) and an increasing rigidity due to the packing of the units, and as a consequence, also a slower or negligible diffusion of dioxygen. The assemblies therefore can become better probes for imaging application due to their enhanced emission and reduced reactivity.[1] In this regard, our research group has already demonstrated the aggregation induced emission for Pt(II) complexes[2,3] in different media. In this contribution we describe the synthesis and characterization of a series of luminescent amphiphilic platinum compounds, soluble in water, based on a N^N^N pyridil-triazolate functionalized with different ancillary ligands (see figure) and their behaviour *in vivo*. An invertebrate freshwater polyp, Hydra vulgaris, was treated with the bright orange phosphorescent complexes at only 20 μM concentration. The compounds self-assembly in vivo and in particular accumulate in the tentacles of the animal. Interestingly preliminary results suggest not only the imaging behaviour of the systems, but an increase in the cell proliferation and a wound healing ability.



Studies are in progress to rationalize such important results.

[1] S. Sinn et al. *J. Am. Chem. Soc*. **2018**, *140*, 2355-2362
[2] A. Aliprandi et al. *Nature Chemistry*, **2016**, 10-15
[3] A. Aliprandi, et al. *Isr. J. Chem.*, **2019,** *59*, 892-897