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Self-assembled complex promotes cell proliferation and stem cell self-renewal through redox signaling in in vivo model

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Transition metal complexes have attracted much attention because of their rich and peculiar chemical and spectroscopic properties that have found applications in different fields and even as therapeutics.[1] In this field, Pt(II) complexes have been extensively studied. However, even though the emission of platinum complexes has been extensively investigated, the use as luminescent probes, for cellular imaging, has been still poorly investigated. This application requires water solubility of the complexes, and it is limited by the quenching exerted by dioxygen in water and biological fluids because of the long lived luminescent excited state. This severe drawback could however be overcome by exploiting the high tendency of such square planar compounds to self-assembly in supramolecular structures. 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 luminescent amphiphilic platinum compound, soluble in water, based on a N^N^N pyridil-triazolate functionalized with an ancillary ligand and its behaviour in vivo. An invertebrate freshwater polyp, *Hydra vulgaris*, was treated with the bright orange phosphorescent complexes at only 20 μM concentration

Figure 1: In vivo fluorescence imaging showing a living *Hydra* 24 h post incubation with YAC_2

The compounds self-assembly in vivo and in particular accumulate in the tentacles of the animal. Interestingly, preliminary results suggest not only the use of these compounds for bioimaging and cell tracking but also as enhancer of cell proliferation. Studies are in progress to rationalize such important results.

References:

[1] K.J. Franz et al. *Chem. Rev*. **2019**, 119, 2, 727–729
[2] A. Aliprandi et al. *Nature Chemistry*, **2016**, 10-15
[3] A. Aliprandi, et al. *Isr. J. Chem.*, **2019,** *59*, 892 -897