

This enzyme is overexpressed in 90% of tumours where it turns on to elongate telomeres, granting unlimited proliferation capability to the cancerous cells. For such a reason, stabilizing G4s in telomeres might become a powerful strategy to contrast abnormal telomerase activity thus arresting cancer cells proliferation. We have recently reported on the G4-DNA interaction ability of a series of Salnaphen-like metal complexes. Indeed, Schiff base metal complexes, derived from N,N'-bridged tetradentate ligands, involving N2O2 donor atoms, present very favourable features to act as G4 binders. Therefore NiII and ZnII Salpyrim-like complexes have been synthesised and their interaction towards B-DNA and telomeric G-quadruplex have been tested by means of spectrophotometric, hydrodynamic and computational approaches.

The data collectively suggest that only NiII complex is capable of strong interactions both with B- both with G4-DNA: it acts as a typical B-DNA intercalator but it also binds to G-quadruplexes by direct end-stacking, stabilizing the oligonucleotide secondary structure. Remarkably, it has been found a 10 fold higher affinity constant towards telomeric quadruplex-DNA than that towards B-DNA, highlighting a selective interaction of the NiII complex. Experiments to evaluate the biological activity of the two complexes against cancer cell lines are currently ongoing.

Isolation and characterization of sea urchin *P. lividus* microbiota from coelomic fluid

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The study of the microbiota is a subject of considerable and growing interest since it is drawing new important perspectives in the life sciences concerning the functional relationships between metazoans and microbial cells. In fact, it has already shown that the endogenous microbial community affects various physiological activities of multicellular organisms. The coelomic cavity of echinoderms contains a fluid in which coelomocytes are reported to exert immune functions like phagocytosis, opsonization and production of antimicrobial agents against marine bacteria [1, 2]. However, up to day nothing is known about the endogenous bacterial population of coelomic fluid. We focused on this issue, and, to this aim, both bacterial culture-dependent and -independent approaches were adopted. By the former approach, we isolated 8 distinct Gram-negative marine bacterial strains identified for their 16S rDNA sequence. Interestingly, almost all isolated strains show a considerable extracellular hydrolytic activity. Moreover, one of them exerts antimicrobial effect against Gram-negative bacteria, including most of the other strains isolated from the coelomic fluid. Finally, molecular investigation on metagenomic DNA composition is currently ongoing using Next Generation Sequence Technology. This study not only suggests insights on functional interaction between sea urchin and marine microorganisms, but also could provide a novel source of biochemical diversity for the production of bioactive compounds and enzymes that can find biotechnological applications.

[1] Remziye Deveci et al. (2015). *Journal of Morphology* 276(5):583-8

[2] Stabili L et al. (1996). *Comp Biochem Physiol B Biochem Mol Biol* 113(3):639-44

DNA cytosine methylation modulates *Streptomyces coelicolor* morphological and physiological differentiation

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The role of DNA cytosine methylation in prokaryotes has not been deeply investigated. In *Escherichia coli* cytosine methylation regulates gene expression during the stationary phase and cytosine hypermethylation