

DIPARTIMENTO DI FARMACIA E BIOTECNOLOGIE

AVVISO DI SEMINARIO

Il giorno **17 Aprile 2019** alle ore **14:30** presso l'Aula 2, via Belmeloro 6

la Dott.ssa Maria Duca, PhD.

Université Côte d'Azur, CNRS, Institut de Chimie de Nice, France (ospite Prof.ssa Bolognesi)

terrà un seminario dal titolo:

SYNTHETIC SMALL-MOLECULE RNA LIGANDS: SCOPE AND APPLICATIONS

I colleghi e gli studenti interessati sono cordialmente invitati

Commissione Ricerca e Attività Correlate - FaBiT

ABSTRACT

MicroRNAs (miRNAs) are a recently discovered category of small RNA molecules that regulate gene expression at the post-transcriptional level. Accumulating evidence indicates that miRNAs are aberrantly expressed in a variety of human cancers, thus being oncogenic and that the inhibition of oncogenic miRNAs (defined as the blocking of miRNAs' production or function) would find application in the therapy of different types of cancer in which these miRNAs are implicated (1).

Our work aims at the development of small-molecule drugs targeting specific oncogenic miRNAs production (2). Toward this aim, we perform the design and synthesis of new RNA ligands as well as the screening of compounds libraries. Both approaches are based on a high throughput in vitro assays and demonstrated to be successful in identifying compounds able to interfere with the biogenesis of oncogenic miRNAs in a selective manner at the intracellular level. Thanks to these works, we demonstrated that it is possible to inhibit miRNAs production using synthetic small molecules and that this kind of approach could be applied in future anticancer therapies. In this context, we will show our recent results about the induction of cancer stem cells differentiation using miRNAs interfering agents. Noteworthy, these RNA ligands could find extremely important applications as chemical biology tools for the improvement of our understanding of miRNAs biological pathways.

(1) Ling H., Fabbri M., Calin, G.A. Nature Rev. Drug. Disc. 2013 12, 847; Velagapudi S.P., Vummidi B.R., Disney M.D. Curr. Op. Chem. Biol. 2015 24, 97.

(2) Vo, D.D., Becquart, C., Tran, T.P.A., Di Giorgio, A., Darfeuille, F., Staedel, C., Duca, M. Org. Biomol. Chem. 2018 16, 6262; Staedel, C., Tran, T.P.A., Giraud, J., Darfeuille, F., Di Giorgio, A., Tourasse, N.J., Salin, F., Uriac, P., Duca, M. Scientific Reports 2018 8, 1667; Vo, D.D., Duca, M. Methods Mol. Biol. 2017 1517, 137; Di Giorgio, A., Tran, T.P.A., Duca, M. Future Med. Chem. 2016 8, 803; Vo, D.D., Tran, T.P.A. Staedel, C., Benhida, R., Darfeuille, F., Di Giorgio, A., Duca, M. Chem. Eur. J. 2016 22, 5350; Tran T.P.A., Vo D.D., Di Giorgio A., Duca M. Bioorg. Med. Chem. 2015 23, 5344; Vo D.D., Staedel C., Zehnacker L., Benhida R., Darfeuille F., Duca M. ACS Chem. Biol. 2014 9, 711.

BIOGRAPHICAL SKETCH



Dr. Maria DUCA is head of « Targeting of Nucleic Acids » research group in the Institute of Chemistry of Nice (Université Côte d'Azur -CNRS). After undergraduate studies in Pharmacy and Medicinal Chemistry (Faculty of Pharmacy, Bologna, Italy), she obtained her PhD in Molecular Biochemistry under the supervision of Dr. Paola B. Arimondo (National History Museum, Paris, France) working on topoisomerase II inhibitors targeting specific DNA sequences. A 2year post-doctoral training in Sydney Hecht's lab (Departement of Chemistry, University of Virginia, USA) allowed her to pursue the study of nucleic acids/small molecules interactions working on targeted protein mutagenesis upon tRNA chemical modification.

After CNRS recruitment as a Research Scientist in 2007, her research activities focus on the targeting of non-coding RNAs using synthetic small molecules toward innovative therapeutic approaches both in anticancer and antimicrobial applications.