



Abstract Book of the Workshop

Towards Novel Anticancer Strategies: It's Time to Build a New Research Community

18th November 2019, Naples

CESTEV

via Tommaso De Amicis, 95

University of Naples Federico II



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Synthesis of PNA Probes for Chronic Lymphocytic Leukemia Detection

Andrea P. Falanga,^{a,*} Stefano D'Errico,^b Maria Marzano,^b Nicola Borbone,^b Gennaro Piccialli^b and Giorgia Oliviero^a

^aDepartment of Molecular Medicine and Medical Biotechnologies, University of Naples Federico II, Napoli Italy;

^bDepartment of Pharmacy, University of Naples Federico II, Napoli Italy.

*e-mail: andreapatrizia.falanga@unina.it

Chronic lymphocytic leukemia (CLL) is a neoplastic disease characterized by the accumulation of small mature B lymphocytes in the blood, bone marrow and peripheral lymphoid organs (lymph nodes and spleen). The first indication for CLL diagnosis is to carry a complete blood count. In the case of altered results, other tests may be required, including bone marrow biopsy. For this reason, we focused our attention on development of a less invasive and faster diagnostic techniques. B lymphocytes from CLL patients express the CD5 transmembrane protein¹. This protein is the main marker used for the diagnosis of CLL. It was decided to select a sequence within the CD5 mRNA that acts as a template for the synthesis of nucleic acid peptide probes (PNAs), capable of recognizing and selectively binding the CD5 diagnostic marker mRNA with high sensitivity. The ability of the synthesized PNA to hybridize the target sequence was investigated by using Circular Dichroism (CD), CD melting and Non denaturing electrophoresis in presence and in absence of the probe conjugated to the DNA sequence. Results demonstrated the interaction between the PNA and DNA sequence. However the presence of the probe on DNA sequence destabilizes the interaction.

Acknowledgments: *This work was supported by: POR FESR 2014-2020. PROGETTI TRASFERIMENTO TECNOLOGICO E DI PRIMA INDUSTRIALIZZAZIONE PER LE IMPRESE INNOVATIVE AD ALTO POTENZIALE PER LA LOTTA ALLE PATOLOGIE ONCOLOGICHE. CAMPANIA TERRA DEL BUONO. Biochip per la diagnosi rapida e il follow-up della leucemia linfatica cronica nella popolazione in territorio a rischio.*

References:

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