TECO Mobility grant

Title of the project

Beneficiary of the grant- Dr Patrizio Arrigo
Home Institution/Company (EU)- CNR ISMAC
Host Institution/Company (INDIA)- CSIR NEERI
Period of the stay in India-10-25 Feb 2016



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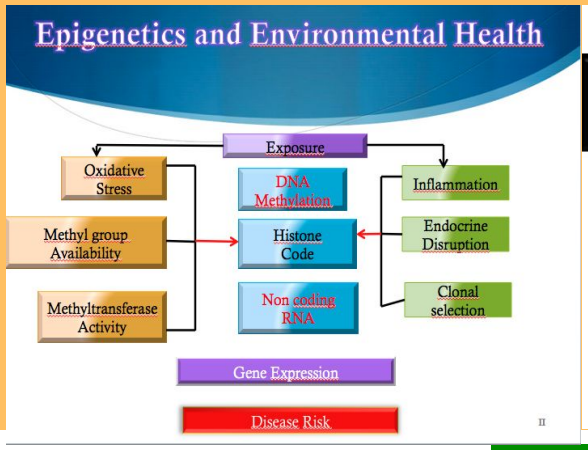
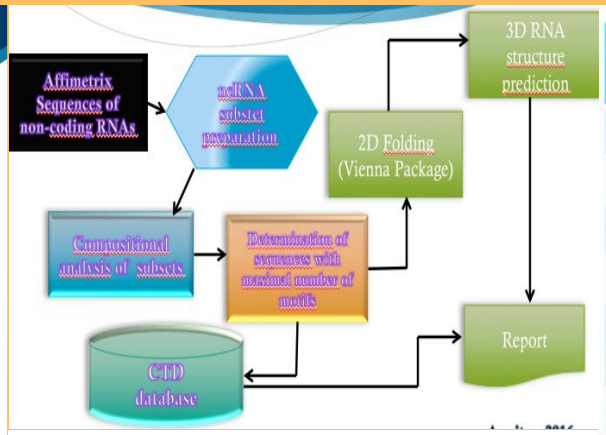
Objective of the project

The aim of proposed project is the prediction of long term exposure to chemical pollutants on post-transcriptional regulation of gene expression controlled by RNA modifications.





ncRNA type	Total probes	Non duplicated	Ensemble average K2P
C/D box R	347	269	0.1124
Haca box	163	112	0.1254
scaRNA	32	21	0.0849
snoRNA	1674	1131	0.1165
Stem-loop (pre-mirna)	1658	1388	0.1459
miRNA	1733	1329	0.00520

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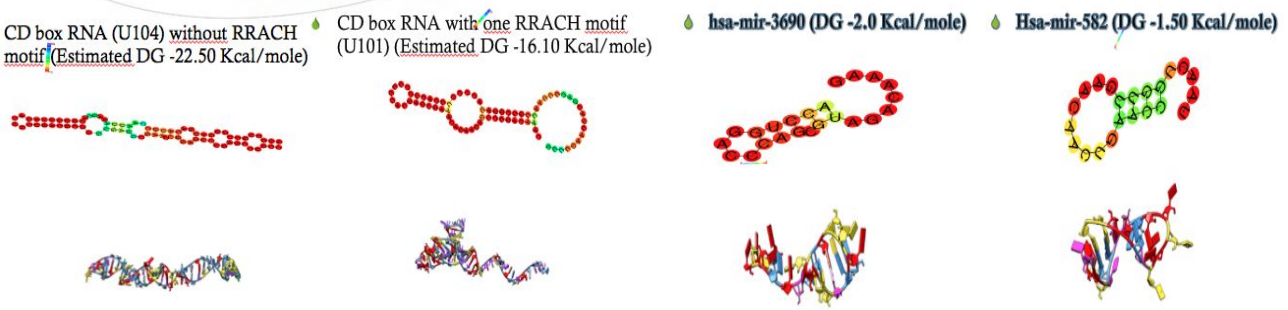
Activities carried out during the period of the grant

The activity was founded on previous collaborative joint-research project in which we have investigated the effect of selected contaminant on the expression of regulatory ncRNA (miRNA and snoRNA). In this project the acitvity was focused on the chemical modifications of different RNA and their proneness to be targeted by chemical pollutants

Class of ncRNA	NR probes	Number of sequences with RRACH motif	Fraction of sequences
C/D box RNA	269	161	0.598
Haca box	112	95	0.848
scaRNA	21	16	0.761
snoRNA	1131	813	0.718
Stem-loop (pre-mirna)	1388	622	0.‰5448
miRNA	1329	187	0.140



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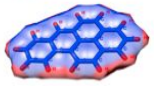
Main outcomes

The project has weight environmental Stress factors underlined how the presence of a Chemical modification of RNA (RNA methylation) Can modify the conformational properties and Stability of non-coding RNA. In addition the modified nucleotide (methyl-adenosine) can show an higher sensitivity to low

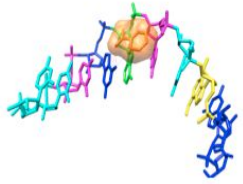
Pre-miRNA	Validated target	Chemicals (from CTD database)	Associated diseases
Hsa-mir-151b	ARHGD1A	Benzo(a)pyrene,bisphenol A Cadmium chloride,estrdiol	Necrosis,Drug induced liver injury
hsa-mir378e	ZNF609	Bisphenol A, Potassium Cr(VI) Aflatoxin,Arsenic,lead, Benzo(a)pyrene,butyraldheyde	Neurobehavioural manifestations Learning disorders
hsa-mir-4261	DCAF7	CNT,bisphenolA,Arsenic, Nickel,Air Polullutans, smoke	Necrosis,Inflammation Learning disorders Cognition disorders
hsa-mir-5047	No target	No info	No info
hsa-mir-567	KPNA2	Calcitrol,BisphenolA, estradiol,CNT, dibutylphtalate,zinc,Cadmium chloride	Necrosis
hsa-mir-941	No target	No Info	No Info

- The Benzo(a)pyrene used as ligand for the docking test

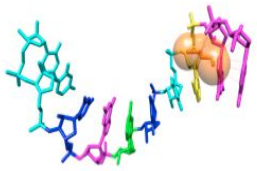


Mirna	GCE	aVdW	rVdW	ACE	Contacts
'hsa-mir-3690'	-50.90	-18.77	4.69	-16.85	72
'hsa-mir-3910-1	NA	NA	NA	NA	NA
'hsa-mir-3910-2'	NA	NA	NA	NA	NA
'hsa-mir-4261'	NA	NA	NA	NA	NA
'hsa-mir-4520a'	NA	NA	NA	NA	NA
'hsa-mir-4520b'	-43.92	-18.84	3.31	-15.53	93
'hsa-mir-492'	-41.04	-15.96	4.90	-14.06	70
'hsa-mir-494'	-44.48	-19.02	9.09	-16.01	91
'hsa-mir-582'	-43.20	-16.42	5.52	-15.52	67
'hsa-mir-631'	-44.92	-17.44	2.37	-14.18	114
'hsa-mir-642b'	-42.74	-17.16	5.69	-15.32	69
hsa-mir-921'	-44.96	-17.91	4.59	-17.25	73

- Complex with a single strand of 2MVS with Nitrobenzene



- Complex of a single strand of 2MVS with Bis(chloro)methyl ether



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