

THE MARCONI UNIVERSITY ENGAGED IN FUNDAMENTAL

Editorial article

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The University “Guglielmo Marconi”, in collaboration with ENEA, the State Research Agency for the new technology and energy, has organized the last 31st of March the seminar:

“The collaboration between University and Research Agencies – The example of Università degli Studi Guglielmo Marconi-ENEA: research on Biomedicine and Radiation Biology”.

The seminar was introduced by Giovanni Briganti, professor of Radiation Protection at Marconi University, and chaired by Dr. Anna Saran, director of the ENEA Laboratory of Radiation Biology and Biomedicine.

Giovanni Briganti announced that recently was established by the Rector the *Department of Nuclear, Sub-nuclear and Radiation Physics*, aimed at promoting the research in the field of high-energy and radiation physics. The research in the field of high energy nuclear and sub-nuclear physics are carried out mainly in the framework of the agreement with the *Fermilab* in Chicago, while the research in the field of radiations interaction with the matter, and in particular of its biological effects, are carried out in accordance with the ENEA Laboratory of Radiation Biology and Biomedicine.

Anna Saran presented the highlights of the research done over the last year, giving evidence of the fruitful collaboration between her Laboratory and Marconi University.

The Laboratory of Radiation Biology and Biomedicine of the ENEA, is engaged with the evaluation of the possible carcinogenic and non-carcinogenic effects of ionizing radiation. The experiments are conducted essentially through a model of mice genetically modified as they can give more significant results in reasonable length of time. The aim, which is very topical, is to establish the risk of radiations on humans. In fact, while the risks of being subjected to high levels of radiations are widely known, as in the case of atomic bombs or serious nuclear accidents, the consequences in terms of tumors in the case of low radiation exposure in humans are still uncertain.

The Laboratory of Radiation Biology and Biomedicine is also engaged with tumor biology in a wider sense, that is biomedicine, through the study of the molecular basis of human tumors development, that is the predisposition of the disease in people.

During the seminar Simona Pazzaglia, senior researcher of the Laboratory of Radiation Biology and Biomedicine - ENEA, presented a paper on the role of protection systems of the DNA in cerebellum tumors in mice heterozygous for *ptc1*^{+/-} (Pazzaglia, Giardullo, *in press*). These systems are made of enzymes that help to protect and stabilize the genome from oxidative damage caused both by normal cellular processes and external causes such as radiation.

Paola Giardullo, junior researcher of the Marconi University, has presented the research, made during the cited collaboration entitled: "*Bystander Effect in vivo: new aspects of the mechanism of damage transmission*". The bystander effect is a biological effect that consists in the chromosome change or gene modification in those cells not directly exposed to radiations (Mancuso, Saran et al., 2008). There is evidence that the indirect transmission of the damage seems mediated by the release of intracellular factors or soluble factors secreted by the irradiated cells.

Emanuela Pasquali, junior researcher of the Marconi University, discussed about a molecule involved in the Bystander Effect *in vivo*, giving evidence that *ATP and Connexin43* are key mediators involved in the distance transmission of the radiation damage in the model under study (Mancuso, Saran, Pasquali et al., *in press*).

Maria Teresa Mancuso, senior researcher of the Laboratory of Radiation Biology and Biomedicine - ENEA, closed the seminar introducing a study about the hormonal regulation of the occurrence of medulloblastoma, the most common malignant tumor of childhood (Mancuso, Giardullo, Pasquali, Pazzaglia, Saran, *in press*). This pathology, that originates in the cerebellum, is twice more frequent in male and it can be classified in those gender-related diseases, that is those illness that are more common to one sex as they are linked to the hormonal structure of individuals. What emerged from the experiments conducted is that estrogens play a protective role against the medulloblastoma progression in female

animals. If this hypothesis is correct, the therapeutic strategies can be oriented towards this direction, thus avoiding traditional cures, that unfortunately cause serious side effects in patients.

The results of the studies presented the 31st of March can be considered as the first results of the collaboration between the Università degli Studi Guglielmo Marconi and ENEA, a cooperation bound to last in the future, in order to achieve a useful, integrated and shared research.

References

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