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Tumor liberated protein (TLP) as potential vaccine for lung cancer patients

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Tumor liberated protein (TLP) has been previously described as a TAA (complex) present in the sera from lung cancer patients with early stage disease. Since early detection improves overall survival in lung cancer, identification of screening biomarkers for patients at risk for the development of this disease represents an important target. Starting from the peptide epitope RTNKEASI previously isolated from TLP complexes, we generated a rabbit anti-RTNKEASI serum. This antiserum detected and immunoprecipitated a 55kDa protein band in the lysate of the lung cancer cell line A549. This protein band was identified as aldehyde dehydrogenase isoform 1A1 through mass spectrometry, revealing the molecular nature of at least one component of the previously described TLP complex. Next, we screened a cohort of 29 lung cancer patients (all histologies), 17 patients with non-neoplastic lung pathologies and 9 healthy donors for the presence of serum ALDH1A1 and global serum ALDH by enzyme-linked immunosorbent assay. This analysis indicated that the presence of ALDH was highly restricted to patients with lung cancer. Interestingly, the global ALDH test detected more lung cancer patients compared to the ALDH1A1-specific test, suggesting that other ALDH isoforms

might add to the sensitivity of the assay. Our data suggest that ALDH levels may therefore be evaluated as part of a marker panel for lung cancer screening. Finally, the ability of the immune system to recognize a TAA, enables the development of a vaccine approach for preventive and therapeutic application and represents a main target of this field of research.

Speaker Biography

Giulio Tarro has graduated from Medicine School, Naples University (1962). He was Research Associate at Division of Virology and Cancer Research, Children's Hospital (1965-1968), Assistant Professor of Research Pediatrics, College Medicine (1968-1969), Cincinnati University, Ohio, Oncological Virology Professor, Naples University (1972-1985). He acted as Chief Division Virology (1973-2003), Head Department Diagnostic Laboratories, (2003-2006), D. Cotugno Hospital for Infectious Diseases, Naples; Emeritus, 2006. Since 2007, he is the Chairman Committee of Biotechnologies and VirusSphere, World Academy Biomedical Technologies, UNESCO, Adjunct Professor Department Biology, Temple University, College of Science and Technology, Philadelphia, Recipient of the Sbarro Health Research Organization lifetime achievement award (2010). His researches have been concerned with the characterization of specific virus-induced tumour antigens, which were the fingerprints left behind in human cancer. His achievements include patents in field; discovery of Respiratory Syncytial Virus in infant deaths in Naples and of tumor liberated protein as a tumor associated antigen, 55 kilodalton protein overexpressed in lung tumors and other epithelial adenocarcinomas.

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