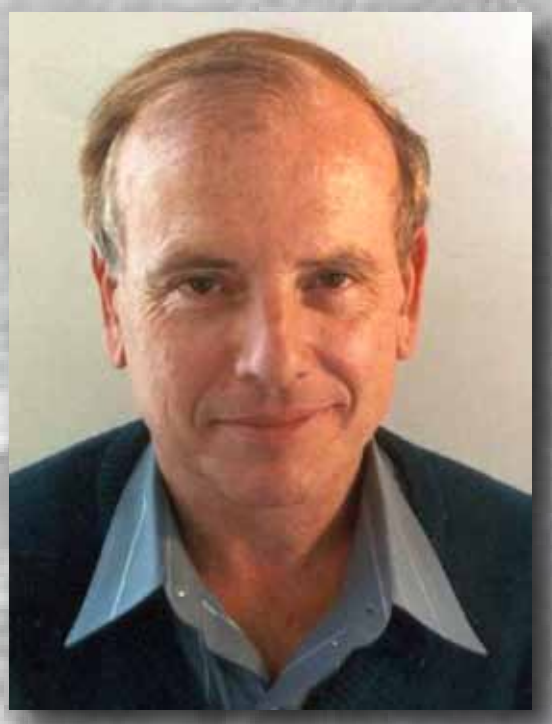
Karl Friedrich Bonhoeffer Lecture

Thursday, 24th March 2011 - 5 pm

Manfred Eigen Lecture Hall
Max Planck Institute
for Biophysical Chemistry
Am Fassberg 11, 37077 Göttingen



Prof. Dr. Alexander Levitzki

Department of Biological Chemistry, Hebrew University of Jerusalem, Israel

"Targeting the immune system to cancer"

The cause of most cancer deaths is incurable dissemination of cancer cells into vital organs. Current systemic therapies for disseminated cancers provide limited efficacy and are often accompanied by toxic side effects. We have recently shown that local application of EGFR-targeted PolyIC eradicates pre-established EGFR-overexpressing tumors. Here we demonstrate for the first time the high efficiency of systemic application of PolyIC/Melittin-Polyethleneimmine-Polyethyleneglycol-EGF (PolyIC/MPPE) in combination with human immune cells. Cancer targeted activation of immune cells was examined in vitro and in vivo following transfection with PolyIC/MPPE. The therapeutic efficiency of the strategy was then examined on disseminated EGFR overexpressing tumors grown in SCID mice. Intravenous delivery of PolyIC/MPPE followed by intraperitoneal injection PBMC induced the complete cure of SCID mice with pre-established disseminated EGFR overexpressing tumors, with no adverse toxic effects. The immune cells and the cytokines they produce are localized to the tumor site of the treated animal and contribute decisively to the demise of the tumor cells.
The immune system homes to the tumors, due to the chemokines produced by the internalized PolyIC. The EGFR homing vector loaded with PolyIC can be used to treat and possibly cure patients with disseminated EGFR overexpressing tumors. The possibility of adopting this strategy to treat other tumors that express a protein capable of ligand induced internalization is discussed.

Host: Donna Arndt-Jovin