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B-aggressive lymphoma proteins BALs and IFN γ /STAT signaling pathway: New drug targets in highly chemo-resistant tumors

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The B-aggressive lymphoma proteins BALs have been recently identified as a risk-related gene product in aggressive diffuse large B-cell lymphoma (DLBCL) and Prostate cancer (PCa). BALs are constitutively expressed in a subset of high-risk DLBCLs with an active host inflammatory response and have been suggested to be associated with interferon-related gene expression. We have previously demonstrated that BAL1 acts as a novel oncogenic survival factor in high-risk, chemo-resistant, diffuse large B cell lymphoma (DLBCL) and in metastatic PCa. Our study provides first evidence that the enzymatic activity of BALs is required for survival of diffuse large B cell lymphoma (DLBCL) and mPCa cells. Our results show for the first time that BAL1 represses the anti-proliferative and pro-apoptotic IFN γ -STAT1-IRF1-p53 axis and mediates proliferation, survival and chemo-resistance in DLBCL and mPCa. As a consequence constitutive IFN γ -STAT1 signaling does not lead to apoptosis but rather to chemo-resistance in tumors overexpressing BALs. The present study further suggests that the combined targeted inhibition of STAT1, BAL1 and BAL2 could increase the efficacy of chemotherapy or radiation treatment in DLBCL, prostate cancer and other high-risk tumor types with an increased STAT1 signaling.

Biography

Rosalba Camicia has completed her Ph.D. from the University of Zurich, International Graduate School in Life Science, and Postdoctoral studies from Oxford University Radcliffe Department of Medicine. She was Visiting Scientist at the Department of Bioengineering and Applied Science (DEAS), Harvard University, Cambridge, MA, USA where she helped to develop a new method of molecular drug delivery from electro-polymerized micro- and nano-patterned surfaces. She has published 6 papers in reputed journals and has been serving Zurich Cancer Network, European Association for Cancer Research (EACR), University of Oxford Club and NHS Trust as a Member.

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