# ImmunoTools *special* Award 2014

**Melanie R. Hassler,** PhD

Lab: Dr. Gerda Egger

Clinical Institute of Pathology, Medical University of Vienna
Währinger Gürtel 18-20, 1090 Wien

## HDAC1 as oncosuppressor in the development of NPM-ALK positive lymphoma

Histone deacetylases are enzymes which remove acetyl groups from both histone and non-histone proteins. They fulfill important chromatin regulatory processes and their action can lead to compaction of chromatin and a repressive chromatin state. Knock-out studies of individual HDACs have provided insight into their function during development, but their role in cancer-associated processes has also been extensively explored. In particular, inhibition of HDAC activity has been shown to successfully induce differentiation, apoptosis and growth arrest in malignant cells. Furthermore, numerous clinical studies are currently being performed with HDACi in hematopoietic diseases and the HDACi vorinostat and romidepsin have been approved by the FDA for the treatment of cutaneous T-cell lymphoma (CTCL), a class of non-Hodgkin lymphoma characterized by involvement of the skin.

Due to the high success rates of HDACi in lymphoma treatment, we have analyzed the effect of HDAC inhibition on the development of the NPM-ALK positive Anaplastic Large Cell Lymphoma ($ALK^+$ ALCL), an aggressive $CD30^+$ T-cell lymphoma mainly found in children and young adults that might potentially benefit from HDAC inhibition. Whereas our *in vitro* data demonstrate that treatment with a class-specific HDACi leads to apoptosis of ALK+ ALCL cell lines, our *in vivo* data surprisingly show that T-cell specific deletion of HDAC1 in a mouse model of NPM-ALK massively accelerates lymphoma development suggesting different mechanisms of action which must be explored fully to determine the therapeutic validity of HDACi in this disease.

In order to explore the remarkable oncosuppressive role of class 1 HDACs in NPM-ALK lymphoma progression, it is essential to characterize emerging lymphomas regarding their immunophenotype. ImmunoTools' anti-mouse flow cytometry antibodies would be optimally suited for this purpose, as determination of cell surface markers on lymphoma cells will give us hints about the developmental T-cell stage of which lymphomas are deriving in our model, and will allow to classify and distinguish arising lymphomas.

As a future prospective, our data might also have direct implications for the possible incidence and evaluation of beneficial and adverse effects of HDACi on different stages of T development.

**ImmunoTools** *special* AWARD for **Melanie R. Hassler** includes 25 reagents

FITC - conjugated anti-mouse CD3e, CD4, CD8a, CD11b, CD25, CD44, CD45, CD45R, CD62L, Gr-1, NK-cells, a/b TCR, g/d TCR, isotype control IgG2b,

PE - conjugated anti-mouse CD3e, CD4, CD8a, CD25, CD44, a/b TCR, g/d TCR,

APC - conjugated anti-mouse CD3e, CD4, CD8a, CD25

DETAILS more AWARDS