Active immunization with a multi-peptide B cell vaccine, targeting Trastuzumab and Pertuzumab binding sites, prevents the formation of Her-2/neu expressing lung metastases

Joshua Tobias[1], M. Drinić[1], S. Högler[2], A. Schmid[1], E. Garner-Spitzer[1], L. Kenner[4], M. Kundi[2,5], C. C. Zielinski[6], U. Wiedermann[1]
([1, 3, 4, 5, 6] Medical University of Vienna, Vienna, Austria; [2] University of Veterinary Medicine, Vienna, Austria)

Background

- We have developed a B cell-based hybrid peptide Her-2/neu vaccine (HerVaxx) comprising Trastuzumab's binding site.
- In clinical evaluations HerVaxx has shown to reduce primary tumor growth by inducing polyclonal anti-tumor immune responses and immunological memory.
- Trastuzumab and Pertuzumab improve the clinical outcome of patients with Her-2/neu positive metastatic breast cancer.

Aim

- To evaluate the capacity of a multi-peptide B cell vaccine containing HerVaxx and the mimotope/B cell epitope of Pertuzumab in preventing metastases formation in a breast cancer mouse model.

Methods

- Active immunization with the multi-peptide vaccine and tail-vein injection with mammary carcinoma cells expressing human Her-2/neu
- Assessment of the level of metastasis in the mice lungs by histological evaluations.

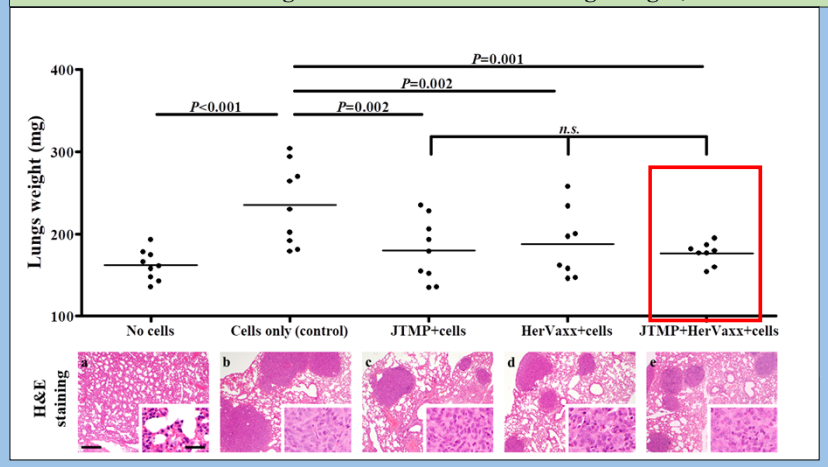
Conclusions

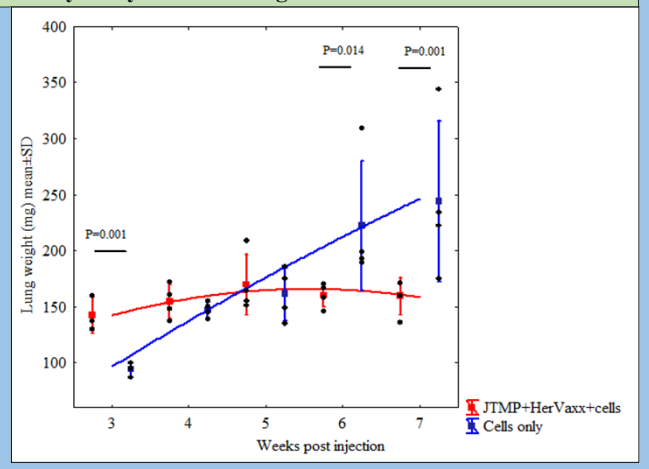
- Our multi-peptide B cell Her-2/neu vaccine may serve as a secondary intervention in adjuvant settings to prevent tumor spread
- Combination therapy involving targeting PD-L1 may potentially result in the remission of the metastases,
- An alternately targeting Her-2/neu and PD-L1 could be adapted to the stage and progression phase of the disease.

Results

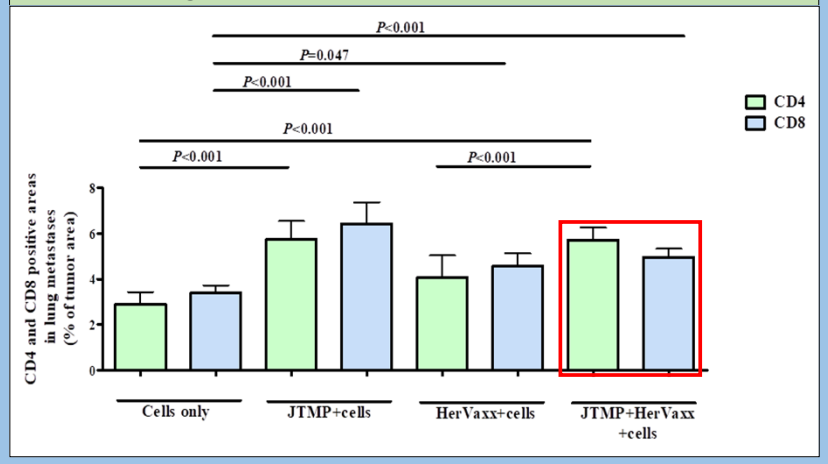
Vaccination with the multi-peptide vaccine (HerVaxx+JTMP) results in:

Significant reduction of the lungs weight, further enhanced by delayed immunological effect

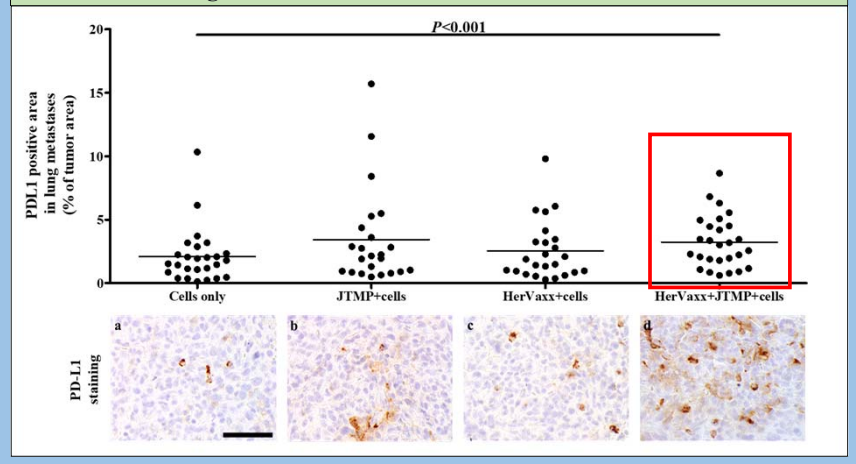




Significant infiltration of CD4+ and CD8+ T cells



Significant increase of PD-L1 in the metastases



References
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Contacts:
joshua.tobias@meduniwien.ac.at
ursula.wiedermann@meduniwien.ac.at