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Project description

Thymoma: Epidemiology, histotyping, molecular features and survival

In collaboration with the International Thymic Malignancies Interest Group (**ITMIG**), we analyse the retrospective ITMIG database (<https://ccehub.org/itmig>) concerning e.g.: epidemiology of thymic malignancies; relation of histotype and survival; correlation of the findings from the database with our own collective. Furthermore on the basis of our own patient collective, we perform histo-morphological and molecular analysis of normal and neoplastic thymic tissue to e.g. retrieve the prognostic value of different architectural patterns under translational perspective.

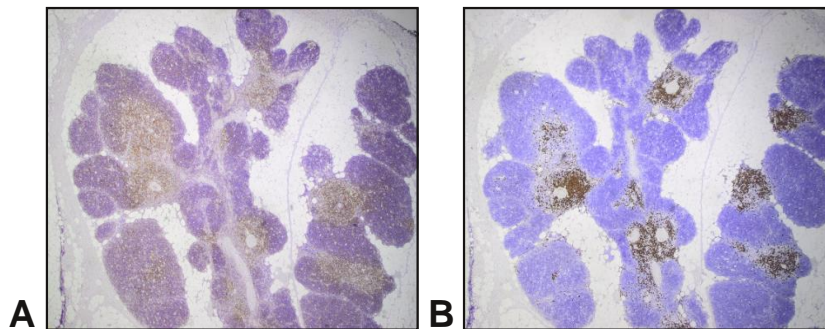


Fig.: Example for different patterns of immunohistochemical stainings

A) Thymic tissue stained for T-cell-marker (CD3) and B) the same tissue stained for a B-cell-maker (CD20). The images were matched manually and by computer.

Thymic neuroendocrine carcinoma: Morphological and molecular analysis with regard to grading

Several Morphological (conventional staining and immunohistochemistry) and molecular (DNA and RNA) analysis of thymic neuroendocrine carcinoma are performed to enhance our knowledge of the correlation of different immunohistochemical patterns and molecular features to survival.

Current MD-student: Benedict Griessmann

Digital Image Processing: Semi-automatic and automatic digital image analysis

Different image analysis methods are applied to retrieve certain patterns and phenotypes in images of single cells and of histological slides. This project aims to establish several tools like automatic segmentation and evaluation of cells within a slide, which could be applied as a kind of toolbox for future projects.

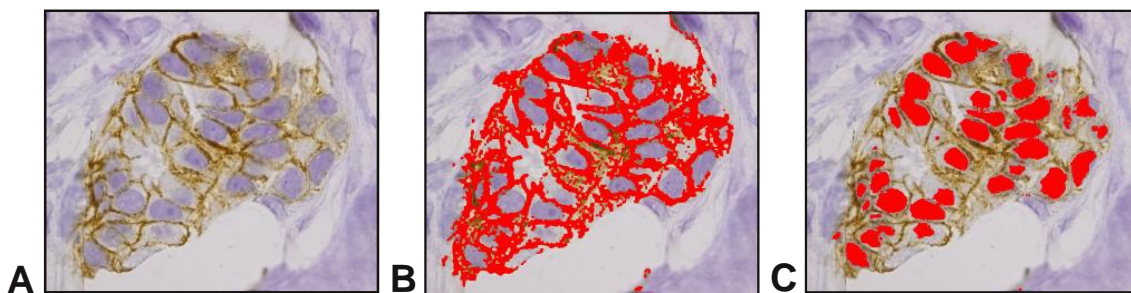


Fig.: Example of automatic segmentation of immunohistochemically stained slides

A) Tissue immunohistochemically stained for a membrane protein (Her2neu). B) Automatic, colour-based segmentation of the brown stained membranes within the image. C) Detection of positive cells on basis of the results from B) and automatic segmentation of the nuclei.