



University of Information Technology and Management in Rzeszow, Poland

**Title: Evaluation of the stroma - a necessary parameter in the effective diagnosis of cancers. Example of papillary thyroid carcinoma.**



Author Name: **Konstantin Maksin**

Co-Authors: **Andrzej Kluk\***, **Magdalena Lewandowska\*\***, **Elżbieta Urańska\*\***, **Sebastian Wołoszczuk\*\*\***, **Izabela Cichocka\*\*\*\***, **Łukasz Piątek\*\*\*\***.

\* Poznan University of Medical Sciences, Poznan, Poland

\*\* Department of Pathology, Faculty of Medicine Pomeranian Medical University, Szczecin, Poland

\*\*\* Faculty of Physics, Adam Mickiewicz University, Poznan, Poland

\*\*\*\* University of Information Technology and Management in Rzeszow, Poland

Recognition of true stroma consistency is necessary to diagnose the right cancer prognosis. In stromal functionality, like in tumor nature, age plays an important role. One of the aging mechanisms is genetic material damage. Damaged cells acquire paracrine features resulting in various secreta (proinflammatory, stimulating growth or angiogenesis, etc.) favoring the development of malignant tumors.

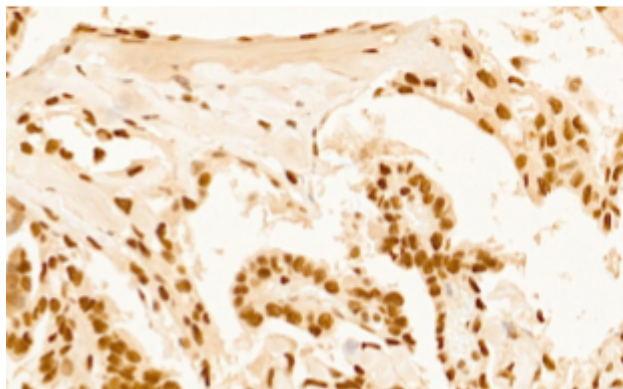
The stroma-cell damage phenomena are not included in the routine histopathological diagnostics and pathologists' knowledge is limited in this respect. In my research, I used DNA damage markers (53BP1,  $\gamma$ H2A.X) to assess papillary thyroid cancer (PTC) and non-invasive thyroid neoplasm with papillary-like nuclear features (NIFTP) stroma. I aimed at showing a correlation between the damaged stroma cells and the type of tumor.

PTC constitutes a significant diagnostic problem. For many years, cell nuclei images were considered the key morphological parameter of PTC. Within the last few years, NIFTP were distinguished and included in the WHO classification (2017). That allows for avoiding onerous treatment in a large percentage of cases, but simultaneously makes PTC diagnostics more complicated in terms of qualifying patients to the risk group.

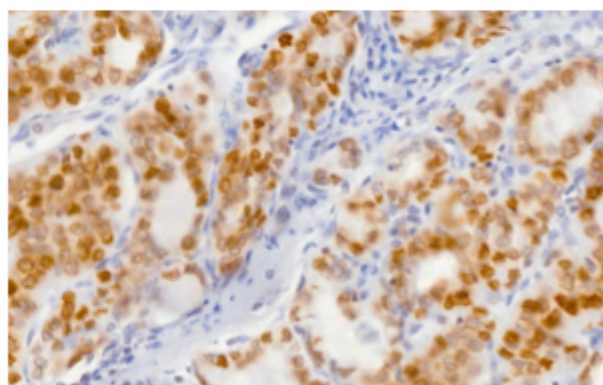
The research results determine the difference between the number of damaged fibroblasts in the PTC stroma and the stroma of NIFTP. Expression of 53BP1 and  $\gamma$ H2A.X was significantly larger in the case of PTC and there was a connection between malignancy and stroma consistency. Moreover, in the case of PTC there was strong statistical

interdependence between DNA damage markers expression and the summary dose of I131 in iodine therapy after thyroidectomy during 5 years observation, which suggests that interpretation of stroma condition may be required in cancer prognosis.

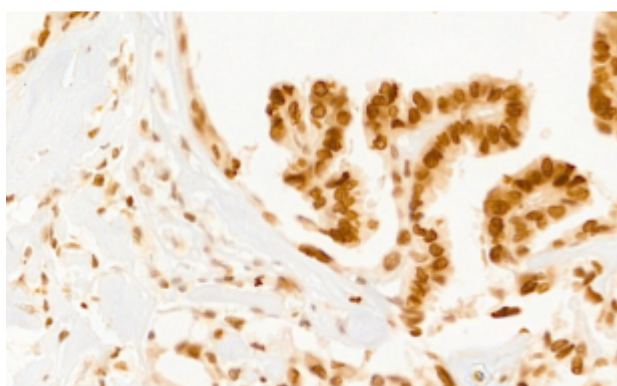
High expression of  $\gamma$ H2A.X in PTC stroma



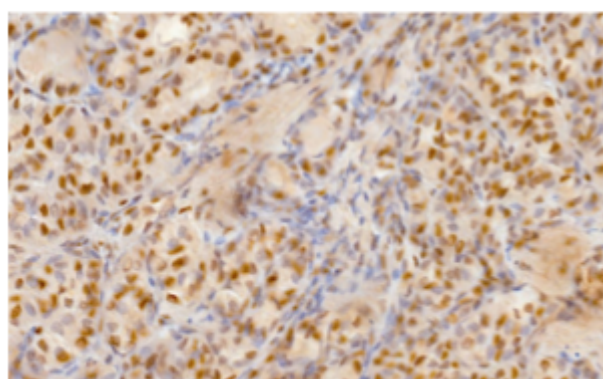
Low expression of  $\gamma$ H2A.X in NIFTP stroma



High expression of 53BP1 in PTC stroma



Low expression of 53bp1 in NIFTP stroma



### Biography

Dr. Konstantin Maksin obtained his PhD from the Poznań University of Medical Sciences (PUMS), Poland, in 2017 for the dissertation entitled: *Impact of Biological Age of Cells on the Development of Papillary Thyroid Cancer*. The research method he proposed can be highly significant for cancer prognosis. He has published in a number of journals, including: *Cancer Letters*, *Oncotarget*, *Cell Death Disease*, *Free Radical Biological Medicine*, or *Clinical and Experimental Metastasis*.

### Presenting author details

Full name: Konstantin Maksin

Contact number: +48669078915

Email id: kmaksin@wsiz.rzeszow.pl

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