Supplementary Material: Analytical methods

FTIR-spectroscopic and LA-ICP-MS imaging for combined hyperspectral image analysis of tumor models

A. Balbekova[a], M. Bonta[a], S. Török[b], J. Ofner[a], B. Döme [b,c,d,e], A. Limbeck[a] and B. Lendl[a]*

[a] Institute of Chemical Technologies and Analytics, Technische Universität Wien, Getreidemarkt 9/164, 1060 Vienna, Austria. E-mail: bernhard.lendl@tuwien.ac.at
[b] National Korányi Institute of Pulmonology, Piheno út 1, 1121 Budapest, Hungary
[c] Division of Thoracic Surgery, Department of Surgery, Comprehensive Cancer Center, Medical University of Vienna, Wahringer Gurtel 18-20, 1090 Vienna, Austria
[d] Department of Biomedical Imaging and Image-guided Therapy, Division of Molecular and Gender Imaging, Medical University of Vienna, Wahringer Gurtel 18-20, 1090, Vienna, Austria
[e] Department of Thoracic Surgery, Semmelweis University and National Institute of Oncology, Rath Gyorgy ut 7-9, H-1122, Budapest, Hungary

Sample preparation and materials

Fluorescent staining

An adjacent cut for histological investigation was deposited on a glass substrate and stained for apoptotic cells. Apoptotic cells were labelled with In Situ Cell Death Detection Kit (Sigma Aldrich, Steinheim, Germany, Cat. No.: 11 684 795 910) according to the protocol of the manufacturer. Co-staining of the nuclei was performed with Hoechst 33342 (Molecular Probes, Eugene, OR, USA) and tumor sections were covered with Prolong Gold Antifade Reagent (20 µL, Invitrogen, Carlsbad, CA, USA; Cat. No.: P36930 . Slides were scanned by TissueFAXS (TissueGnostics GmbH, Vienna, Austria).

Results and discussion

Figure S1A shows a light microscopic image of the tumor cross section (sample S1) prepared for IR and MS measurements. Dead tissue appears as inhomogeneous dark structures. The fluorescent image of the adjacent thin section of the tumor stained for apoptotic cells is given in Figure S2B.

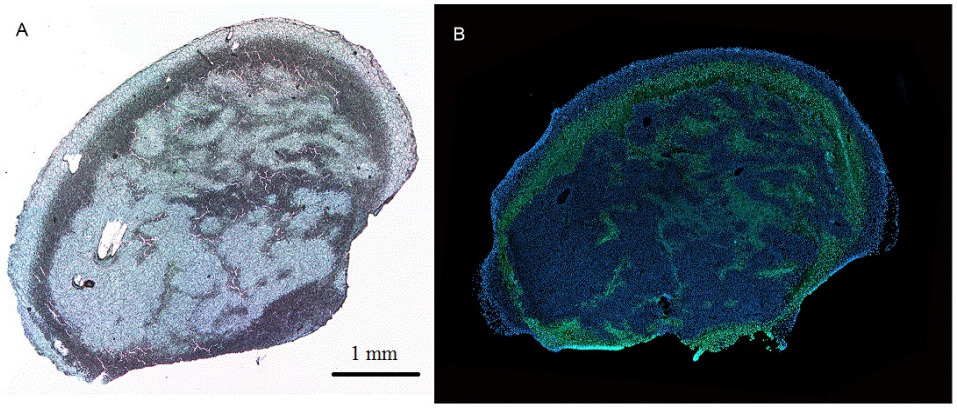

Figure S1. Optical microscopy image of the tumor tissue sections: (A) Image of the sample S1 prepared for IR and MS measurements with a scale bar. (B) TUNEL stained image of the adjacent section. Apoptotic cells (green) shown by TUNEL staining, counterstained with Hoechst 33342 (blue).

Staining revealed apoptotic areas (Figure S1B, light green); they partially correlated with dark grey areas in the light microscopic image made from the thin-cut used for multisensor measurements (Figure S1A). Differences between those two specimens can be explained by shrinking of the tissue during the staining procedure.