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*Editorial*

# Immunohistochemical Expression Volume II

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One of the most used ancillary techniques by surgical pathologists in clinical practice is immunohistochemistry (IHC) that, through an antibody–antigen reaction, allows for the detection of specific proteins at the cellular level. IHC was born in 1941 when some colleagues first used fluorochrome-conjugated antibodies in their practice [1], which allowed the antigen–antibody binding complex to be identified under an optical microscope. In the subsequent decades, this method was extensively used to identify the cell line of origin of otherwise poorly differentiated cells and to provide clinicians with prognostic and predictive factors of response to treatment of solid tumors.

The dual diagnostic and prognostic/predictive role of IHC is emphasized in this Special Issue, which represents Volume II of a past and very successful Special Issue, and provides readers with a deeper knowledge of the potential applications of this technique in the diagnostic approach to human neoplastic and inflammatory diseases.

Five original studies and one review paper are included in the present Special Issue.

Lin et al. investigated the expression pattern and distribution of Quiescin Q6 sulfhydryl oxidase 1 (QSOX1) in the pregnant uterus, placenta and embryo during mouse pregnancy [2]. This protein has an enzymatic function, catalyzing the oxidation of the sulfhydryl group to disulfide bond, and a wide tissue expression pattern [2]. The authors found a diffuse expression of QSOX1 in the junction zone, labyrinth and chorionic plate in the placenta. QSOX1 was also consistently immunoexpressed in nervous tissues (spinal cord, lens, midbrain, cerebellum, medulla oblongata) and muscles (heart, intercostal muscle, diaphragm, tongue, extrinsic ocular muscle) of mouse embryos [2].

Broggi et al. studied the prognostic role of Serine and Arginine-Rich Splicing Factor 1 (SRSF1) on a series of 85 cases of uveal melanoma (UM) [3]. UM is a relatively rare malignant tumor arising from the melanocytes of the uveal tract, characterized by apparently indolent biological behavior but invariably characterized by the onset of liver metastases within 10–15 years of diagnosis [4,5]. Little is known about the causes of this peculiar clinical course and scientific research is focused on the identification of factors able to stratify the prognosis of these patients, predicting metastatic risk. The authors found that high SRSF1 immunohistochemical expression correlated with higher microvessel density (MVD), higher metastatic risk and shorter metastasis-free survival, suggesting a poor prognostic role and a pro-angiogenic function of this protein in UM [3].

Similarly, the prognostic role of tumor-infiltrating lymphocytes (TILs) and their relationship with other clinico-pathologic features in HER-2-positive breast cancer was investigated by Angelico et al., who found that the levels of TILs were positively related to increased Ki-67, to estrogen and progesterone receptor expression and to the response to both adjuvant and neoadjuvant therapy [6].

Vermiglio et al. measured, via immunofluorescence images, the diameter and the cross-sectional area of ipsilateral and contralateral masseter muscle fibers in unilateral posterior crossbite to study whether this malocclusive disease was associated with hypertrophy or hypotrophy of the muscle. They found larger-fiber diameters of contralateral masseter



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than those of the ipsilateral muscle, suggesting that hypertrophic changes occurred in the contralateral muscle [7]. Similarly, in another study, Vermiglio et al. found overexpression of Laminin, Collagen IV and MMP-9 in the extracellular matrix of the contralateral masseter muscle, while no differences were observed with respect to MMP-2 expression [8].

Lastly, Lo Giudice et al. reviewed the clinical role of SRSF1 in human cancer [9]. SRSF1 is a splicing factor, which regulates several cellular processes, including cell cycle, proteolysis, nucleotide repair, p53 pathway, apoptosis, acid nucleic duplication and degradation [9]. It has been hypothesized that SRSF1 acts as tumorigenic factor through abnormal alternative splicing [9,10].

Tumorigenesis and tumor growth of different human neoplasms, such as glioblastoma, lung, breast, colon and prostate cancer, are regulated and enhanced through different mechanisms by SRSF1, which also seems to be involved in tumor chemo/radio-resistance [9].

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