

## Special issue of Radiology and Oncology on experimental and translational oncology

Substantial progress in research of cellular and molecular mechanisms of development and progression of cancer provides new insight to malignant diseases, enables the application of new tools in diagnosis and treatment of human cancers and ultimately improves the clinical care of oncology patients. To foster the transfer of knowledge from basic laboratories to clinical practice, Association of Radiology&Oncology organises international conferences on experimental and translational oncology, gathering young and senior scientists to present basic and clinical achievements in oncology and related sciences. The 7th Conference on Experimental and Translational Oncology, held in Portorož, Slovenia, from April 20-24, 2013, was attended by 170 participants from 28 countries. Besides topics, being discussed already at previous conferences, such as Mechanisms of tumour progression, Biomarkers and New drugs and therapeutic targets, this conference additionally addressed Biomedical applications of electroporation and Cellular therapy. The event was co-organized by COST TD 1104 Action. Selected papers covering some of the topics of the conference are published in this issue.

The important role of proteases and other enzymes in tumour progression has been stressed by several speakers. Proteolytic function is crucial in tumour invasion and migration, proteases regulate the apoptosis of tumour cells and mediate tumour directed cytotoxicity of T cells and NK cells. Additionally, the components of tumour proteolytic system can be used as biomarkers to allow molecular classification, early diagnosis and prognosis of human malignancies and to predict the response to anticancer drugs. In the current issue Schmitt et al. presents kallikrein related peptidases as promising biomarkers in female and male reproductive organ malignancies. Besides proteases, growth factors, hormones and cytokines have also been presented as factors involved in regulation of tumour development and growth. Moreover, uroplakins, glycosylated membrane proteins also consist a group of potential tumour biomarkers and, as shown in a paper of Zupančič and Romih, their localisation in urothelium may provide diagnostic information in bladder cancer. MicroRNAs are another group of molecules which underwent extensive investigation during last decade regarding their role in cancer biology. As presented by several speakers they can modulate mRNA expression and translation of various tumour associated genes and some of microRNAs have already been identified as prognostic and diagnostic markers. The paper of Hauptman and Glavač provides the prospects of micro RNA and long non-coding RNA in diagnostics and therapy of cancer.

The section New drugs and therapeutic targets was focused on the development and application of new protease inhibitors in anticancer therapy as well as on improved use of the existing chemo- and radio-therapeutics. The latter is evident from the paper of Filipović et al., where new analogues of cisplatin with improved pharmacological characteristics are presented, and from the paper of Jurdana et al., describing the effect of ionizing radiation on human skeletal muscle precursor cells. Similarly, Trošt et al., describe the altered gene expression and molecular mechanisms involved in the modulation of cisplatin cytotoxicity by biological drug erythropoietin.

Cellular therapy is another rapidly growing area in oncology which can provide exciting new approaches in cancer treatment. Besides the stimulation of the cytotoxicity of T cell and NK cells the speakers emphasized the potential of mesenchymal stem cells in cancer therapy. Encouraging results, being obtained in brain cancer are partially addressed in a paper of Podergajs et al. describing a role of growth factors bFGF and EGF in growth of glioblastoma stem-like cells.

At last, an important part of the conference was dedicated to biomedical applications of electroporation. Electrochemotherapy is a good example of successful translational research of joined contribution of basic and clinical scientists. The advantage of electrotransfer of genes and chemotherapeutics have been

demonstrated by several groups, a part of these studies is published in this issue including a paper of Wichmann Mathiessen et al. on application of electrochemotherapy in patients with breast cancer, the case study of Scelsi et al. on patients with advanced Merkel cell carcinoma of head and neck and the case study of Campana et al. on patients with gastric cancer.

The conference deserved very positive response in broad scientific community what confirms the concept of Association of Radiology and Oncology to promote translational research and to foster cooperation between basic and clinical scientists.

Janko Kos  
Gregor Serša  
Tamara Lah Turnšek