

4th Jagiellonian Symposium on Advances in Particle Physics and Medicine



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Invited talk: Quantitative analysis of tumor hypoxia in nuclear medicine imaging and therapy

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Tumour hypoxia is a critical hallmark of cancer, which is associated with tumour aggressiveness and resistance to multiple therapies. PET imaging methods have been developed for noninvasive visualization of tumour hypoxia and the emerging radioligand therapy is expected to overcome the limitation of conventional external beam radiotherapy in cancer treatment. However, it is not straightforward to interpret the PET imaging signals for tumour hypoxia due to the complex tumour microenvironment. On the other side, the influence of hypoxia on radioligand therapy is more complex than the penetration distance of therapeutic radioisotopes. This talk will give an overview of computational methods including pharmacokinetic modelling and reaction-diffusion modelling in the interpretation of hypoxia in PET imaging and radioligand therapy. The combination of experimental data and computational modelling may accelerate the development of hypoxia-related nuclear medicine imaging and therapy.

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