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## Theranostics: a key component of personalized medicine

The development of new techniques combining molecular imaging with targeted therapies contributed to the emergence of the concept of “theranostics” in clinical applications. Such an approach used for example in the diagnosis and treatment of neuroendocrine tumors with a molecule (or edotreotide DOTATOC) allows to specifically label the tumor cells for imaging by labeling  $^{68}\text{Ga}$  followed by targeted therapy by the same molecule labeled  $^{177}\text{Lu}$  transmitter of alpha particles for the destruction of targeted cells. This technique led to the release on the market of a commercial product in record time thanks to the exceptional results of clinical studies that showed a highly significant superiority of this technique over conventional treatments.

Several similar approaches are being validated in other oncological applications. A peptide specific surface antigen of prostate cells (PSMA) identifies the tumor foci and metastasis of prostate carcinomas and potentially destroy by marking of the same molecule of  $^{177}\text{Lu}$ . Currently clinically validated this technique can dramatically change treatment approaches for prostate cancer.

With the combination of therapy and imaging, it becomes possible to accurately target patient's markers predicting the response to treatment. This is the mind-founded principle of personalized medicine. This personalized approach is more expensive than conventional treatments, it is necessary to point with certainty which patients are likely to benefit and show a significant response. This is what constitutes what is referred now as high-precision medicine.

The development of molecular imaging services to the concept of personalized medicine based on highly specialized technical diagnostics and molecular therapy represents one of the priorities of our vision for the future of molecular imaging.

**Author:** Prof. RATIB, Osman (University Hospital of Geneva)

**Presenter:** Prof. RATIB, Osman (University Hospital of Geneva)