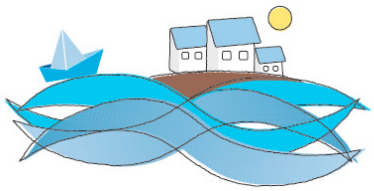

Mediterranean Thematic Workshops in Advanced Molecular Imaging

Contribution ID: **56** Type: **Invited Virtual**

Dedicated imaging systems and high resolution brain scanner, including PET/MR

Tuesday 6 September 2022 11:30 (30 minutes)

The paradigm shift in medicine from treatment of acute and/or advanced disease to very early diagnosis and even prevention in cancer, neurodegenerative as well as cardiac fields puts more stringent requirements on PET imaging both in terms of sensitivity as well as specificity. Likewise, recent developments in Targeted Radionuclide Therapy (TRT) where theragnostic pairs are used to tailor a personalized treatment in terms of dose using PET initial imaging and subsequent alpha or beta emitting radionuclides have introduced a clear and urgent need for more widespread and accurate PET imaging. Standard clinical scanners are sub-optimal both in terms of cost that limit widespread use as well as performance. Standard clinical PET scanners use sets of tightly arranged rings of detector modules, usually consisting of scintillation crystals optically coupled to light sensors with readout electronics, cover only a limited solid angle, and just a small few percent fraction of the positron decays is registered.
In this talk, we present a clinical overview of the need for high sensitivity and/or high resolution scanners in specific clinical scenarios.
Two specific scenarios at the two ends of the spectrum will be covered: dedicated brain PET with ultra-high spatial resolution in the context of neurodegerative and neurological diseases; and long axial high sensitivity very fast timing whole body PET in the context of cancer. Designs and preliminary results of the two systems will be presented and potential clinical significance discussed.

Topic Selection

Presenter: EL FAKHRI, Georges (MGH Harvard Medical School)

Session Classification: Other techniques/ analysis

Track Classification: Other techniques and analysis