

## AbstractID: 11891 Title: Imaging Technologies - From Cells to Humans

Molecular Imaging is a promising new approach that facilitates early stage disease diagnosis and evaluation of treatment effectiveness. It spans multiple technologies that range from low energy optical photons, to high energy ionizing radiation and from single cell analysis to small animals and whole body human imaging. The unifying concept is the use of specific molecular markers that are the signatures of the underlying molecular processes.

In this presentation, we will discuss the design of technologies that are used for handling and detecting the full range of possible signal, some of their strengths and practical limitations, and will provide some examples of possible applications. We will start from optical imaging in the visible wavelength and its use in cell cultures and preclinical in-vivo models. Further, we will discuss radionuclide technologies and their use for preclinical drug screening in the single cell level, to clinical human studies.

### Learning Objectives:

1. Understand the origin of the created optical and radionuclide signal
2. Understand the nature of signal propagation in different media
3. Understand the detection limits of different imaging modalities