

In vivo Luminescence

An introduction to In vivo Luminescence

In vivo represents a profoundly useful area of biophotonic research that allows non-invasive imaging of whole organisms from plant seedlings through transgenic mice to human patients. It is of interest to study and record the bioluminescent emissions from organisms in their natural environment as well as in controlled laboratory conditions. Some of the individual biomolecules that give rise to bioluminescence have been identified, isolated, studied, often genetically coded, to be put to use across a range of applications including genomics, proteomics and pathophysiology. In particular, ultra-weak emissions of living systems have the potential to be used as a means of monitoring the status of organism's cells, tissues and whole organs. The possibility of acquiring a whole body image within one exposure cycle can significantly shorten the subject study time. If a longer series of images is needed this could mean several long exposures (1-10 min) and subsequent image stitching to include all parts of the specimen in it. Another key aspect of In vivo luminescence imaging is spatial resolution which depending on the sample studied can be the crucial factor for identifying discreet anatomic locations and sites exhibiting certain metabolic activity or quiescence.