



The Singapore Bioimaging Consortium (SBIC)  
presents a seminar

on

**“New Tools and Animal Models for Whole Body Optical Imaging and  
Translation into the Clinic : Our experience with Optical Image  
Guided Surgery”**

**Speaker: Prof Clemens Löwik**  
**Head, Experimental Molecular Imaging**  
**Leiden, University Medical Center**  
**The Netherlands**

**Date : Tuesday, 13 Aug 2013**  
**Time : 11.00am – 12.00pm**  
**Venue : Aspiration Theatre**  
**30 Biopolis Street**  
**Level 2M, Matrix Building**

**Abstract**

Whole body fluorescent imaging and bioluminescent imaging are now widely applied in small animals to study all kinds of biological and molecular processes like i.e. gene expression, tumor progression and metastasis, apoptosis, inflammation, angiogenesis, proteolysis and to follow trafficking, differentiation and fate of cells (i.e. stem-, immune- and tumor cells). This has been done mainly by using gene reporters expressing fluorescent proteins or luciferases. Recently new mutated red shifted fluorescent proteins and codon optimized and mutated luciferases have been developed making optical imaging more sensitive and offering the possibility to use dual gene reporters. Apart from new “smart gene reporters” there has also been a great development in injectable near infrared fluorescent (NIRF) probes, especially for tumor detection. These NIRF probes can either be targeted or enzyme-cleavable. These new developments has opened up the possibility to apply NIRF imaging in the clinic especially to image tumor tissue and to identify sentinel lymph nodes during operation. In the current presentation preclinical applications of new multi-modal gene reporters and NIRF probes to image all kinds of biological processes and applications of NIRF probes in image-guided surgery will be discussed.

**About the Speaker**

Clemens Löwik (1957) is a full Professor in Experimental Molecular Imaging at the department of radiology at Leiden University Medical Center in the Netherlands. He was closely involved in the development and clinical translation of new bisphosphonates for treatment of diseases characterized by bone loss and the

discovery of sclerostin, a natural inhibitor of bone formation and new specific drug target for osteoporosis. His current research consists of 4 major research lines :

1. Development of new multi-modal gene reporters to follow stem cell migration, differentiation and fate;
2. Mechanisms involved in bone metastasis of breast cancer;
3. Intra-operative optical imaging guided surgery;
4. Imaging and targeting necrosis.

Within his research, he is implementing non-invasive molecular imaging technologies in mice and rats based on bioluminescence and fluorescence, CT and MRI. He is one of the pioneers and world expert on whole body optical imaging technologies based on bioluminescence and fluorescence. He is one of the founders of the European Society for Molecular Imaging and from 2010-2012 he was president of ESMI. He has published 217 original papers and is (co) inventor of 5 patents.

***--- Admission is free and all are welcome ---***