ESMI @ facebook

Facebook has just celebrated its 10th anniversary and also the ESMI is now on facebook ;-)!

We aim to provide you with another possibility to stay connected with the ESMI. Not only to follow our activities but even more to comment and post, to like or share any relevant news, pictures, publications, ideas, funny things, though-provoking questions [...].

We are excited about this additional channel but – as usual – rely on your active participation to create an active forum.

The official.ESMI facebook page shall not just mirror the webpage – take a look and let us know if you like it! It is a public facebook page so that everybody can see what is posted but only registered facebook users can like, comment, post,share...

Find us on Facebook

www.facebook.com/official.ESMI
ESMI Award for excellent PhD thesis goes to…

Laila Ritsma for her thesis on “High resolution in vivo imaging of metastasis; Seeing is believing”

“PhD award winner Laila Ritsma advanced in her thesis research our fundamental understanding of cancer metastasis, through elegant development on new tools for molecular imaging. To achieve that, she developed a novel window for longitudinal intravital imaging of internal abdominal organs, thus overcoming the limitations of existing preparations. Using this window, Dr Ritsma could detect metastatic liver colonization initiated from a single cell. These studies revealed a new pre-micrometastatic stage in which the tumor cells show enhanced migratory behavior. She further developed tools for spatially correlating the in vivo imaging with cryosection immunolabeling, allowing her to identify cells in the microenvironment that may influence the dynamics of metastasis.”

Michal Neeman, chair of the Award Committee

“I have no doubts that Laila will have a bright future in science ahead of her, and I expect that she will become a future leader in the field. Impressed by her skills, her intelligence and working spirit, I rank her to the best 5% of PhD students in the Netherlands. The ESMI PhD Award will help Laila to get exposure in the imaging field and will help her to initiate collaborations with other researchers which is important for her future career. Moreover, she can contribute to the success of the annual ESMI meeting by presenting her exciting new data.”

Jacco van Rheenen, supervisor

We are very much looking forward to hear more about Laila’s work in the Award Plenary Lecture in the scope of the EMIM 2014 in Antwerp, 4-6 June.

That’s new in 2014 – PhD Award

Only one ESMI award for excellent PhD thesis per year! Collection deadline is 31 December; applications can be submitted throughout the year!

Read more about application procedure and eligibility criteria at www.e-smi.eu/index.php?id=2451
European Molecular Imaging Meeting – EMIM 2014

**ForSight**

**European Molecular Imaging Meeting 2014**

4-6 June at the Stadsschouwburg in Antwerp, Belgium

We warmly invite you to Antwerp for the 9th annual meeting of the ESMI!

**General schedule** – start and end of the EMIM

**Start of the EMIM 2014 | Wednesday 4 June**
- 08:30h Industry Sessions
- 12:30h Educational Sessions
- 16:00h Opening Ceremony and Keynote Lecture by Hans Clevers

**End of the EMIM 2013 | Friday 6 June**
- 18:00h YIA final, Highlight Lecture by Markus Schwaiger, Awarding Ceremony

**Plenary Speakers**

Opening Lecture by **Hans Clevers** - Utrecht on “Visualizing stem cells in vivo; growing stem cells in vitro”

**Vladislav Verkhusha** - New York on “Engineering of bacterial phytochromes for in vivo imaging”

**Seth Grant** - Edinburgh on “Synapse complexity”

**Guus van Dongen** - Amsterdam on “Molecular imaging with (radio) labeled drugs”

Highlight Lecture by **Markus Schwaiger** - Munich

**ESMI Award Plenary Session**

ESMI award winner 2014 (announcement during Opening Ceremony) & PhD award winners: **Laila Ritsma** on “High resolution in vivo imaging of metastasis; Seeing is believing” - further name to be announced

**10 February 2014 | DEADLINE for abstract submission**

We are looking forward to learning more about your excellence in imaging science – submit your abstract and present your work in Antwerp!

*Only with your contribution the set-up of an excellent programme will be possible!*

**Sessions – an overview**

**Parallel sessions** - each of the about 20 Parallel Session starts with an overview talk followed by five talks selected from the abstract submissions.

**Poster sessions** – to emphasise the importance the poster presentations two poster sessions without any competitive sessions are scheduled

**Educational sessions** – 4 educational sessions in parallel à 3h;
- 2 BASIC and 2 ADVANCED educational sessions

**Focus sessions** – 3 talks à 30min on a focussed topic organized in co-operation with related societies like Microscopy, Radiology, and Nuclear Medicine

**Focus Session & Study Group Meetings** – open for anybody who is interested; “Intra-operative Imaging” and “Image-guided Drug Delivery” Group and the newly established Study Group on “Mass Spectrometry”.

**Plenary lectures** – 1 Opening Lecture by Hans Clevers, 1 ESMI Awards plenary session by the PhD Award and ESMI Award winners + 3 Plenary lectures and 1 Highlight lecture by Markus Schwaiger

**What's going on in Europe** – presentation of 20 European research projects related to imaging science, update on funding opportunities under the new calls of Horizon 2020, and infrastructural approaches like EuroBioImaging and EATRIS - European Infrastructure for Translational Medicine.

**Industry Sessions** - academic sessions organized by the industry
European Molecular Imaging Meeting – EMIM 2014

EMIM 2014 Programme – how to

The highly interdisciplinary programme will cover basic sciences, translational aspects as well as clinical applications of molecular imaging.

Abstract Categories 2014
- Chemistry / Probes / Reporter Genes
- Technology / Methodology
- Neuro-Imaging
- Cancer-Imaging
- Cardiology-Imaging
- Others

The committee decided to limit the number of abstract categories. With this we aim to ensure a better representation of your needs and also to avoid that quite similar abstracts will be submitted in different categories and almost the same talks “appear” in diverse sessions. Depending on the scores given by the reviewers the category chairs will suggest titles and number of parallel sessions per category as well as the presentations selected for talks from your submitted abstracts.

Focus on Education

your educational programme at the EMIM

The educational sessions are scheduled for Wednesday 4 June from 12:30h to 15:30h. You can register to the educational sessions during the online registration process. We charge a "symbolic" fee of 10€ to ensure attendance.

4 educational sessions in PARALLEL are foreseen
2 BASIC educational sessions and 2 ADVANCED

1) CT Imaging - Potential and Limits BASIC session
organized by Marc Kachelriess - Heidelberg

This educational session reviews basic principles of clinical and preclinical CT, thereby covering technological, medical, as well as practical aspects. The first presentation will introduce you to the CT technology and explain how CT images are formed from x-rays and what potentials and limitations are behind the technology. The second contribution gives an overview over clinical CT applications with a focus on functional aspects such as perfusion imaging, spectral imaging and cardiac imaging. The session then switches to preclinical imaging where typical preclinical CT applications are discussed, including

We are the sum of our people - thanks to all of you for your commitment and dedication.

EMIM 2014 Committee
Annemie van der Linden       Antwerp
Silvio Aime       Torino
Markus Aswendt       Cologne
Kevin Brindle       Cambridge
Emmanuelle Canet-Souls       Lyon
Ron Heeren       Amsterdam
Mathias Hoehn       Cologne
Marc Kachelriess       Heidelberg
Fabian Kiersling       Aachen
Juhan Knuuti       Turku
Twan Lammers       Aachen
Boudewijn Lelieveldt       Leiden
Kai Licha       Berlin
Adriana Maggi       Milan
Chrit Moonen       Utrecht
Michal Neeman       Rehovot
Klaas Nicolay       Eindhoven
Vasilis Ntziachristos       Munich
Bernd Pichler       Tuebingen
Jorge Ripoll       Madrid
Markus Rudin       Zuerich
Michael Schaefers       Muenster
Markus Schwaiger       Munich
Alexander Vahrmeijer       Leiden
Gooitzen van Dam       Groningen
Juan José Vaquero       Madrid

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Veerle Baekelandt       Leuven
Florence Collez       Brussels
Bernard Gallez       Brussels
Serge Goldman       Brussels
Uwe Himmelreich       Leuven
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Louis Maes       Antwerp
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Paul Parizel       Antwerp
Dimitri Roose       Antwerp
Steven Staelens       Antwerp
Sigrid Stroobants       Antwerp
Jean Pierre Timmermans       Antwerp
Marleen Verhoeye       Antwerp
multi-modality imaging approaches such as PET/CT or SPECT/CT, and including practical aspects thereof. The fourth contribution introduces the novel CT imaging modality phase contrast CT with its new contrasts, and it highlights where phase contrast CT could play a role in molecular imaging in the future. The session concludes with a video presentation showing how typical preclinical CT exams are actually carried out (animal preparation, contrast agent application, scanning, reconstruction, post processing, data analysis).

2) Quantification in Molecular Imaging – An unsolved issue? BASIC session
organized by Markus Aswendt - Cologne

“Seeing is believing – and measuring is knowing”
Multimodal imaging provides unique insight into biological processes in the living animal. In contrast to conventional invasive techniques, the intra-individual time profile during longitudinal studies is accessible. Nevertheless, the usefulness and recognition of in vivo imaging depends on a convenient and reliable quantification process. This educational session will address this important issue and provide a broad overview of existing techniques for image quantification. Presentations will cover key molecular imaging techniques, namely Magnetic Resonance Imaging, Positron Emission Tomography, Ultrasound and Optical Imaging. We will introduce state-of-the-art quantification techniques and software, discuss imaging protocol requirements, and draw a comparison to established reference methods. In addition, attendees will have the chance to discuss quantification challenges from own experimental data.

3) Imaging
Mass Spectrometry
ADVANCED session
organized by Ron Heeren – Amsterdam

Multimodal molecular Imaging with mass spectrometry provides direct insight into the spatial organization of a wide variety of molecules on complex surfaces. It is truly label free imaging technique that takes advantage of all analytical capabilities embedded in modern mass spectrometers. This molecular histology technique allows for direct structural analysis of molecules liberated from the surfaces under study. As such, it enables direct metabolite, oligosaccharide, lipid, peptide and protein identification that can contribute to disease specific molecular disease profiles. This educational session will describe the basics of the technology, as well as its clinical and pharmaceutical application. In addition the quantitative aspects and considerations of imaging MS as well as the application for three dimensional single cell studies will be discussed. Participants will provided with both theoretical background as well as practical information how to combine imaging MS with other molecular modalities.
4) How to use animal atlases to improve molecular imaging research

ADVANCED session
organized by Boudewijn Lelieveldt – Leiden

In recent years, several digital anatomical and functional animal atlases have been made freely available for use in life-sciences research. These atlases enable complementing in-vivo observations with prior atlas information. Applications of anatomical atlases range from automated segmentation and quantification of structural imaging data to fusion of multi-modal molecular imaging data. Functional atlases, such as the Allen Brain transcriptome and mouse connectivity atlas, enable the derivation of molecular interaction networks, high-fidelity anatomical connectivity analysis and mapping of spatially resolved gene expression patterns to in-vivo observations (of the brain). This educational session will provide a broad overview of atlases for enhancing molecular imaging research. We will cover whole-body atlases for automated image segmentation and fusion, the Allen Brain atlas for linking molecular interaction networks and imaging data, probabilistic atlases to model variability in a population, and atlases for simulation of image acquisition physics.

Learn more about:
- Different ways to complement molecular imaging research with atlas information
- Applications of anatomical atlases for robust segmentation and image fusion
- Applications of gene expression and connectivity atlases in life-sciences research
- Probabilistic atlases to derive statistics on anatomical variability in a population
- Animal atlases for simulation of imaging physics

Academic Industry Sessions

The EMIM 2014 will start with academic sessions organized by the industry on Wednesday 4 June 08:30h – right before the Educational Sessions.

Infectious Diseases
organized by PerkinElmer

Non-invasive imaging has powerfully augmented the investigation of various disease processes in fields such as Oncology, Neurology, Infectious Diseases and Inflammation. Spectacular advances in molecular imaging provide unparalleled opportunities for combined anatomic and functional imaging. The focus of this session is Molecular Imaging of Infectious Diseases. This half day session will showcase the latest preclinical and clinical developments in the field of Infectious Diseases Imaging and bring together individuals from multiple scientific disciplines with the goal of promoting the emerging field of Molecular Imaging of Infection and Inflammation. Presentations will focus on identifying and tracking the interplay between different host-microbial events, using state-of-the-art molecular imaging and probes from optical, PET, SPECT, CT and MRI.

Researchers from the fields of bacteriology, virology, mycology, parasitology or anyone else interested in Molecular Imaging of Infectious Diseases are encouraged to attend.

Registration to the industry sessions is possible for each EMIM participant free of charge but registration is required - www.emim.eu.
EMIM 2014 Get-together

Thanks to the young ESMI group in Belgium for organizing our get-together in Antwerp!

The get-together will take place at the Antwerp Zoo, the green heart of the city of Antwerp. It is located in the city centre, next to central station. The Antwerp Zoo was established in 1843 making it one of the oldest zoological gardens in the world. At your arrival, drinks will be offered in the ‘Verlatzaal’, an aristocratic entrance hall dominated by a monumental stair case. During the reception, you will have the possibility to visit the ‘Wintertuin’, a beautiful tropical greenhouse giving you the feeling of being in the jungle. A perfect scene for a royal party afterwards – it will be great!

Have you ever attended a party in a zoo?

The buffet dinner will be held in the ‘Marmeren zaal’ and its huge covered terrace. This room with its massive marble pillars, huge windows and the high ‘Art Nouveau’style ceiling breathes a ‘Belle Epoque’ atmosphere.

Register during the online registration process. We are asking for a contribution of 30€ only – and are confident to cover the costs by the gracious support of some companies.

Be part of the EMIM – registration & fees

We are doing our best to keep the registration fee as low as possible and to ensure the best possible surrounding conditions for interdisciplinary knowledge exchange in the field of imaging science! The registration fees haven’t been changed for four years and include:

- attendance fee
- all coffee breaks and lunches (4 to 6 June)
- opening reception at 4 June incl. refreshments and hors d’oeuvres
- access to conference sessions and exhibition
- EMIM conference material
- registration to the industry sessions free of charge
- registration to the Educational Sessions (additional 10€)

<table>
<thead>
<tr>
<th>Registration fees</th>
<th>Early</th>
<th>Late</th>
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</thead>
<tbody>
<tr>
<td>Regular fee member:</td>
<td>480€</td>
<td>580€</td>
</tr>
<tr>
<td>Regular fee non-member:</td>
<td>580€</td>
<td>680€</td>
</tr>
<tr>
<td>Students’ fee member:</td>
<td>300€</td>
<td>400€</td>
</tr>
<tr>
<td>Students’ fee non-member:</td>
<td>400€</td>
<td>500€</td>
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</tbody>
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Within the registration process you can

- sign in for the educational sessions
- register to the industry sessions
- to the “get-together” and
- reserve your hotel room in Antwerp
In Retrospect

TOPIM 2014 – 8th ESMI Winter Conference

January 19-24, 2014 at the Ecole de Physique in Les Houches, France

Date: January 19-24, 2014
Venue: École des Physique Les Houches, France

Exciting 5 days in Les Houches brought together, possibly for the first time, a group of imaging physicists, imaging experimentalists, mathematicians, computer scientists and developmental biologists, to discuss one of the greatest wonders of life, namely the development of a complex organism from a single fertilized egg. The complex forces that govern development include precise three-dimensional temporal regulation of gene expression and cell migration, to form tissues and organs at the correct place and time. Understanding development challenges the capabilities of imaging technologies, with its demands for precision, spatial resolution, multiplexing of information and rapid temporal changes. These challenges are further amplified by the need for increasing throughput of image acquisition, to accommodate for large screening programs of genetic modifications. Fruitful discussions delineated the similarities and differences between physiological morphogenesis and cell behavior in pathological processes including cancer. Remarkable insight can be gained by comparing embryos of different species spanning from zebrafish and birds to rabbit, mice and human. Clearly the challenges for imaging mammalian embryos are particularly demanding where development outside the uterus is limited. Dynamic analysis of development poses one type of technological challenge. Cutting edge 3D light Sheet microscopy demonstrated remarkable capabilities for live imaging and dynamic analysis of cell migration paths for the early stages of development, while OCT and in utero ultrasound and MRI allowed in vivo monitoring of unperturbed pregnancy albeit at considerably lower spatial resolution. The second type of challenge is high throughput imaging based screening of genetically modified or drug treated embryos. Large scale morphometric phenotyping was demonstrated with CT, OPT and MRI, each with its optimal window during different stages of development, resulting in anatomical atlas type data, made useful by the development of powerful analytical tools for un-biased mapping of phenotypic changes.

Committee
Bertrand Tavitian - Paris CHAIR
Andreas Jacobs - Muenster
Michal Neeman - Rehovot
Vasilis Ntziachristos - Munich
Nadine Péyrieras - Gif sur Yvette

www.topim.eu
So what imaging advancements are required in order to make further significant impact?

In order to evaluate the needs it is important to reflect on the primary biological questions. For example:

- When and how does cell specification start? How organs are shaped and structured?
- When do senses (e.g. hearing) and awareness start?
- What is the relation between genotype and phenotype?
- How do (micro)environmental effects influence phenotype?

Addressing these issues has become possible because of huge progress in physics and instrumentation technology that provide sharper, real-time images without physiological interference. Physics and mathematics have also invaded the theoretical aspect of developmental studies. For instance, mathematical models have demonstrated that developmental scenarios cannot avoid stochasticity. Indeed, however powerful genetic determinism may be, both as a tool in experimental embryology and as a conceptual framework for evolution, alone it is unable to predict the building of an adult phenotype. Models are too sensitive to unstable cell-cell and cell-environment boundaries to be purely deterministic; therefore, random functions must be introduced in the equations describing cell-to-tissue organization. It is fascinating to see how, by a sort of return of the old gradient theories, long distance interactions in space and time and reaction-diffusion processes are increasingly called upon in order to describe the development of organisms. These questions clearly carry also ethical weight. Thus an evening session was devoted for discussion of ethical aspects of these scientific endeavors. Assisted by historical perspective, a lively discussion focused on the role and responsibilities of the scientists in the potential use of the increased technological capabilities.

Although not included in this TOPIM meeting, the clinical potential and health benefit of imaging of development is profound. Imaging technologies can affect the efficacy of assisted reproduction programs (such as IVF), prenatal fetal monitoring and monitoring of high-risk pregnancies. Furthermore, it is well known that adverse effects during pregnancy have long term and significant impact on adult life health.

Thanks to all of you for an inspiring, intensive, and great week!
NEWSLETTER

EVENTS
congresses, workshops, trainings

Feb. 17-21, 2014    WORKSHOP - 3rd PET/MR workshop in Tuebingen, Germany
Apr. 7-9, 2014     PET BASICS-course in Turku, Finland
Apr. 9-11, 2014    WORKSHOP - PET: Technology and Application in London, UK
Apr. 16-18, 2014   13th European Symposium on Controlled Drug Delivery in Egmond aan Zee, The Netherlands
Apr. 24-25, 2014   WORKSHOP - Microglia Imaging and Biology in Manchester, UK
Apr. 27-29, 2014   WORKSHOP - Cell therapies and cell labelling in Helsinki, Finland
May 12-14, 2014    Odense Spring Meeting 2014 - MI: Solution to tomorrow’s health care?
May 19-21, 2014    3rd Conference on PET/MR and SPECT/MR in Kos, Greece
May 21-24, 2014    Symposium on Functional NeuroReceptor Mapping of the Living Brain in Amsterdam, The Netherlands
May 24 - 27, 2014  XIII Turku PET Symposium in Turku, Finland
Jun. 4-6, 2014     9th European Molecular Imaging Meeting - EMIM in Antwerp, Belgium
Jun. 15-20, 2014   Biophotonics and Imaging Graduate Summer School in Galway, Ireland
Jul. 3-5, 2014     ESMOFIR first workshop on clinical functional imaging in Berlin, Germany
Sep. 7-12, 2014    International Microscopy Congress IMC 2014 in Prague, Czech Republic
Sep. 17-20, 2014   World Molecular Imaging Congress 2014 - WMIC in Seoul, South Korea

for details please visit the “congress/workshop calendar” at www.e-smi.eu/index.php?id=1996

EU NEWS
open calls

Jan. 10, 2014     ERA-NET “Neuron”
Dec. 11, 2014     ERC Starting Grant
Dec. 11, 2013     ERC Consolidator Grant
Dec. 11, 2013     ERC Proof of Concept
Dec. 11, 2013     H2020 1st calls for proposals under Horizon 2020
Dec. 11, 2013     Innovative Medicines Initiative - IMI 11th call for proposals
Dec. 11, 2013     2 JPND joint transnational calls
Dec. 2013

for further information, deadlines, and continuative links please visit the “EU NEWS” section at www.e-smi.eu/index.php?id=1971
Please always validate the given information through the official websites.
JOBS

open positions

Jan. 31, 2014 | PhD Position in cancer imaging with hyperpolarized MRI-agents in Aachen, Germany
Jan., 30 2014 | Applications Specialist – Pre-Clinical Imaging Systems at TriFoil Imaging
Jan. 27, 2014 | 2 PhD Positions on Multispectral optoacoustic tomography in Munich, Germany
Jan. 27, 2014 | Marie Curie fellowship in Optical Imaging in Munich, Germany
Jan. 23, 2014 | PostDoc position in Bioengineering in Tuebingen, Germany
Jan. 22, 2014 | Research Professor (tenure track) in vivo small animal MR imaging in Antwerp, Belgium

for details please visit the “VACANCIES” section at www.e-smi.eu/index.php?id=1973

We need your participation in order to foster new ideas and excellence in imaging science through inter-disciplinary cross communication and to establish a strong Imaging Community also to secure funding for your field of research.

Become a new member | www.esmi-insight.eu/membership