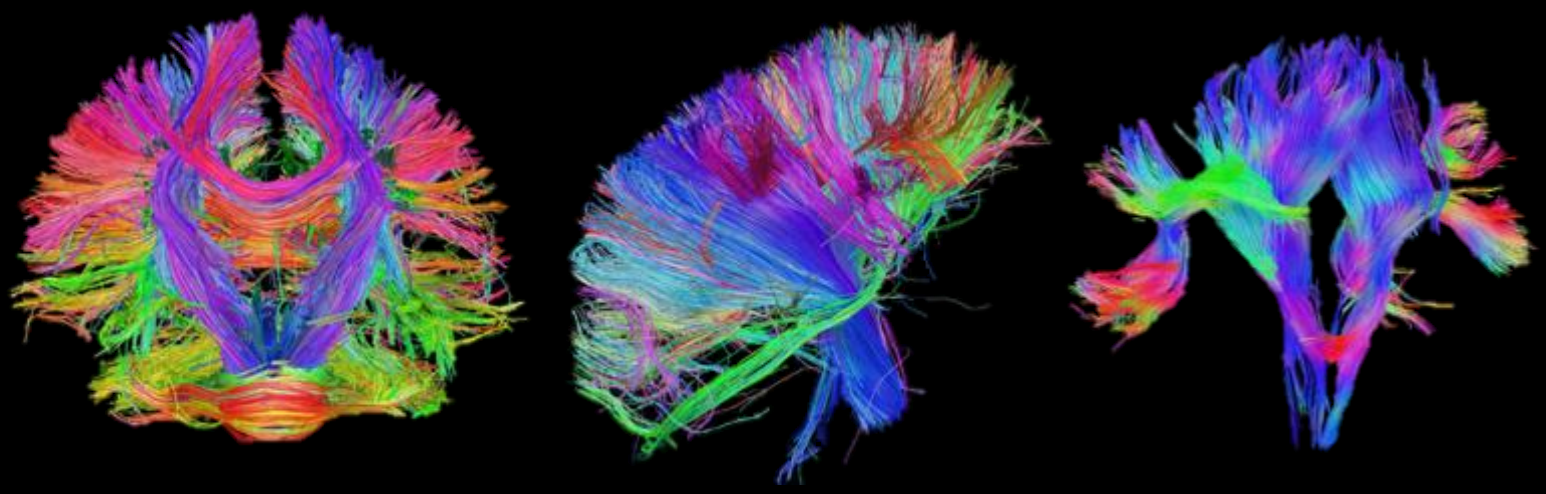
NAVAt VII

www.NAVAt.org

SEVENTH INTERNATIONAL SYMPOSIUM ON AUTOMATED LOW FLOW ANESTHESIA AND VISUAL DRUG DISPLAY SYSTEMS



SATURDAY SEPTEMBER 21, 2019, AALST, BELGIUM

Dear Colleagues,

It is our pleasure to announce NAVAt VII. Come and explore with the world's experts in their respective fields how to NAVigate to your Anesthesia targets. For the seventh time, this international meeting focuses on pharmacokinetics and pharmacodynamics of potent inhaled anesthetics, anesthesia workstations (with a focus on low flow anesthesia), and anesthetic depth monitoring. Looking forward to seeing you all in Aalst on Saturday September 21, 2019 !

The NAVAt group

Jan FA Hendrickx, M.D., Ph.D.
Staff Anesthesiologist
Dept. of Anesthesiology/CCM
OLV Hospital
Aalst, Belgium
Alumni Consultant Assistant Professor
Stanford University
Stanford, CA, USA

Andre M De Wolf, M.D.
Professor
Dept. of Anesthesiology
Feinberg School of Medicine
Northwestern University
Chicago, IL, USA

Michel Struys, M.D., Ph.D.
Professor and Chair
Dept. of Anesthesiology
University of Groningen
University Medical Center of Groningen
Groningen, The Netherlands
Professor in Anesthesia
Ghent University, Belgium

Philip Peyton, M.D., Ph.D.
Professor
Anaesthesia, Perioperative and Pain Medicine Unit
Medical School, University of Melbourne
Melbourne, Australia
Chair, Australian and New Zealand College
of Anaesthetists Clinical Trials Network

Patrick Wouters, M.D., Ph.D.
Professor and Chair
Dept. of Anesthesia and Perioperative Medicine
Professor
Clinical Physiology
Ghent University, Belgium

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European Society of Anaesthesiology ESA

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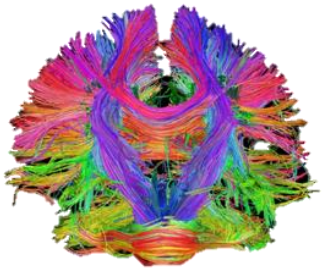
Edwards



NAVAt LOGISTICS **www.navat.org** **www.navat.org**

Date	Saturday September 21, 2019
Time	09:00 – 16:30h
Location	OLV Hospital, Aalst, Belgium
Fee	M.D., industry 120 €
	Resident & nurse 40 €
	Onsite (cash only) +40 €
	Medical students: inquire @ mail below
Details	www.navat.org
CME	Accredited
Inquiries	jcnwahendrickx@yahoo.com

I can see how you feel: closing the gap between molecular events and functional activity

Professor **Kamil Ugurbil** holds the McKnight Presidential Endowed Chair Professorship in Radiology, Neurosciences, and Medicine and is the Director of the Center for Magnetic Resonance Research (CMRR) at the University of Minnesota (MN, USA). He is a giant in the field of functional MRI (fMRI). fMRI was first achieved simultaneously by two independent teams, one of which was led by Kamil Ugurbil and his colleague Seiji Ogawa from Bell Laboratories. His research brings together physics and instrumentation with physiology and neurochemistry to assess cerebral function and underlying physiology and morphology. He pushes the boundaries of neuroimaging, particularly as related to brain function and connectivity. These advances are now extended to the Human Brain Connectome project launched by the NIH Neuroscience Blueprint initiative which is bound to revolutionize the field of psychiatry. We are honored to have him present **"I can see what you feel – mind if I look into your mind?"** On the road to visualize pain, (un)consciousness, intent to move, depression….

Did your patient's brain make it through intact? Are you still the same person?

It is a pleasure to welcome back Professor **Roderic G. Eckenhoff**, Austin Lamont Professor of Anesthesia at the University of Pennsylvania (Philadelphia, PA, USA). After graduating from Northwestern University Medical School (1978), he joined the Naval Submarine Medical Research Laboratory in Groton, CT. After completing his anesthesia residency at Penn, he pursued basic science training in the Andrew Somlyo lab (and at Penn as well). He accidentally discovered an approach to measure subcellular concentrations of anesthetics, ultimately discovering anesthetic photolabeling, and adapting a series of traditionally biophysical approaches to study anesthetic mechanisms. He is the senior author of the Recommendations for the nomenclature of cognitive change associated with anesthesia and surgery-2018, published jointly in the major anesthesia journals. How do we define the cognitive changes we observe in our patients postoperatively, and can we do something about it? **"On how to treat the brain well in the perioperative phase – or can we? What is PND (perioperative neurocognitive disorder) and how is it different from POCD?"**

Why is it so hard to wake up?

Alexander Proekt is Assistant Professor of Anesthesiology at the University of Pennsylvania where he is a practicing neuroanesthesiologist.. While studying medicine at Mount Sinai School of Medicine in New York, he completed a PhD on biophysics of small networks in the lab of Klaude Weiss. He graduated as an anesthesiologist from Weill Cornell Medical College (New York, NY, USA) and completed postdoctoral fellowships with Prof. Donald Pfaff (Rockefeller University) in neuroscience and with Marcello Magnasco (Rockefeller University) in physics. He studies neurophysiological mechanisms that anesthetics use to extinguish consciousness, and processes that allow the brain to recover consciousness after anesthesia. To study these questions, he uses a combination of techniques including invasive recordings of neuronal activity, computational modeling, pharmacology, and optogenetics. His lecture is entitled: "**Neuronal inertia: why emergence is more complicated than you thought."** *The* excuse to sleep late?

Why are you waving at me in your sleep?

Jaideep Pandit is consultant anesthesiologist at Oxford University Hospitals, Oxford, UK. He served on numerous boards in numerous positions. He was the Academic Strategy Officer of the Royal College of Anesthetists (2005-7), publishing the National Strategy for Academic Anesthesia; member of the Court of Examiners of the Royal College of Surgeons of England; editor of Anesthesia; member of the Research Council of the National Institute of Academic Anesthesia; and Scientific Officer of the national Difficult Airway Society. In 2014, he published NAP5 on 'Accidental Awareness during General Anesthesia' (UK and Ireland), the culmination of a 4-year Royal College project making over 60 recommendations for clinical practice. Can patients indicate whether they are awake if we do not paralyze the muscles of one arm? Let's find out: "**Taking the Auspices: Palm reading for beginners. The isolated fore arm technique."**

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INVENTING FOR LIFE

A. MAC attack II: On the rivers of Babylon, MAC cannot be reduced
B. Isocapnic hyperventilation: Of course not

Andre De Wolf is professor at the Dept. of Anesthesiolog y at Northwestern University, Feinberg School of Medicine, Chicago, IL, USA, and with Jan Hendrickx, the founding father of NAVAt. He is one of the world's experts on hemodynamics during liver transplantation, and while working at University Pittsburgh Medical Center from 1981 until 1996, closely collaborated with Thomas Starzl, the surgeon who invented liver transplantation. He developed a secondary interest in pharmacokinetics and pharmacodynamics of inhaled anesthetics, which started to lead a second life in and by itself after meeting Jan Hendrickx. He will discuss the value of monitoring "MAC Brain" and discuss inconsistencies in the use of the "MAC" concept in his lecture "**MAC attack II**". In his second lecture, "**Isocapnic hyperventilation: Of course not"**, a pro-con debate with Prof. Orr, he will convince us that isocapnic hyperventilation is not worth the effort and expense.

The future: AI

Chris Connor is Assistant Professor of Anaesthesiology at Brigham & Women's Hospital, Harvard Medical School and adjunct Research Associate Professor of the Department of Physiology & Biophysics and the Department of Biomedical Engineering at Boston University. His research interests are on machine learning, anesthesia control systems, and the mechanisms of action of volatile agents on consciousness. His work on anesthesia and C.elegans has been honored as among the 10 best science abstracts of the ASA meeting in San Francisco last year. Technology is evolving at a rapid pace, and AI, Artificial Intelligence, will be at the heart of it. Dr. Connor will teach us the basics of AI: **"Machine Learning In A Hurry: AI TL;DR :)"** His review article in Anesthesiology "Machine Learning and Artificial Intelligence" came out, online ahead-of-print, at the time of writing this bio.

AI at work: track, measure, steer – welcome OR 2030

Dr. Teodor Grantcharov is a Staff Surgeon at St. Michael's Hospital and a Professor of Surgery at the University of Toronto, where he holds the Keenan Chair in Surgery. He also holds a Canada Research Chair in Simulation and Surgical Safety. He completed his general surgery residency at the University of Copenhagen, obtained a doctoral degree in Medical Sciences at the University of Aarhus in Denmark. His academic interest are minimally invasive surgery, surgical education and patient safety. He developed the OR Black Box, a system that collects a vast number of data from the operating room to assess human and technology performance, as well as organizational and environmental factors. The OR Black Box platform then provides analytics that identify safety threats and creates a foundation for designing interventions that can improve peri-operative safety and efficiency. But could it one day guide us in real time when we make decisions in the OR and enhance our abilities to deliver precise, predictable and ultra-safe surgical procedures? **The OR black box: building the road to autopilot.**

AI beyond your wildest dreams

Julian M. Goldman studied anesthesiology (with a fellowship in medical device informatics) at the University of Colorado and joined Harvard Medical School (Dpt. of Anesthesia, CCM, and Pain Medicine) at Massachusetts General Hospital in 2002. He advised and/or lectured on computer and information sciences at the National Science Foundation, CDC, FDA, IEEE EMBS (largest international society of biomedical engineers), healthcare standardization and innovation. He received numerous prestigious awards. At NAVAt VII, he will introduce us to the nec plus ultra of closed loops and AI: pre-hospital autonomous casualty care. Imagine having sustained a motor vehicle accident. A flying drone scoops you up within minutes. The interior consists of a host of completely autonomous systems that sedates you, secures your airway, ventilates you, places an IV to volume resuscitate you etc. Fiction – or fact soon?
My guarding angels: pre-hospital autonomous casualty care. AI beyond your wildest dreams.

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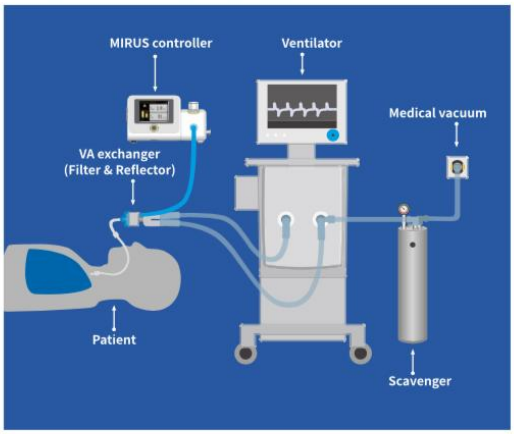

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I can see what the lung needs

Professor **Göran Hedenstierna** works at the Department of Clinical Physiology at Uppsala University, Sweden (senior prof since 2008) which holds a Hedenstierna lab and organizes the Hedenstierna symposium. He is *the* authority on atelectasis and gas exchange during anesthesia, authoring Miller's Anesthesia chapter on "Respiratory Physiology and Pathophysiology". The space provided by this entire flyer would not suffice to list his contributions to our profession. He established an animal research laboratory with Ph.D. students and visiting scientists from approximately 20 countries. A PubMed search (March 2019) with his name yields more than 503 references - and counting. We therefore are proud to have this giant in our field lecture at NAVAt for the fourth time. His energy, genuine interest, witty humor, encouragement, mentorship, expertise and willingness to contribute to NAVAt are major forces that help the organizers drive the NAVAt meeting. This year, we look forward to his lecture "**Visualizing atelectasis: ready for prime time?"** Has technology evolved up to a point where we might be able to use it intraoperatively to help titrate PEEP and O_2? Maybe even build a closed loop?

Let me hold your breath for you: Automated CO_2 control

Georg Miestinger is staff anesthesiologist („Oberarzt") at the University Hospital St. Pölten, Austria. After studying medicine at the Paracelsus Private Medical University (Salzburg, Austria), he completed his anesthesiology and intensive care residency at University Hospital St. Pölten, Austria. He has been conducting the „AVAS-Trial" (Automated control of mechanical ventilation during general anesthesia), and we look forward to have him share his experience.

The Big Bang theory

Professor **Philip Peyton** (Anaesthesia, Perioperative and Pain Medicine Unit, University of Melbourne, Australia) is a world-expert on how ventilation/perfusion mismatching affects anesthetic gas exchange. He is chair of the Australian and New Zealand College of Anaesthetists Clinical Trials Network, Paul Myles' multi-institutional research group, that conducted ENIGMA I and II (Evaluation of N_2O In the Gas Mixture for Anaesthesia) which confirmed the safety of N_2O. He has been a speaker and co-chair at NAVAt several times. It is a true pleasure to welcome Philip Peyton back at NAVAt this year where he will tackle the issue of the use of N_2O during abdominal surgery: **"Does N_2O make the bowel explode?"**.

Isocapnic hyperventilation: Yes, of course

Joseph Orr is research associate professor at the University of Utah, Department of Anesthesiology. He has over 20 years of experience as an expert in respiratory and anesthesia instrumentation with an emphasis on the measurement and analysis of physiologic O_2 consumption and CO_2 production. He is a past president of the STA, the Society of Technology in Anesthesia. He has authored 26 peer-reviewed publications and currently holds 42 US patents and has multiple patents pending. Dr. Orr holds a Ph.D. in bioengineering from the University of Utah and a master of engineering management degree from Brigham Young University. He holds a position as co-founder and CEO of KORR™ Medical, and as president and founder of Dynasthetics LLC. He will convince us of the usefulness of isocapnic hyperventilation to hasten emergence.

No more granules?

Sarah Eerlings is a resident at the Department of Anesthesiology, UZLeuven, Leuven, Belgium. Together with Jan Hendrickx at the Department of Anesthesiology in Aalst, Belgium, she studied the in vivo performance of a new CO_2 removal device that uses the technology of the oxygenator of a cardiopulmonary bypass machine, the Memsorb™. This device could theoretically become an integral part of the anesthesia workstation and be left in place for months. Will $Ca(OH)_2$ based granules become obsolete? Come and learn all about it during Dr. Eerlings' presentation **"No more granules? In vivo performance of the Memsorb™"**. Her abstract was voted one out of 6 best abstracts at this year's ESA annual meeting in Vienna.

Low and minimal-flow anesthesia course
Invitation

19–20th of September 2019
ORSI Academy, Gent, Belgium

Welcome to low and minimal-flow anesthesia course for anesthesiologists

- Qualified theoretical presentations, based on known concepts and illustrated by simulations
- Interactive hands-on animal workshop with different clinical scenarios
- Attend live surgery where low and minimal-flow anesthesia is demonstrated
- Entrance fee to NAVAt International Symposium September 21st (www.navat.org)
- CME (UEMS) accredited

The purpose of the course is to teach and show you that today, with the right knowledge and equipment, it is safe and easy to use low and minimal-flow anesthesia.

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Low and minimal-flow anesthesia course

Important facts at a glance

Speaker
Jan F.A. Hendrickx M.D., Ph.D.
Andre M DeWolf M.D., Ph.D.

Price
Course fee 350 EUR
Includes course material (USB + syllabus), transports to ORSI and OLV, meals (see below). Hotel and travel expenses are paid separately at own cost.

Meals included
Dinner in Gent on September 19th, lunch and coffee breaks.

Registration
Seats are limited. Please book early, no later than Sep 1, 2019.

For more information and registration please contact, Global Clinical Application Manager Mikael Petrini, mikael.petrini@getinge.com

Agenda

- Gas exchange during anesthesia
- How to perform safe low-flow anesthesia
- Low flow in clinical practice with modern technology
- Interactive animal workshop
- Live OR case (day 2 at OLV Hospital, Aalst)

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Lessons from my playground 2019

Jan Hendrickx is a member of the Dept. of Anesthesiology in Aalst, Belgium, and an alumnus of the Dept. of Anesthesiology of Pittsburgh and of Stanford, CA, USA. He has a life-long interest in the quantitative aspects of low flow and closed-circuit anesthesia. He is a past chair of the ESA subcommittee on Equipment, Monitoring and Ultrasound, and current member of the ESA Patient Safety and Quality Committee and the APSF Committee on Technology. He has been testing a new CO_2 absorber and a new approach to titrate inhaled agents, and he will discuss the impact of new technology on the terminology we use every day.

Stellan Eriksson completed his CRNA training at Jönköping Hospital (Sweden) and joined the anesthesia department at St. Görans Hospital from 1978 until 1987. From 1987 to1989 he worked for Gambro-Engström AB as clinical application specialist for ELSA, the first workstation with an electronic vaporizer designed to facilitate low flow anesthesia. After returning as CRNA to St Görans Hospital (1990), he became division leader for anesthesia equipment and IT coordinator.

Dr. Sixten Bredbacka studied medicine at the Karolinska institute, Stockholm, Sweden (1977), where he also became specialist in Anesthesia and Intensive Care (1982), obtained his Ph.D. (1993), and was consultant anesthetist and assistant professor (until 2000). He was visiting professor at Health Sciences Centre in Winnipeg, Canada in 1987-89,91. He has a long and vast experience with all sorts and aspects of anesthesia and intensive care, both clinically and in research. He always had a special interest in development and education. He was associate professor and Head of the department of Anesthesia at Capio St Görans Hospital (Stockholm Sweden) (2000 – 2014), and Associate professor (clinical) from 2015. He presently is "semi-retired".

Stellan and Sixten joined forces and made the entire department consistently work with manual closed-circuit anesthesia. In a self-experiment, Dr. Bredbacka's low F_IO_2 of 8% (eight % !) resulting in an S_pO_2 of 72% while breathing from a circle breathing system with a 1 L/min air fresh gas flow convincingly demonstrated the dangers of inhaling air at reduced fresh gas flows (J Clin Mon Comp 2016;30:251-2). This passion, dedication, and perseverance is what they share with Dr. Leo Vaes, and this will be reflected in **The Leo and Christiane Vaes lecture: Lean Burn.**

NAVAt

The Leo and Christiane Vaes lecture II


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STA 2020 Annual Meeting
January 15-18, 2020
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Barcelona


22-23 November 2019
The dogmas of the past, the facts of the present, the prospects of the future
@ SQUARE, Brussels

Michel Struys is Professor and Chair at the Department of Anesthesiology, University of Groningen and University Medical Center Groningen, The Netherlands, and affiliated as Professor in Anesthesia to the Ghent University, Belgium. His research group is one of the world's leading groups in anesthetic pharmacology, including pharmacokinetic/pharmacodynamic modelling, drug interaction research and drug administration systems such as TCI and closed-loop. He is an editor of the British Journal of Anaesthesia, senior editor of Anesthesia and Analgesia, and a former associated editor of Anesthesiology. He is a past president of the International Society of Anesthetic Pharmacology, current chair of the committee on Pharmacology of the ESA, and board member of EuroSIVA. He has been a speaker at NAVAt and will co-chair NAVAt VII.

Patrick Wouters is Professor and Chair of the Department of Anesthesia and Perioperative Medicine and Professor of Clinical Physiology at Ghent University, Belgium. He has published extensively on right ventricular function. He has chaired the ESA Scientific Subcommittee on Clinical and Experimental Circulation and the Subcommittee of the European Association of Cardiothoracic Anaesthesiologists on Echocardiography. He is 2019 president-elect of EACTA (European Association of Cardiothoracic Anaesthesiology). His expertise, his personal enthusiasm and support for the NAVAt meetings, the enthusiastic attendance of his department, and the many historical ties on a personal and academic level prompted us to invite him as the fifth member of the NAVAt group. He will co-chair NAVAt VII, only a few weeks after having organized the annual meeting of the EACTA (European Association of Cardiothoracic Anaesthesiologists).

Jan Hendrickx is a member of the Department of Anesthesiology in Aalst, Belgium, and an alumnus of the Dept. of Anesthesiology of Pittsburgh and of Stanford, CA, USA. He has a life-long interest in the quantitative aspects of low flow and closed-circuit anesthesia. He is a past chair of the ESA subcommittee on Equipment, Monitoring and Ultrasound, and current member of the ESA Patient Safety and Quality Committee and the APSF Committee on Technology. He has the luxury of not having to present because he has been able to delegate his (self-assigned) homework to Andre De Wolf (MAC awake) and Sara Eerlings (In vivo performance of Memsorb CO_2 removal device).

Jan Poelaert is professor of Anesthesiology and chairman at the Department of Anesthesiology and Perioperative Medicine, Acute and Chronic Pain Therapy of the University Hospital of Brussels (VUB). He graduated as physician and as anesthesiologist from Ghent University, which included rotations in the OLV hospital in Aalst (Belgium) and in the Academic Medical Centre in Amsterdam (the Netherlands). He is past president of the Belgian Society of Intensive Care medicine (SIZ) and the Belgian Society of Anaesthesia and Resuscitation (BSAR), and he served as chair of ESA and ESICM scientific committees. His academic interests are perioperative cardiac function (left ventricular systolic and diastolic function), transesophageal echocardiography (the topic of his 1995 Ph.D.), ventilator associated and postoperative pneumonia and its prevention in the perioperative care, improvement of outcome after major surgery and hemodynamic monitoring strategies. We look forward to have professor Poelaert chair and navigate NAVAt.

Geert Vandenbroucke, chair of the department of Anesthesiology, CCM, and Pain Medicine at the OLV hospital, has been unrelenting in his support for NAVAt and will be hosting NAVAt for the 7th time.

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Delivering Secure Solutions

Just like the challenge of breaking a code fuels hackers, we're driven by providing your patient, your team and your hospital with secure solutions. Constant innovation ensures we deliver medical solutions you can trust. That's why we're:

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  - Threat analysis
  - Vulnerability testing
  - Independent penetration testing
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SEVENTH INTERNATIONAL SYMPOSIUM ON AUTOMATED LOW FLOW ANESTHESIA AND VISUAL DRUG DISPLAY SYSTEMS

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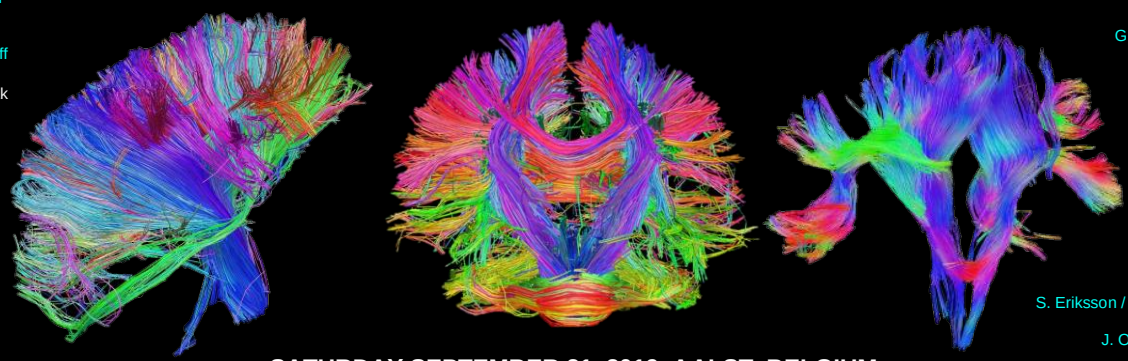
08:30 Registration
09:00 Welcome
09:02 K. Ugurbil
09:45 R. Eckenhoff
10:10 A. Proekt
11:35 Coffee break

T. Grantcharov 13:15
J. Goldman 13:40
G. Hedenstierna 14:05
G. Miestinger 14:30
Coffee break 15:00



11:05 J. Pandit
11:30 A. De Wolf
11:50 C. Connor
12:15 Lunch

S. Eriksson / S. Bredbacka 15:15
P. Peyton 15:35
J. Orr / A. De Wolf 15:50
S. Eerlings 16:15
Adjourn 16:30

SATURDAY SEPTEMBER 21, 2019, AALST, BELGIUM

I can see what you feel…

- The human connectome project: Mind if I look into your mind?
  Kamil Ugurbil, Minneapolis, MN, USA

Why's dad acting funny ?

- PND and POCD: how do they differ? On perioperatively treating the brain well
  Roderic Eckenhoff, Philadelphia, PA, USA

Sleeping late, sleepy head?

- Neuronal inertia: why emergence is more complicated than you thought
  Alex Proekt, Philadelphia, PA, USA

Taking the auspices: Palm reading for beginners

- The isolated forearm technique
  Jaideep Pandit, Oxford, UK

MAC Attack II: On the rivers of Babylon MAC cannot be reduced

- MACBAR
  Andre De Wolf, Chicago, IL, USA,

Machine learning in a hurry

- AI TL;DR :)
  Chris Connor, Harvard Boston, MA, USA

What's in the box for me?

- The OR black box: Building the road to autopilot
  Teodor Grantcharov, Toronto, ON, Canada

My Guarding Angels

- Pre-hospital autonomous casualty care: AI beyond your wildest dreams
  Julian Goldman, Harvard Boston, MA, USA

And I can see what the lung needs !

- Visualizing atelectasis: Ready for prime time?
  Göran Hedenstierna, Uppsala, Sweden

Hijacking the respiratory center

- Automated end-expired CO_2 control
  Georg Miestinger, St. Pölten, Austria

The Leo & Christiane Vaes lecture

- Lean burn
  S. Eriksson, S. Bredbacka
  Stockholm, Sweden

The Big Bang theory

- Does N_2O make the bowels explode?
  Philip Peyton, Melbourne, Australia

Are you hyper or hypo?

- Isocapnic hyperventilation, of course!
  Joseph Orr, Salt Lake City, UT, USA
- No no no, just ventilate until awake
  Andre De Wolf, Chicago, IL, USA

Lessons from my 2019 playground

- Memsorb in vivo
  Sarah Eerlings, Aalst, Belgium

European Society of Anaesthesiology ESA *See you in Barcelona June 2020!*

SA Society for Technology in Anesthesia *See you in Austin, Texas, January 2020 !*

See you in Brussels November 2019! Society of Anesthesia and Resuscitation of Belgium

Date	Saturday September 21, 2019		**Director**	Jan Hendrickx	Aalst, Belgium
Time	09:00 – 16:30h		**Chair**	Jan Poelaert	Brussels, Belgium
Place	OLV Hospital, Aalst, Belgium		**NAVAt**	Andre De Wolf	Chicago, USA
Fee	M.D., industry	120 €		Philip Peyton	Melbourne, Australia
	Resident & nurse	40 €		Michel Struys	Groningen, NL
	Onsite registration (cash only)	+ 40€		Patrick Wouters	Ghent, Belgium
Details	www.navat.org CME accredited			Jan Hendrickx	Aalst, Belgium
Inquiries	jcnwahendrickx@yahoo.com		**Host**	Geert Vandenbroucke	Departmental chair

Welcome Reception
Friday September 20
@ 19:30h, Belfort, Aalst