INVITATION

Holst Symposium 2017

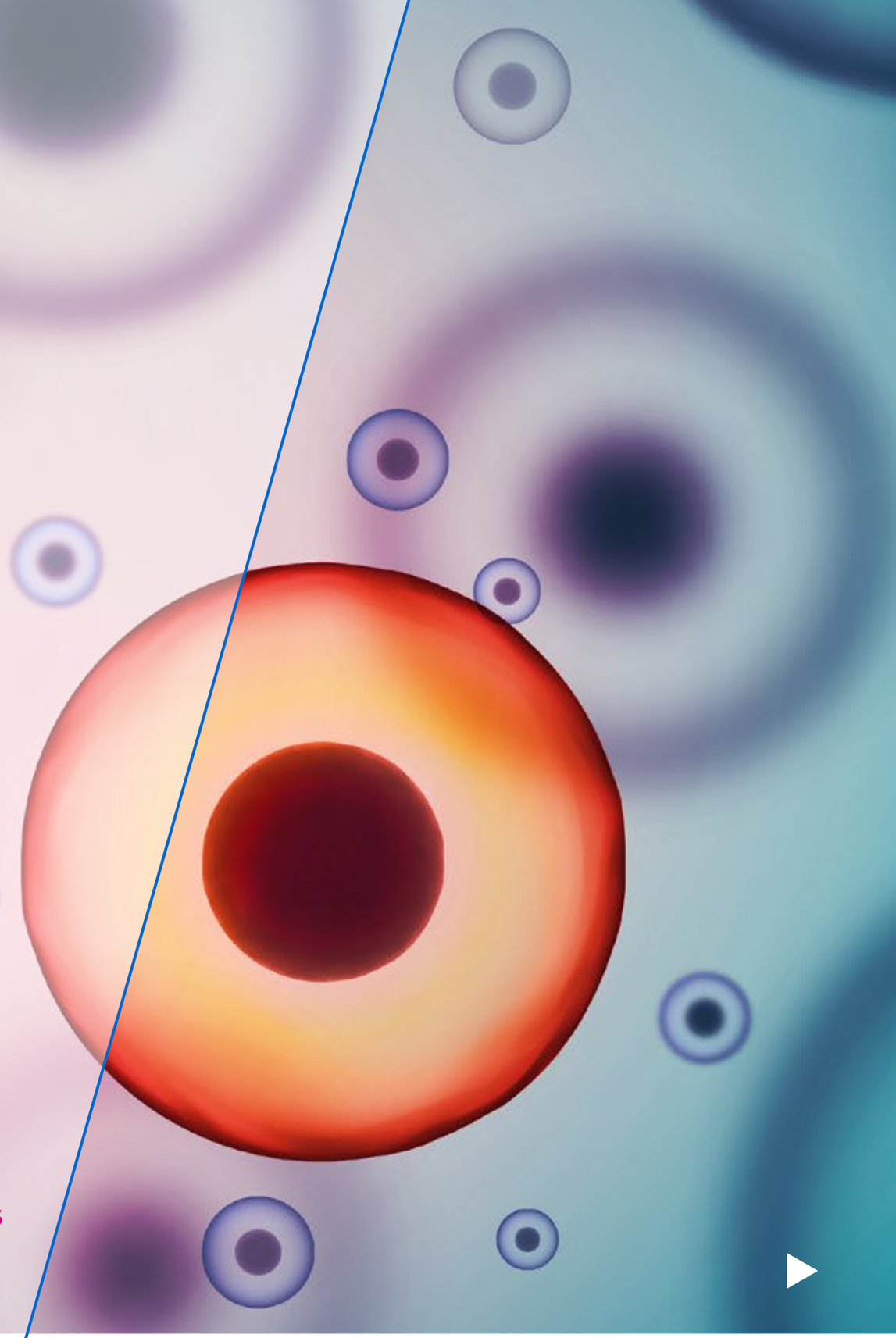
Oncology: from Diagnosis to (Immuno)Therapy

Holst Memorial Lecture 2017

Cancer Immunotherapy: Blazing the Trail with Melanoma

Prof. Caroline Robert, MD, PhD
Gustave Roussy Cancer Centre, Villejuif-Paris, France

Conference Centre, The Strip, High Tech Campus Eindhoven, the Netherlands
Organized by Philips Research and Technische Universiteit Eindhoven



TU/e Technische Universiteit Eindhoven University of Technology

PHILIPS

Holst Memorial Lecture 2017

The Holst Memorial Lecture and Symposium are organized by Philips Research and the Technische Universiteit Eindhoven (TU/e). This year's Holst Lecture, the 41st since 1977, will be given by prof. Caroline Robert MD, PhD. Caroline Robert is University Professor of Dermato-Oncology and head of the Dermatology Unit at the Gustave Roussy Cancer Centre, Villejuif-Paris, France.

Symposium 'Oncology: from Diagnosis to (Immuno)Therapy'

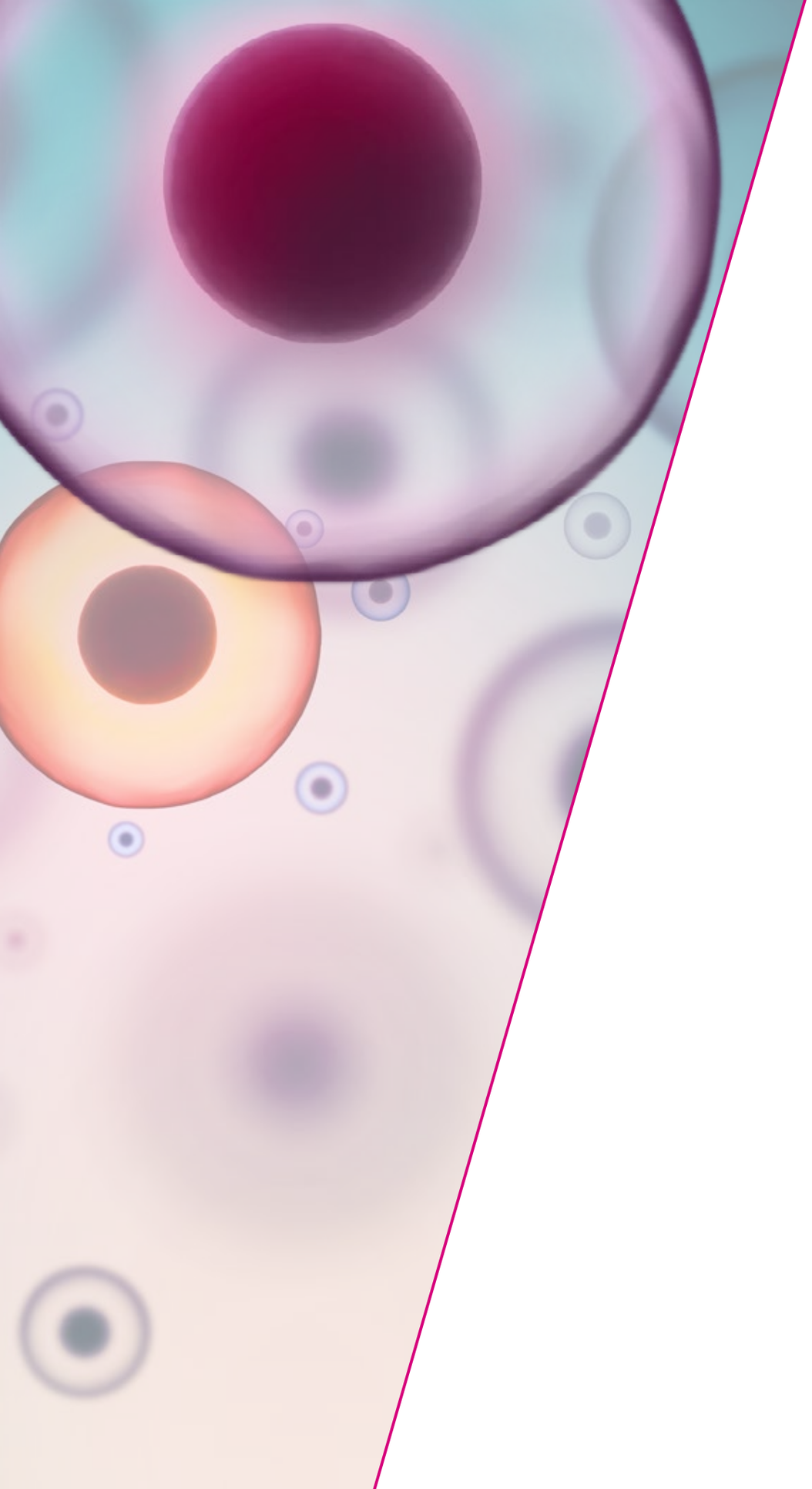
The treatment of cancer over the past decade has seen considerable progress. Refined surgical techniques allow for more complex tumors to be operated on. Innovative radiation therapy technologies have been developed, which lead to more precise delivery of treatment. Chemotherapies have improved. Imaging plays an increasingly crucial role in oncological care in clinical practice. It is employed in screening to detect disease early. It is furthermore essential in determining the specific type of disease as well as the outlook for the patient, which together largely define treatment choice. Furthermore, in recent years cancer immunology has come to the forefront and has produced several new methods of treating cancer that increase the strength of immune responses against tumors. Immunotherapy stimulates the activities of the patients own immune system or counteract signals produced by cancer cells that suppress immune responses. Four eminent scientists will share their views on developments in their specific field of research, focusing on aspects like imaging, pathology, therapeutic applications and immunology.

Holst Memorial Lecture 2017:

Cancer Immunotherapy: **Blazing the Trail with Melanoma**

Prof. Caroline Robert, MD, PhD

Interfering with the immune system in order to eliminate cancer cells was one of the most attractive and exciting goals in oncology. After decades of deceived efforts and disappointing clinical trials, this long lasting objective was finally reached in 2011 with the authorization of a new immunotherapy in patients suffering from metastatic melanoma, which is one of the most challenging situations in oncology. This innovative treatment, based on the blockade of a physiological brake of the immune system, was the first specimen of a new generation of drugs called checkpoint inhibitors that are now developed in various tumor types. Along with this new concept, profound re-evaluations of assessing the efficacy of the drugs, managing the new toxicity profiles and addressing the patient's quality of life are emerging leading to a global revolution the field of cancer treatment.



Holst Memorial Lecture Award 2017 Recipient:

Caroline Robert MD, PhD is a scientist of international renown in the clinical and translational research of melanoma and the cutaneous side-effects of new targeted chemotherapies. She has authored more than 130 articles in peer-reviewed scientific journals, including a number of publications on new treatments for metastatic melanoma, and has been involved in numerous international clinical trials. Currently, she is head of the Dermatology Unit in Gustave Roussy Cancer Center, Villejuif-Paris, France. Professor Robert earned her medical degree at the Cochin Port-Royal School of Medicine, Paris, in 1990, after which she was made a faculty member of the graduate school of biological sciences and received her French Board Certification in dermatology in 1992. On gaining her certification, Caroline Robert was appointed assistant professor in dermatology at the St-Louis Hospital, Paris.

She completed a research fellowship at Harvard University in Boston, Massachusetts, United States, and a PhD in cancer immunology and immunotherapy. In 2000, she returned to Europe as medical director for Johnson & Johnson Consumer Europe. In 2001, she took a position at Gustave-Roussy as assistant in dermatology, before becoming head of the Dermatology Unit in 2005. Since 2010, she also heads a research laboratory with dr. Stephan Vagner. Her research focuses on the identification of predictive biomarkers of efficacy/tolerance of new drugs in melanoma. She is president of the EORTC Melanoma group since September 2014. She is also a board member of the European Association of Onco-Dermatology (EADO), and a member of the European Association of Dermato-Venereology (EADV), the French society of Dermatology and Venereology, the American Association for Cancer Research (AACR) and the American Society of Clinical Oncology (ASCO).

Participation

Participation (HOLST Symposium+Holst Memorial Lecture) is free of charge.

Registration however is mandatory; the number of seats available is limited. Registered participants will receive a confirmation.

The venue for the events is the Conference Center, The Strip, High Tech Campus Eindhoven, the Netherlands.

Register here

Further information

Further information
Conference Office TU/e
Telehone: +31 40 247 4000
E-mail: conferences@tue.nl
Website: www.tue.nl/holst

Program
Thursday 2 November 2017

10.30 hrs	**Registration, Coffee**	
11.00 hrs	**Word of Welcome**	**Henk van Houten** (CTO Royal Philips)
11.05 hrs	**Introduction**	**Chair**
11.15 hrs	**Lecture #1**	**Carl Figdor**
12.00 hrs	**Lecture #2**	**Peter Luijten**
12.45 hrs	**Lunch Break**	
13.45 hrs	**Lecture #3**	**Andrea van Elsas**
14.30 hrs	**Lecture #4**	**Willem Mulder**
15.15 hrs	**Concluding remarks**	**Chair**
15.30 hrs	**Coffee/Tea Break**	

Holst Memorial Lecture 2017 'Cancer Immunotherapy: Blazing the Trail with Melanoma'

16.00 hrs	**Word of Welcome**	**Frank Baaijens** (Rector Magnificus Technische Universiteit Eindhoven)
16.05 hrs	**Holst Memorial Lecture**	**Caroline Robert,** (Gustave Roussy Cancer Centre, Villejuif-Paris, France)
17.00 hrs	**Award Ceremony and Reception**	**Henk van Houten** (CTO Royal Philips)
17.15 hrs	**Reception**	

Lecture 1
Prof.dr. Carl Figdor
Radboudumc Nijmegen, the Netherlands

11.15 hrs:
Synthetic immune systems to outsmart cancer

Professor Carl Figdor PhD is a professor of Immunology and head of the department of Tumor Immunology at the Radboudumc in Nijmegen. He obtained his Master degree in biology in 1979 from the University of Utrecht and his PhD degree in medicine in 1982 from the University of Amsterdam working at the Netherlands Cancer Institute, where he got tenured in 1985 and started his own research group. In 1992 Carl Figdor became Professor in Cell Biophysics at the University of Twente, and in 1994 he moved to the Radboudumc in Nijmegen to start a new department on Tumor Immunology. Here he initiated a large translational program exploiting the immune system to fight cancer.

Until 2010, he was scientific director of the RIMLS, Radboud Institute for Molecular Life Sciences, a research institute within the domain of molecular mechanisms of disease that became internationally recognized during his leadership. In 2006, he won the Spinoza Prize, which is also known as “the Dutch Nobel Prize”, for his groundbreaking research on the use of immune cells against cancer and for the translation of fundamental research into patient care. His research interests focus on the molecular mechanisms controlling antigen presenting cells, in particular dendritic cells. Carl Figdor was one of the first to use dendritic cell therapy in patients. He modified dendritic cells to ‘teach’ a patient’s immune system to recognize tumor cells. Major current research projects include the use of antigen loaded dendritic cell vaccines in the treatment of cancer patients and the generation of synthetic dendritic cells.

Professor Figdor received several prizes and honours including the Van Loghem Award (1999), Eijkman Medal (2000), Spinoza prize (2006), Dutch Cancer Foundation research award, the ERC Advanced Grant (2010) and the NWO Gravity Grant (2013). He is a member of the Academia Europaea and the Royal Dutch Academy of Arts and Sciences. He became a Knight in the Order of the Dutch Lion in 2012.

Lecture 2
Prof.dr. Peter Luijten
UMC Utrecht, the Netherlands

12.00 hrs:
Imaging, from diagnosis to therapy and back

Peter R. Luijten received his training in physical and theoretical chemistry from 1972-1979 (Amsterdam). After finalizing his thesis on NMR studies of molecular dynamics in liquid crystals (1984, Amsterdam and San Diego), he became research scientist at Philips. He developed multiple new technologies resulting in several patent applications, publications in peer reviewed scientific journals and products embedded in the Philips Magnetic Resonance Imaging portfolio. From 2000 to 2005 he worked for Philips in the US establishing public-private partnerships with a large number of leading academic medical centres. In 2005 he was appointed Professor of Functional Medical Imaging at the University Medical Center in Utrecht. He became chair of the imaging department (radiology, nuclear medicine, radiotherapy) in 2014, director of the UMC Utrecht Center for Image Sciences in 2015 and chair (a.i.) of the Utrecht Cancer Center in 2017. In 2007 he was appointed Chief Scientific Officer of the Center for Translational Molecular Medicine, a position he holds jointly with his academic appointment at the University of Utrecht. He served on the board of trustees of the International Society of Magnetic Resonance in Medicine and received European Magnetic Resonance Award in 2002.

In vascular medicine diagnostic imaging and therapeutic applications have been inseparable and fully integrated since the introduction of endoluminal interventions under X-ray guidance during the second half of the last century. In oncology this synergistic use of imaging and therapy is from a much later date and coming to fruition as we speak. Real time MRI guided external beam radiation (photons, ultrasound, protons?), PET and SPECT imaging of targeted peptide radionuclide receptor therapy, image guided radio-embolisations and many other non- or minimally invasive approaches have paved the way for “surgery without cutting”. Examples and trends in this field will be discussed.

Lecture 3
Andrea van Elsas, PhD
Chief Scientific Officer, Aduro Biotech Europe

13.45 hrs:
Cancer Immunotherapy, Beyond PD1

Andrea van Elsas became Chief Scientific Officer (CSO) in September 2017, following his tenure as Chief Scientific Officer of Aduro Biotech Europe since November 2015. Prior to its acquisition by Aduro in 2015, Dr. Andrea van Elsas co-founded BioNovion and served as Chief Scientific Officer focusing on the development of innovative therapeutic antibodies in the field of immune oncology. From 1999 to 2011, he held numerous positions at Organon in Oss, The Netherlands, and Cambridge, Massachusetts (acquired by Schering-Plough Corporation in 2007 and later by Merck & Co.), and as the Director of Tumor Immunology he ran the immune oncology portfolio including the program that later became known as pembrolizumab. As a postdoctoral researcher from 1997-1999, Andrea worked at the University of California, Berkeley, studying antibodies blocking CTLA-4 for the treatment of cancer and is a co-inventor on the original patents that formed the basis for the development of Yervoy® (ipilimumab), the first checkpoint inhibitor approved in 2011 by the U.S. Food and Drug Administration for the treatment of melanoma.

Checkpoint inhibitors targeting CTLA-4 and PD-1 enhance the anti-tumor immune response setting a paradigm for the potential durable clinical benefit associated with successful immunotherapy. However, checkpoint inhibitors only demonstrate activity in a minority of patients with advanced cancer. Studying non-responsive tumors and the biology of immune evasion leads to the rational development of novel therapeutics and combinations, a few examples of which will be addressed.

Lecture 4
Prof.dr. Willem Mulder

Translational and Molecular Imaging Institute Icahn School of Medicine, USA

14.30 hrs:

Nanoimmunotherapy: taking control of immunit

Dr. Mulder is full professor of Radiology at the Translational and Molecular Imaging Institute Icahn School of Medicine at Mount Sinai, New York, USA and professor of Cardiovascular Nanomedicine, AMC, Amsterdam. Dr. Mulder received an M.Sc. in Chemistry from the Utrecht University in 2001 and a Ph.D. in Biomedical Engineering from the Eindhoven University of Technology in 2006. Later that year, after his recruitment to the Icahn School of Medicine at Mount Sinai in New York, he founded the Nanomedicine Lab, one of four programs within Sinai's Translational and Molecular Imaging Institute.

His research – funded by several NIH grants and an NWO Vidi – focuses on precision imaging[1] and targeted therapy[2] in cardiovascular disease[3,4] and cancer[5,6]. This involves library technology, encompassing nanomaterials derived from natural lipoproteins (nanobiologics), that allows meticulously designing targeted immunotherapies[7]. When appropriately designed, such nanobiologics can be applied to empower the immune system's ability to fight disease, by promoting or inhibiting an immune response, by polarizing macrophage function, or by targeting myeloid cell dynamics. To facilitate translation, his team synchronously develops noninvasive imaging techniques to probe nanobiologics' in vivo behavior[8,9] and therapeutic function.

1. Mulder, W. J. M., Jaffer, F. A., Fayad, Z. A. & Nahrendorf, M. Imaging and Nanomedicine in Inflammatory Atherosclerosis. Sci. Transl. Med. 6, 239sr1 (2014).
2. Lobatto, M. E., Fuster, V., Fayad, Z. A. & Mulder, W. J. M. Perspectives and opportunities for nanomedicine in the management of atherosclerosis. Nat. Rev. Drug Discov. 10, 835–52 (2011).
3. Duivenvoorden, R. et al. A statin-loaded reconstituted high-density lipoprotein nanoparticle inhibits atherosclerotic plaque inflammation. Nat. Commun. 5, 3065 (2014).
4. Tang, J. et al. Inhibiting macrophage proliferation suppresses atherosclerotic plaque inflammation. Sci. Adv. 1, e1400223–e1400223 (2015).
5. Pérez-Medina, C. et al. Nanoreporter PET predicts the efficacy of anti-cancer nanotherapy. Nat. Commun. 7, 11838 (2016).
6. Zhao, Y. et al. Augmenting drug-carrier compatibility improves tumour nanotherapy efficacy. Nat. Commun. 7, 11221 (2016).
7. Tang, J. et al. Immune cell screening of a nanoparticle library improves atherosclerosis therapy. Proc. Natl. Acad. Sci. 113, E6731–E6740 (2016).
8. Pérez-Medina, C. et al. In Vivo PET Imaging of HDL in Multiple Atherosclerosis Models. JACC Cardiovasc. Imaging (2016). doi:10.1016/j.jcmg.2016.01.020
9. Perez-Medina, C. et al. PET Imaging of Tumor-Associated Macrophages with 89Zr-Labeled High-Density Lipoprotein Nanoparticles. J. Nucl. Med. 56, 1272–1277 (2015).

History of the Holst Memorial Lecture

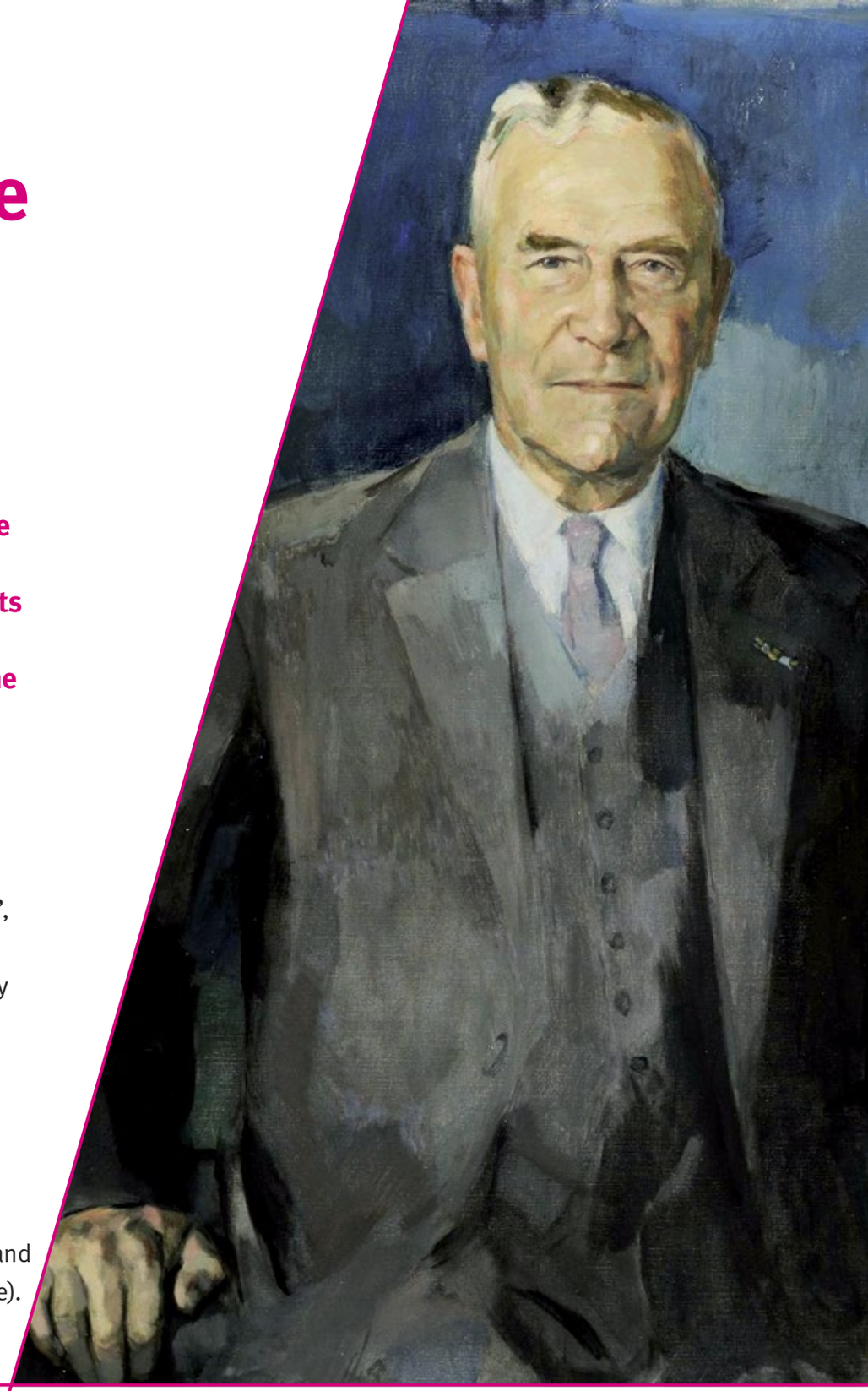
The first Holst Memorial Lecture was held in 1977 to commemorate the 21st anniversary of the Technische Universiteit Eindhoven. With support from Philips Research, the Holst Lecture became an annual tradition. An eminent scientist is invited to deliver the lecture to an audience consisting of university staff, students, representatives from industry and other guests with a general interest in science and technology. The general theme chosen for these lectures reflects the important contribution of Dr. Gilles Holst to research and technology in the Netherlands: 'the development of applied sciences, particularly mathematics and the natural sciences, for the benefit of industry on the one side and their implications for society on the other.'

Gilles Holst

In his own academic career Gilles Holst (1886-1968) played an important part in the discovery of superconductivity by Nobel laureate Heike Kamerlingh Onnes, whilst working at the University of Leiden. However, Gilles Holst will be first and foremost remembered as the founding director of the famous 'Nat Lab', the Philips Physics Laboratory in Eindhoven, where he worked between 1914 and 1946. Dr. Holst also was chairman of two committees that were instrumental in establishing the second Dutch university of technology in Eindhoven in 1956.

Holst Memorial Lecture Award

After delivering the Holst lecture, the speaker will receive the Holst memorial Lecture Award, an artist medal designed by Dutch Master sculptor Jos Reniers. Candidates for the Award are selected by a committee under the joint chairmanship of Frank Baaijens, Rector Magnificus of the TU/e, and Henk van Houten, CTO Royal Philips. The 2017 scientific committee consists of Paul van de Wiel and Matthias Bertram (Philips Research) and Josien Pluim, Massimo Mischi and Luc Brunsveld (TU/e). Secretary to both committees is Joep Huiskamp (TU/e).



Dr. Gilles Holst (1886-1968)

List of Holst Memorial Lecture Award Recipients

1977 Dr. Alexander King, Director OECD, Paris, *'The role of the engineer and the engineering sciences in future society'*.

1978 Prof.dr. Cristopher Freeman, University of Sussex, Brighton, UK, *'Technology and employment: long waves in technical change and economic development'*.

1979 Prof.dr. Carl Friedrich Von Weizsäcker, Max Planck Institute, Starnberg, Germany, *'Langfristige Energiepolitik als Beispiel technischer Zukunftplanung'*.

1980 Prof. Kevin Lynch, MIT, Cambridge, USA, *'What is a good city? General theory of good city form; a new try at an old subject'*.

1981 Prof.dr. Hendrik B. Casimir, Philips N.V., Eindhoven, the Netherlands, *'Gilles Holst, pionier van het industrieel onderzoek in Nederland'*.

1982 Dr. Michiyuki Uenohara, Nippon Electric Co, Kawasaki, Japan, *'The Japanese social system for technological development; its merits and demerits'*.

1983 Prof.dr. Joseph Weizenbaum, MIT, Cambridge, USA, *'The place of the computer in our world'*.

1984 Prof. John M. Ziman, F.R.S., Imperial College London, UK, *'Doing my own work: the individual in collectivized science'*.

1985 Prof. Ilya Prigogine, Nobel Laureate, The Solvay Institute, Brussels, Belgium, *'Exploring complexity from the intemporal world of dynamics to the temporal world of entropy'*.

1986 Prof. Sir Hermann Bondi, F.R.S., Churchill College, Cambridge UK, *'The application of satellites in connection with the environment'*.

1987 Prof.dr. Dick Swaab, Dutch Institute for Brain Research, Amsterdam, the Netherlands, *'De klok in onze hersens'*.

1988 Prof.dr. Abraham Pais, Rockefeller University, New York, USA, *'Einstein's invloed (the impact of Einstein's relativity theory)'*.

1989 Sir John Maddox, Nature Magazine, London, UK, *'How true is the promise of science?'*.

1990 Prof.dr. Cornelis M. Braams, FOM-Institute Plasma Physics, Nieuwegein, the Netherlands, *'Kernfusie in historisch perspectief'*.

1991 Prof.dr. Philippe G. de Gennes, Nobel Laureate, ESPCI, Paris, France, *'Bubbles, foams and other fragile objects'*.

1992 Dr. Arno A. Penzias, Nobel Laureate, AT&T Bell Laboratories, Holmdel, USA, *'The future of knowledge intensive industries'*.

1993 Prof.dr. Henk C. van de Hulst, University of Leiden, the Netherlands, *'Het astronomisch spectrum'*.

1994 Prof.dr. Donald P. Greenberg, Cornell University, Ithaca, New York, USA, *'Imaging and the electronic age'*.

1995 Prof.dr. Hubert Curien, Université Pierre et Marie Curie, Paris, France, *'Big instruments and big programmes for research; where is the limit?'*.

1996 Prof.dr. Serguei P. Kapitza, Russian Academy of Sciences, Moscow, Russia, *'World population growth and technology'*.

1997 Prof.dr. Nicholas Negroponte, MIT, Cambridge, USA, *'Why Europe is so unwired'*.

List of Holst Memorial Lecture Award Recipients

1998 Prof.dr. Alan J. Heeger, Nobel Laureate, University of California, Santa Barbara, USA, *'20 years of research into conducting and semiconducting polymers; is it worth the effort?'*.

1999 Prof.dr. H. Koenraad Hemker, University of Maastricht, the Netherlands, *'Een bloedstollende geschiedenis'*.

2000 Dr. Rod C. Alferness, Lucent Technologies, Holmdel, USA, *'Optical networks, enabler of the communication revolution'*.

2001 Dr. John L. Hennessy, Stanford University, Stanford, USA, *'Directions and challenges in microprocessor architecture'*.

2002 Dr. Harold G. Craighead, Cornell University, Ithaca, USA, *'Nanostructures for mechanical and biological applications'*.

2003 Dr. Sanjiv Sam Gambhir, Stanford University, Stanford USA, *'Imaging diseases with molecular detectives'*.

2004 Sir Richard Friend, FRS, University of Cambridge, UK, *'Plastic Electronics-new science, new technology, new products and new markets'*

2005 Dr. J. Craig Venter, the Venter Institute, Rockville MD USA, *'From the Human Genome to Environmental Metagenomics'*

2006 Prof.dr. Peter Carmeliet, KU Leuven en VIB, Belgium, *'The neurovascular link of A. Vesalius revisited'*

2007 Prof.dr. Henk van der Vorst, RU Utrecht, the Netherlands', *'Men and Computers: an Upward Spiral'*

2008 Prof.dr. Shuji Nakamura, Nobel Laureate, University of California Santa Barbara USA, *'Current and Future Status of Sold State Lighting'*

2009 Prof.dr. Rutger A. van Santen, Royal Academy of Arts and Sciences professor at TU/e, *'Energy, Catalysis and Society'*

2010 Dr. Denis le Bihan, Neurospin, Gif-Sur-Yvette, France *'Water: from Brownian Motion to the Mind'*

2011 Prof. Donald E. Ingber MD, PhD, The Wyss Institute, Harvard University, USA. *'From Cellular Mechanotransduction to Biologically Inspired Engineering'*

2012 Russell Foster, Bsc, PhD, FRS, The Nuffield Laboratory of Ophtalmology, Oxford University, UK, *'Light and the Rhythm of Life'*

2013 Cherry A. Murray, PhD, Dean Harvard School of Engineering and Applied Sciences, *'Engineering for All'*

2014 Dr.ir. Robert Cailliau, Former Staff Member CERN, *'The Web Adventure'*

Dr.ir. A.E. Pannenborg – *Honorary Holst Medal*

2015 Prof.dr. Bastiaan Bloem, Radboud University Medical Center, Nijmegen, the Netherlands. *'Healthcare Networks need Innovative Technology (and vice versa)'*

2016 Andrew B. Watson, PhD, NASA Ames Research Center, Moffet Field, CA, USA, The Windows of Visibility'