

Amsterdam Institute for
Infection and Immunity

Facts & Figures 2020 - 2021





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FROM OUR DIRECTORS

It is our pleasure to present the annual report of 2020 and 2021 with the facts and figures of the Amsterdam institute for Infection and Immunity.

As you all know, the last two years were dominated by COVID-19. The first lockdowns occurred in 2020 and we had to deal with a new infectious agent. In reaction to this we initiated the COVID-19 funding scheme early 2020 to facilitate COVID-19 research. This scheme was very successful and helped different researchers to initiate research into COVID-19 as well as obtain further funding from other agencies. We collaborated with the COVID-19 Task Force to organize seminars concerning COVID-19 research within Amsterdam UMC.

One of the biggest challenges for our researchers during 2020 and 2021 was to be able to perform research under the COVID-19 restrictions. This has led to a severe delay of PhD research but also impacted the research of postdoctoral researchers. We therefore initiated in the end of 2020 a postdoctoral grant round that provided postdocs at the end of their appointment the opportunity to obtain extension to compensate for the time loss. We were among the first to address this issue and luckily other institutes and national agencies have followed this initiative.

We have also initiated online seminars and even held our first online Annual Meeting in 2021, which turned out to be a great success.

It became apparent in 2020 that we needed to change/adapt our management structure to address urgent needs concerning Public Relations, Technology Transfer, Communications and Education. We therefore formed Committees of very enthusiastic All members with a focus on these specific elements (see page 3) and this allowed us to organize and address important issues within the institute in a successful and effective manner. The involvement of the Committee members was pivotal to its success and we are very happy to have an enthusiastic group of All members involved in these Committees .

We thank everyone for their participation in our institute in these difficult years and to help us overcome and address the challenges in 2020 and 2021. We are therefore proud to present our annual report that shows that even during the Pandemic we were able to help and facilitate research within All not only on COVID-19 but also with relation to Cancer and Inflammatory Diseases.

Yvette van Kooyk and Theo Geijtenbeek,
Directors of Amsterdam Institute for Infection and Immunity



RESEARCH BOARD

DIRECTORS



Theo Geljtenbeek



Yvette van Kooyk

MANAGEMENT SUPPORT



Yvonne Duiker



Tine Sibbing

PROGRAM LEADERS



Inflammatory Diseases



Derk Amsen



Bianca Blom



Jonny van der Laken



Reina Mebius



Sander Tas



Infectious Diseases



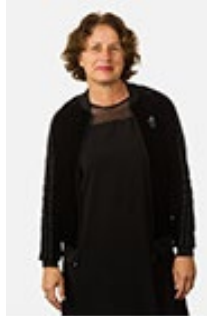
Wilbert Bitter
till 1-3-2021



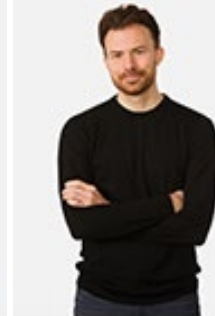
Jeroen den Dunnen
from 1-9-2021



Joppe Hovius



Maria Prins



Colin Russell



Marcelline Tutu van Furth



Cancer Immunology



Idris Bahce



Eric Eldering



Fons van de
Eertwegh



Marjolein van Egmond



Tanja de Gruij



Arnon Kater



Rosalie Luiten



COMMITTEES (START END 2020)

ANNUAL MEETING / SEMINARS

Chair:

- Derk Amsen

Members:

- Jan dan den Bossche (from 1-12-2021)
- Tanja de Gruijl
- Irene van der Haar Avila
- Vanessa Harris

PR & PUBLIC OUTREACH

Chair:

- Rosalie Luiten

Members:

- Derk Amsen
- Stefanie Busold
- Marjolein van Egmond
- Maria Prins

VALORISATION

Chair:

- Conny van der Laken

Members:

- Joppe Hovius
- Rosalie Luiten
- Myrddin Verheij

TALENT POLICY

Chairs:

- Marjolein van Egmond
- Sander Tas

Members:

- Jan van den Bossche
- Marc Hilhorst
- Marieke Koelink
- Rosalie Linssen
- Colin Russell
- Robbert Spaapen (till 1-8-2021)
- Rieneke van de Ven

STRATEGY

Chair:

- Colin Russell

Members:

- Eric Eldering
- Joppe Hovius
- Reina Mebius

EDUCATION

Chairs:

- Wilbert Bitter (till 1-9-2021)
- Bianca Blom

Members:

- Jeroen den Dunnen (from 1-9-2021)
- Juan Garcia Vallejo
- Aram de Haas
- Yvonne Pannekoek
- Eddy Wierenga

GRANTS

Chair:

- Marceline Tutu van Furth

Member:

- Reina Mebius

Review committee:

- Louis Ates
- Lisa van Baarsen
- Adriaan Bins
- Jeroen den Dunnen
- Klaas van Gisbergen
- Bram Goorhuis
- Joke den Haan
- Mette Hazenberg
- Martijn van der Kuip
- Thomas Rustemeyer
- Maarten Schim van der Loeff
- Maria Themeli
- Kees van 't Veer

POSTDOC COMMITTEE

(from 1-9-2021)

- Alsya Affandi
- Marta Bermejo-Jambrina
- Thanos Blanes
- Kornel Golebski
- Melissa van Gool
- Fleur Peters
- Kwinten Sliepen

PHD STUDENT COMMITTEE

- Stefanie Busold
- Irene van der Haar Avila
- Aram de Haas
- Rosalie Linssen (till 1-8-2021)
- Florencia Morgana
- Celine Sewnath
- Myrddin Verheij



SCIENTIFIC MEETINGS

2020

MEET AND GREET

- February 4, 2020 - Volkshotel Amsterdam

All WEBINAR

- June 25, 2020: 'COVID-19: antivirals & vaccines against SARS-CoV-2'. With an update of Martin Grobusch on our ongoing remdesivir clinical trial. Arjan Griffioen presented his research on a SARS-CoV-2 vaccine and Hans Zaaijer gave an update on his COVID-19 antibody survey.

All SYMPOSIA

- December 3, 2020 (online) Amsterdam UMC & COVID-19: Unorthodox teams, accelerating science (organized together with other research institutes).
- December 10, 2020 (online): Infectieziekten Symposium Amsterdam (IDSA): IDSA goes ID-week.

All EDUCATION

Advanced Immunology course

- January 27 - February 7, 2020.

2021

MEET AND GREET

- October 7, 2021 - Postdoc meeting - Volkshotel Amsterdam
- November 2, 2021 - Joint All/AGEM meeting - CASA

All ANNUAL SYMPOSIUM

- June 24, 2021 (online in studio) 'The current and next pandemic', with (inter)national speakers: Kwok-Yung Yuen, Miguel Soares, Laurence Zitvogel and Hanneke Schuitemaker, parallel sessions with presentations of PhD students, and a panel discussion with Ron Fouchier, Hanneke Schuitemaker and Menno de Jong.

All ANNUAL PHD STUDENT RETREAT

- November 4, 2021: Two day's PhD retreat at the Volendam Hotel, full of networking, scientific presentations, social activities and a party.

All SEMINAR SERIE

- September 7, 2021 (online in studio): Jeffrey Rathmell - 'Fueling T cells: Immunometabolic checkpoints in cancer and inflammation'.
- October 5, 2021 (hybrid): Kees Melief - 'Combination immunotherapy of cancers caused by high risk human papillomavirus'.
- October 12, 2021 (online in studio): Jason Cyster - 'Molecular cues guiding immune cell migration dynamics'.
- October 14, 2021 (hybrid): Peter Horby - 'The RECOVERY trial: design, impact, and lessons'.
- November 2, 2021 (online in studio): Janis Taube - 'Multiplex IF biomarker development using the AstroPath platform: Astronomy accelerates pathology'.
- November 9, 2021 (hybrid): Nick de Voogdt & Jo Vanginderachter - 'Imaging and therapy of inflammation and cancer with anti-CD206 nanobody probes'.

All SYMPOSIA

- December 15, 2021 (online): Infectieziekten Symposium Amsterdam (IDSA): IDSA goes ID-week.

All EDUCATION

Advanced Immunology course

- June 3 - July 2, 2021 - online.

'De infectie Avond'

- January 19, 2021 - 'Tuberculose', with speakers Frank Cobelens, Josje Altenburg and Wilbert Bitter.
- May 25, 2021 - online: 'Vaccinatie', with speakers Ben van der Zeijst, Rogier Sanders and Adriaan Bins.



GRANTS PROVIDED BY AII

2020

COLLABORATION GRANT

€ 20.000 to stimulate new collaboration between research groups of at least 2 locations (AMC/VUmc/GGD/Sanquin/Reade).

- *Nina van Sorge, Sue Gibbs, Reina Mebius*: the project is the start of a new collaboration between experts in microbiology (van Sorge), tissue engineering (Gibbs) and mucosal immunology (Mebius) with the aim to provide insight into the barrier-specific immune responses against the Gram-positive bacterial pathogen GAS.
- *Coen Kuijl (MMI/VUmc)*, was instigated after being jointly inspired by discussions with *Jeffrey Buter* (Stratingh Institute for Chemistry/UG) and *Nicole van der Wel* (Electron Microscopy Centre Amsterdam/AMC), who share a research interest in the mechanisms and implications of phagosomal escape of Mycobacteria and the approaches by which we study this phenomenon provide a clear potential for synergy. The goal of this grant proposal is to develop the technique: Mycobacterial Coating with Trehalose-Associated Proteins.
- *Joke den Haan (MCBI/VUmc)* and combines the expertise of two very different research groups to enable a completely new research line focused on the role of platelet activation on CD8+ T cell priming. For this the know-how of platelet activation and its role in innate immunity of the *van der Poll/van 't Veer* lab (CEMM/AMC) is joined with the experience in CD8+ T cell priming by antigen presenting cells of the *den Haan* lab.
- *Mike Nurmohamed (Reade Rheumatology)* will mark a new collaboration between the Depts of Gastroenterology at AMC and VUmc and Reade Rheumatology (Nurmohamed) to extend their observations to respective response prediction in rheumatic diseases and to perform an epigenome-wide association study (EWAS) using the Illumina EPIC BeadChip methylation array on responders and non-responders to the aforementioned biologicals in rheumatic diseases.

COVID-19 GRANT

€ 20.000 to enable teams of researchers within the Amsterdam UMC and their strategic partners to rapidly pursue innovative studies to fight the ongoing pandemic.

- *M.J. van Gils/S. de Taeye/G. Vidarsson/T. Rispen*: Screening of COVID-19 antibodies using binding kinetics and epitope binning for the selection of optimal therapeutic candidates.
- *C.M.S. Ribeiro/F. Jean/V. Muncan/M.E. Wildenberg*: Fighting COVID-19 from the inside: Impact of autophagy-based therapies on intestinal SARS-CoV-2 dissemination.
- *J. den Dunnen/M. de Winther/M. van Gils/G. Vidarsson*: Obtaining proof-of-concept that Fostamatinib can counteract excessive inflammation induced by anti-SARS-CoV-2 antibodies.
- *T.B.H. Geijtenbeek/R.W. Sanders*: Heparan sulphates as molecular traps to block SARS-CoV-2 infection.

EXTENSION GRANT FOR POSTDOCS

€ 20.000 to support postdocs that were unable to finish their research project due to COVID.

The awarded postdocs are:

- *Tom Groot Kormelink*
- *Susanna Commandeur*
- *Renske Hebing*
- *Anastasia Prokopi*
- *Kwinten Sliepen*
- *Joyce Lübers*
- *Kornel Golebski*
- *Branka Popovic*
- *Yme van der Velden*
- *Daniela van Santen*
- *Ellen Generaal*



TRAVEL GRANT

€ 500 to stimulate young talent to attend an international scientific conference to actively build their CV and network.

The awarded PhD students are:

- *Jelle van Schoten*
- *Sebastiaan Verboeket*
- *Eveline Verheij*
- *Cormac Kinsella*
- *Mandy Gruijs*
- *Diana van Stijn*

2021

POSTDOC GRANT

€ 80.000 to support young postdoctoral talent at the crucial stage in their innovative research towards successful future grant applications.

- *Kornel Golebski*, Respiratory Medicine: Understanding the role of unconventional inflammatory ILC2s in pathologies of the airways.
- *Kwinten Sliepen*, Medical Microbiology: Membrane-bound E1E2 as template for hepatitis C virus vaccine design.

HIGHLIGHTS

A selection of highlights of 2020

Official kick off of the ARCAID project

Amsterdam Rheumatology Center for Autoimmune Diseases (ARCAID), a collaboration of 15 leading researchers from Amsterdam UMC, coordinated by Ronald van Vollenhoven, professor of Rheumatology, received a 2 million euros European Horizon 2020 MSCA-COFUND grant. In the ARCAID project, 20 young researchers are trained in the field of translational immunological rheumatology, in order to become future pioneers and take autoimmune rheumatology research a step further. 20 January 2020 was the official kick off of the project at location AMC.

Powerhouses against Corona

Marit van Gils found powerful antibodies against the coronavirus which resulted in a publication in Science followed by a lot of media attention. "We collected dozens of antibodies (proteins) from the blood. Two of these turned out to be the most

powerful of all antibodies against the new corona virus known to date. The idea is to produce and give those powerhouses on a large scale as medicines in the early stages of the disease, or perhaps preventively to temporarily protect people. We were one of the first to make antibodies from covid-19 patients. Researchers all over the world have now done the same. Our antibodies are among the most powerful that have been found."

Promising new drug for critically ill corona patient

An existing drug appears to reduce organ damage and mortality in people with covid-19. This has been shown by a small-scale study among thirty corona patients. The special thing about the medicine is that it does not shut down the entire immune system, as existing medicines do. The study was published at the end of last month in The Lancet Rheumatology.



"We are not there yet with this drug," emphasises research leader and ICU doctor Dr Alexander Vlaar. "A larger follow-up study (phase 3) should confirm this signal."

Triple therapy for malaria: a promising option

In Southeast Asia, malaria has become resistant to common artemisinin-based combination therapies over the last decade. Researchers from the Mahidol Oxford Tropical Medicine Research Unit in Thailand and the Amsterdam UMC recently published the promising results of a large-scale study in that region into the efficacy, safety and tolerability of two forms of triple artesimnin-based combination therapies (TACTs). Internist-infectiologist in training Rob van der Pluijm was research coordinator of this TRAC II study.

Triple ACTs (TACTs), combining an artemisinin and two existing partner drugs, could be a stop-gap therapy for treating multidrug-resistant malaria until new antimalarials are available. Where resistance is not established, deployment of TACTs could delay or prevent emergence of resistance and could prolong the longevity of antimalarial

compounds used in any triple-drug combination.

Drugs for metabolic disease disarm a cancer immune evasion shield

Sanquin researchers have found a way to induce a stronger immune response against cultured brain tumor cells. To this end, Robbert Spaapen and colleagues have removed certain lipids with a sugar headgroup, so-called glycolipids, from the outside of those tumor cells. They also identified a molecular mechanism that controls the fabrication of those glycolipids. Intervention in this mechanism may improve the survival chances of patients. Spaapen already has a drug in mind. The research is published in *Immunity*.

Strength in numbers through COVID-19

Writing a review of all the scientific medical literature being published on COVID-19 - currently running at 300 articles a day - and still counting! - seems more like an unending and hence impossible Sisyphean task than a feasible proposition. Internist and infectious disease specialist Joost Wiersinga managed it, and the July 2020 *JAMA* article was an immediate resounding success.

A selection of highlights of 2021

A solution for Antibiotic-resistant gonorrhea

Antibiotic-resistant gonorrhea is a growing problem worldwide. The first signs of resistance to the current standard drug ceftriaxone have now been demonstrated. Is there an alternative that can be found if resistance really does take hold and gonorrhea becomes untreatable as a result? Maarten Schim van der Loeff and his team found a solution - just in case.

High-impact research reveals how lymphoma evades the immune system

New insights into immune escape by lymphoma obtained in the laboratory of Dr. Marcel Spaargaren and Prof. Steven Pals were published in the prestigious scientific journal *Blood*.

PET scan detects early stage inflammatory arthritis earlier

The PET scan offers the possibility of detecting incipient inflammations in rheumatoid arthritis (RA) and axial spondyloarthritis (ax-SpA) at an earlier stage. This has been shown in research among patients by rheumatologist Conny van der Laken. With the PET scan we can see inflammations that cannot yet be seen on the outside.

The early detection of inflammatory rheumatic diseases such as RA and Ax-SpA is important because it can prevent damage. The PET scan has already been used for some time to see if someone has a certain condition. Dr. Conny van der Laken is one of the first researchers to use the PET scan to diagnose incipient inflammatory rheumatism.



A Big Step forward for cancer immunotherapy

Amsterdam UMC was the first hospital in the Netherlands that was qualified for treating cancer using modified immune cells. We have now treated around 50 patients with lymph node cancer with CAR T-cell therapy, and more than half are still in remission after more than two years. This is a remarkable medical achievement, taking into account their limited life expectancy before the availability of CAR T-cell therapy.

Breakthrough reveals new possibilities in the fight against tuberculosis

In a new study, published in Nature, All researchers and collaborators from the Vrije Universiteit and CSSB Hamburg reveal the structural basis of an intact type VII secretion system inner membrane machinery from Mycobacterium tuberculosis which can enable the development of novel therapies for the treatment tuberculosis.

Promising Phase III data for a new passive vaccine against RSV

Respiratory Syncytial Virus (RSV) is the leading cause of hospitalization in infants.

The currently available preventive treatment is a monthly injection with an anti-RSV antibody, which is only given to high-risk infants and only temporarily provides protection due to a limited half-life. Now, a new antibody against RSV, which was developed by scientists of Amsterdam UMC spin-off AIMM Therapeutics, has come one step closer to market authorization, showing positive results in a Phase III clinical trial performed by pharma companies Astra Zeneca and Sanofi. This antibody, being more stable than the existing antibody, will only need to be administered once per RSV-season and should become available to all infants.

Seven scientists of All in the 'QUOTE 500' of international research

Each year, [Web of Science](#)™ presents a list of international scientists whose work has made it into the top 1% of most cited publications of the past 10 years. The scientific work of Wytse Fokkens, Robert Landewé, Tom van der Poll, Hergen Spits, Caroline Terwee, Ronald van Vollenhoven and Pieter Wesseling are on the 'Highly Cited Researchers' list of 2021.

AWARDS AND PRIZES

A selection of awards and prizes obtained in 2020

Best PhD supervisor of 2020 from the Graduate School AMC

- *Marie Jose Kersten*

Bio Art & Design Award

- *Juan Garcia Vallejo*: Becoming a Sentinel Species. A science fiction project that focuses on small plastic particles - microplastics - and sentinel species.
- *Henry de Vries*: The Orders of the Undead. A participatory research design into public health, stigma, viruses and 'othering'

1st Emerging Investigators Joint Fellowship Award in the Field of Cell Therapy and Immunotherapy

- *Maria Themeli* and colleagues for their abstract: Generation of Universal "Off-the-Shelf" Chimeric Antigen Receptor (CAR)-engineered T Cells from Induced Pluripotent Stem Cells.

Sauerwein Medal

- *Menno Smith* for his research contribution in the field of tropical infectious diseases.



NVVI Van Bekkum thesis award.

- *Sjoerd Schetters*: Orchestrating the immune system to initiate anti-tumor immunity.

Team Science Award of the Melanoma Research Alliance

- Tomas Kirchhoff, Jeffrey Weber (New York University), *Rosalie Luiten*, *Wouter Ouwerkerk* (Dermatology, Amsterdam UMC) and John Haanen (AVL-NKI) obtained the award for setting up a worldwide consortium for collaborative research on Germline

biomarkers of melanoma immunotherapy.

ZonMW parel award:

- *Henk Schallig* for his RAPDIF project: How can diagnosis and treatment of young children with fever be improved in African countries?
- *Elske Hoornenborg* for her AMPREP project: Research by the GGD Amsterdam has shown that PrEP is very effective in practice and prevent HIV infection.

A selection of awards and prizes obtained in 2021

Amsterdam Science and Innovation award

- *Hergen Spits* for his drug against the RS virus that causes major crowding in pediatric ICUs in the winter.

Best presentation parallel sessions 4th All Annual Symposium

- *Alsya Affandi*
- *Anusca Rader*
- *Laura Boekel*

Famelab International 2021

- *Alexandra Cloherty*. The annual competition challenges researchers from around the world to showcase their science communication skills. Participants have to condense a complex scientific topic in an accessible manner within three minutes.

'Master' of the American College of Rheumatology

- *Maarten Boers*. This appointment is a career award. Recognition as a Master of the American College of Rheumatology is one of the highest honors the College bestows to members who have made outstanding contributions to the field of

rheumatology through scholarly achievement and/or service to their patients, students, and profession.

NCHIV Joep Lange & Jacqueline van Tongeren Junior Investigator Award

- *Renee Schreurs*: for the best abstract submitted at the Netherlands Conference on HIV Pathogenesis, Epidemiology, Prevention and Treatment (NCHIV) this year. This research concerns 'genetic variation in autophagy machinery associated with enhanced antiviral T-cell immunity and reduced T-cell exhaustion signatures in HIV-1 infected individuals'.

Ridder in de orde van de Nederlandse Leeuw

- *Hergen Spits*

Talma Eykman thesis prize

- *Bob Kullberg* for the scientific internship he did at the Center for Experimental Molecular Medicine (CEMM) in Amsterdam UMC on the topic 'The role of the lung microbiome in pneumonia' under the supervision of Bas Haak and Joost Wiersinga.



GRANTS

A selection of grants obtained in 2020

Amsterdam UMC Fellowship (including funding and Tenure Trak)

- *Lieuwe Bos*.

Amsterdam UMC TKI-public private partnership grants

- *Joke den Haan*: CanNanoVac: Novel nanovaccines to stimulate anti-cancer immunity.
- *Marie José Kersten*: RACE-CAR: impRove endurAnce, priCe and Efficacy of CAR T-cells.
- *Dasja Pajkrt*: Focus-on-Virus: Picornavirus and HIV infection using a complex gut-brain organoid model.
- *Elena Rampanelli*: Cocoon: Combining cord-free uterine elektrohysterography and standard clinical measurements for refining the detection of premature birth.
- *Alexander Vlaar*: HistoSeps: Implementation of a novel therapy for sepsis treatment in the intensive care setting.
- *Carlie de Vries*: NR4Ants: NR4A antagonists as targeted strategy to boost cancer immunotherapy.

Amsterdam UMC Young Talent Fund

- *Tara Muijlwijk*
- *Tjitske van Engelen*

Cancer Center Amsterdam (CCA) Foundation

- *Daniël Miedema*: Chromosomal instability as key regulator of the immune microenvironment of cancers.
- *Joep Grootjans*: Mapping the human peritoneal immune system to identify novel immunomodulatory targets for the treatment of peritoneal metastasized cancer.
- *Marieke Fransen*: Immune-modulating effects of various doses of (chemo) radiotherapy and immunotherapy on tumor draining lymph nodes in stage II-III NSCLC patients.
- *Rubina Baglio*: Liquid biopsy-based immune profiling for cancer patients' personalized medicine.

European Commission Horizon 2020

- *Elisa Giovannetti*: ALISE (Antibody Light-Induced Selectivity Enhancement) Anti-Cancer Light-Controllable Antibody-Peptide Conjugates.
- *Marie Jose Kersten*: Monitoring multidimensional aspects of QUALity of Life after cancer ImmunoTherapy - an Open smart digital Platform for personalized prevention and patient management.

European Commission: Next generation Organ-On-Chip grant

- The consortium GUTVIBRATIONS (founders: *Dasja Pajkrt and Katja Wolthers*) to develop a next-generation gut-brain axis organ-on-chip and lead innovation in the fields of complex organ-on-chip technology for virology.

European & Developing Countries Clinical Trials Partnership (EDCTP) grant

- *Petra Mens and Henk Schallig*, together with partners in Mali, Burkina Faso, DR Congo, Mozambique, The Gambia, Spain for their PyraPreg project to study the efficacy and safety of a newly registered artemisinin-based combination therapy (pyronaridine-artesunate - Pyramax).

European Research Council (ERC)-Consolidator Grant

- *Matthijs Brouwer*: Improving Prognosis by Using Innovative Methods to Diagnose Causes of Encephalitis.

European Union's Horizon 2020 research and innovation grant

- *Marie José Kersten and Maria Themeili*: Accelerating the Development and Improving Access to CAR and TCR engineered T cell therapy (T2EVOLVE).



Health-Holland Top Sector Life Sciences & Health grant:

- *Anke-Hilse Maitland - van der Zee*: Precision Medicine for more Oxygen - P40”.
- *Arjan Griffioen* for making a vaccine against the coronavirus, based on the same technique as the vaccine against cancer he is working on.

KWF grant:

- *Adriaan Bins*: eCRIML: a safety and quality of life study of chemoradiotherapy, in combination with immunotherapy in patients with localized bladder cancer.
- *Tuna Mutis*: Targeting Acute Myeloid Leukemia Stem Cells with Dual (split) Chimeric Antigen Receptor (CAR)-engineered T-cells.
- *Niels Heemskerk*: Young investigator grant: Targeting tumor vessels to improve leukocyte trafficking for immunotherapy.
- *Judy van Beijnum*: Unique high-risk project: iCARE - Chimeric antigen receptor T cells for targeting solid tumors through the vasculature.
- *Mette Hazenberg*: Antibodies as therapy for acute myeloid leukemia (AML).
- *Joke den Haan*: Development of a flexible vaccine to stimulate the immune response against melanoma.
- *Yvette van Kooyk*: How do we change the immune system-suppressing tumor microenvironment of pancreatic cancer?
- *Marjolein van Egmond*: How can we let our own immune system attack cancer cells?
- *Derk Amsen*: How Notch helps make effective cytotoxic T cells against cancer.

Landsteiner Foundation for Blood Transfusion Research (LSBR)

- *Arjan Griffioen*: Effect of anti-HPA-1a antibodies on sprouting angiogenesis and bleeding in fetal and neonatal alloimmune thrombocytopenia.
- *Sietse Nagelkerke*: Targeted ultralong-read sequencing to solve the genetic structure of complex genetic regions in blood group and immune genetics.

- *Jan Voorberg*: Conformational regulation of ADAMTS13 in immune thrombotic thrombocytopenic purpura.
- *Mette Hazenberg, Carlijn Voermans, and Bianca Blom*: Explore ways to enhance Innate Lymphoid Cell (ILC) recovery in allogeneic HCT recipients to prevent or ameliorate GvHD.

Lymph&Co

- *Arnon Kater*: Correction of metabolic dysfunction in CAR-T cells as curative treatment option for small lymphocytic lymphoma/ chronic lymphocytic leukemia.

Novel Antibacterial Compounds and Therapies Antagonizing Resistance (NACTAR) program:

- *Wilbert Bitter*: Targeting Mycobacterium tuberculosis, setting up the stage for type VII secretion inhibitors focuses on research into antimicrobial substances that can tackle the bacteria that causes tuberculosis (TB).

NWO KIEM (Kennis Innovatie Mapping) within the ENW-PPS fund:

- *Joke den Haan*: Nanobodies to produce cancer vaccines.

NWO Open Competition Domain Science -KLEIN grant:

- *Stephan Huvneers*: Endothelial junctions: forces guiding the vasculature.
- *Sandra van Vliet*: Tuning immune cell biology with macrocyclic glycopeptides.
- *Jan Van den Bossche*: The regulation and function of a newfound immunometabolite in macrophages.

NWO Rubicon Grant

- *Sjoerd Schetters*: The professional profile of the eosinophilist.

NWO VENI grant

- *Felipe Vieira Braga*: Good cop, bad cop: the role of regulatory T-cells in colorectal cancer development and treatment.
- *Lonneke van Vught*: Clinical phenotypes in sepsis: course and association with the immune response.



NWO VIDI grant

- *Joppe Hovius*. By researching tick saliva and the immune response of humans to ticks, Joppe Hovius wants to develop a vaccine against ticks to prevent Lyme disease in both Europe and America.

NWO VICI grant

- *Colin Russell*: New approaches to characterize how our immune system changes after each influenza virus infection and how these changes affect virus evolution.

Phospholipid Research Center

- *Joke den Haan* (with *Yvette van Kooyk*): Virus-like liposomes targeting CD169+ dendritic cells as a novel carrier for cancer immunotherapy

Stichting AIDS Fonds

- *Theo Geijtenbeek, Carla Ribeiro, Neeltje Kootstra, Marit van Gils, Ben Berkhout, Rogier Sanders, Alexander Pasternak e.a.* for their research on HIV healing through identification and elimination of the HIV reservoir.
- *Steven de Taeye* for his project: Powerful antibodies with a twist.

Stichting AMC Foundation

- *Joppe Hovius, Taco Kuijpers* and *Dasja Pajkrt*.

U.S. Department of Defense Multiple Sclerosis Research Program (MSRP) grant

- *Marjolein van Egmond*: Immunoglobulin A Antibodies as Biomarker for Multiple Sclerosis Progression.

ZonMW COVID-19 grant

- *Taco Kuijpers*: Immunity against SARS-CoV-2 in immune-suppressed patients: increased risk of insufficient immunological memory or sufficient protection against re-infection.

- *Jeroen den Dunnen*: Therapeutic inhibition of severe pneumonia caused by anti-SARS-CoV-2 antibodies.
- *Dirk Eggink*: A virus-free platform to study coronavirus replication inhibitors.
- *Menno de Jong*: RECoVERED-study.
- *Ellen van der Schoot*: The build-up and duration of protective immunity against SARS-CoV-2 in relation to the severity of infection.
- *Gestur Vidarsson*: Altered antibody fucosylation by COVID-19: Implications for diagnosis and treatment.
- *Theo Geijtenbeek*: Existing drug prevents SARS-CoV-2 infection.

ZonMw-Good Use of Medicines project grant

- *Kim Sigaloff*, together with *Jan Prins* and *Michiel van Agtmael*: Safe shortening of antibiotic treatment duration for complicated *Staphylococcus aureus* bacteremia (SAFE-trial).

ZonMW-Open Competition (former TOP Grant):

- *Menno de Winther*: Defining H3K9 methylation regulatory pathways in monocyte and macrophage function in cardiovascular disease.
- *Ben Berkhout, Alexander Pasternak and Jeroen den Dunnen*: Revealing HIV hiding places: functional characterization of the HIV reservoir in CD32a+ T cells.

ZonMw second wave COVID-19 call

- *Theo Geijtenbeek*: Inhalation of low-molecular heparin as prophylaxis to prevent SARS-CoV-2 infection.
- *Jeroen den Dunnen*: Therapeutic inhibition of severe pneumonia caused by anti-SARS-CoV-2 antibodies.

Zorginstituut Nederland en ZonMw

- *Marie Jose Kersten* (with UMC Groningen, Radboud UMC, and Erasmus MC): In-house CAR-T Production.



A selection of grants obtained in 2021

European Developing Countries Clinical Trials Partnership (EDCTP)

- *Scientists of the Department of Medical Microbiology* have together with African and European partners: Develop and evaluate a new diagnostic and to trial a new malaria treatment for pregnant women.

KNAW Ter Meulen grant to go abroad for a scientific research project/work visit

- *Nurul Wirusanti*: Use of intestinal enteroids to test the potency of microbiome modulation on rotavirus vaccine protection.

KWF grant

- *Joep Grootjans*: Characterization of the human peritoneal immune system to develop new immunomodulatory therapy for peritoneally metastatic colorectal cancer
- *Rieneke van de Ven*: Characterization of tumor-infiltrating B cells in oral cavity tumors
- *Marieke Fransen*: Arming local lymphoid tissues to increase the efficacy of immunotherapy for non-small cell lung cancer
- *Joke den Haan*: Development of a liposomal vaccine that leads to optimal activation of liver killer T cells and elimination of liver cancer
- *Richard Groen*: The role of the bone matrix proteins in the recovery of multiple myeloma induced bone breakdown

KWF Young Investigator Grant

- *Joep Grootjans*: Characterization of the human peritoneal immune system to develop new immunomodulatory therapy for peritoneally metastatic colorectal cancer

KWF Unique High-risk projects grant

- *Derk Amsen*: Improvement of adoptive cancer T-cell therapies requires in vivo testing

NWO-Rubicon grant 2021

- *Willianne Hoepel*: Searching for new treatment options in kidney diseases.
- *Philip Brouwer*: A Lassa vaccine; protection against a deadly virus from an unwanted house guest.

NWO VENI grant

- *Alsya Affandi*: Nanotrivax: three-component nanobody vaccines targeting human dendritic cells for immunotherapy
- *Caitrin Cr udden*: Intercepting cancers post; how extracellular vesicles manage the secretome
- *Koen Prange*: Epigenetic control of inflammatory macrophage activation

NWO VIDI grant

- *Alexander Vlaar*: The grant enables him to develop his own innovative line of research and set up his own research group in the coming five years.

Stichting Steun Emma

- *Renee Schreurs*: Study human milk-derived extracellular vesicles as a potential therapy for intestinal inflammatory disease

TKI-PPP grants

- *Eric Eldering*: CLOSIT: CLL Lymph node Organoids for Screens and Intelligent Testing.
- *Arjan W. Griffioen*: INFLUVAX: Novel approach for evolution-proof influenza vaccination.
- *Jeffrey Kroon*: 3D-IRI: A novel 3D dual-cell perfusion model as tool to identify and validate potential druggable targets to reduce Ischemia Reperfusion Injury (3D-IRI)
- *Eric Reits*: Compound screening and validation to reduce mutant huntingtin levels.
- *Danielle Vugts*: Cell-PET: Imaging of NK cells with PET: towards better understanding of CAR-NK and NK cell therapy.
- *Bart Westerman*: AI-IMPACT: Repurposing and discovery of multi-target kinase inhibitors against brain tumors.
- *Bart Westerman*: The Toxicity atlas: Application of artificial intelligence to predict toxicities of combination therapies

ZonMW: Animal-free innovations for better COVID-19 research

- *Theo Geijtenbeek*: Inhalation of Low Molecular Weight Heparins as a



profylaxis to prevent SARS-CoV-2 infection. A heparin puff against coronavirus infection?

ZonMw COVID-19 program

- *Inge Nijhof and Mette Hazenberg*: COVID vaccinatie bij patiënten met een hematologische aandoening (COBRA KAI)
- *Filip Eftimov, Marieke van Ham, Taco Kuijpers* (Amsterdam UMC en Sanquin): Immuniteit na SARS-CoV-2 (2TB/Target to B substudie)
- *Jeroen den Dunnen*: Therapeutische remming van ernstige longontsteking veroorzaakt door anti-SARS-CoV-2 antilichamen.
- *Joost Wiersinga*: Investigate monoclonal antibody therapy against COVID-19

ZonMw Good Use of Medicines grant

- a collaboration between the Departments of Anesthesiology, Internal Medicine and Cardiothoracic Surgery, led by *Jeroen Hermanides*: Investigating the extent to which the use of so-called SGLT2 inhibitors before and after heart surgery can prevent acute kidney damage.

ZonMw Innovation grant:

- *Rheumatology and Reade*: Plants for joints.

ZonMw Open Competition

- *Klaas van Gisbergen*, together with prof. Thorbald van Hall (LUMC) Ready for new T: tumour defence with tissue T cells.
- *Wilbert Bitter*, together with prof. Dirk Slotboom (UMCG) Peeking through the cell wall of the tuberculosis bacterium.



FUNDING OF PROJECTS

Projects started in 2020

Location VUmc: about € 7.500.000

Location AMC: about € 42.500.000

Total amount of funding: about € 50.000.000

Projects started in 2021

Location VUmc: about € 8.500.000

Location AMC: about € 34.500.000

Total amount of funding: about € 43.000.000



ANNUAL FIGURES

2020

Scientific core staff	318
Other scientific staff	190
PhD students	491
Technicians	59
Total # researchers	1058

	Cancer Immunology	Infectious Diseases	Inflammatory Diseases	Total
Refereed articles	177	507	540	1224
Non-refereed articles	6	41	41	88
Books, chapters	1	1	1	3
Professional publication ¹	3	19	22	44
Other research output ²	11	2	15	28
PhD theses	14	26	39	79

Note: joint publications location VUmc - AMC: 91
Source: AMSCO, 28-4-2022

2021

Scientific core staff	308
Other scientific staff	232
PhD students	457
Technicians	78
Total # researchers	1075

	Cancer Immunology	Infectious Diseases	Inflammatory Diseases	Total
Refereed articles	202	590	669	1461
Non-refereed articles	8	40	46	94
Books, chapters	1	4	3	8
Professional publication ¹	-	10	11	21
Other research output ²	1	1	5	7
PhD theses	15	56	46	117

Note: joint publications location VUmc - AMC: 80
Source: AMSCO, 28-4-2022`

,DISCLAIMER: The data from the PURE research database (community module / AMSCO) has been checked to the best of our abilities, but there may be inconsistencies or flaws in the system.

¹ Publications about results of scientific research aimed at professionally interested people

² Contributions in non-scientific journals and newspapers



TOP PUBLICATIONS

2020

- Hetland, ML, Haavardsholm, EA, Rudin, A, Nordström, D, Nurmohamed, M, Gudbjornsson, B, Lampa, J, Hørslev-Petersen, K, Uhlig, T, Grondal, G, Østergaard, M, Heiberg, MS, Twisk, J, Lend, K, Krabbe, S, Hyldstrup, LH, Lindqvist, J, Hultgård Ekwall, AK, Grøn, KL, Kapetanovic, M, Faustini, F, Tuompo, R, Lorenzen, T, Cagnotto, G, Baecklund, E, Hendricks, O, Vedder, D, Sokka-Isler, T, Husmark, T, Ljoså, MKA, Brodin, E, Ellingsen, T, Söderbergh, A, Rizk, M, Olsson, ÅR, Larsson, P, Uhrenholt, L, Just, SA, Stevens, DJ, Laurberg, TB, Bakland, G, Olsen, IC & Van Vollenhoven, R 2020, 'Active conventional treatment and three different biological treatments in early rheumatoid arthritis: Phase IV investigator initiated, randomised, observer blinded clinical trial', *The BMJ*, vol. 371, m4328. <https://doi.org/10.1136/bmj.m4328>
- Ramiro, S, Mostard, RMLM, Magro-Checa, CS, van Dongen, CMP, Dormans, T, Buijs, J, Gronenschild, M, de Kruif, MD, van Haren, EHJ, van Kraaij, T, Leers, MPG, Peeters, R, Wong, DR & Landewé, RBM 2020, 'Historically controlled comparison of glucocorticoids with or without tocilizumab versus supportive care only in patients with COVID-19-associated cytokine storm syndrome: Results of the CHIC study', *Annals of the rheumatic diseases*, vol. 79, no. 9, 218479, pp. 1143-1151. <https://doi.org/10.1136/annrheumdis-2020-218479>
- van Lier, YF, Davids, M, Haverkate, NJE, de Groot, PF, Donker, ML, Meijer, E, Heubel-Moenen, FCJ, Nur, E, Zeerleder, SS, Nieuwdorp, M, Blom, B & Hazenberg, MD 2020, 'Donor fecal microbiota transplantation ameliorates intestinal graft-versus-host disease in allogeneic hematopoietic cell transplant recipients', *Science Translational Medicine*, vol. 12, no. 556, eAAZ8926. <https://doi.org/10.1126/scitranslmed.aaz8926>
- Kater, AP, Wu, JQ, Kipps, T, Eichhorst, B, Hillmen, P, D'Rozario, J, Assouline, S, Owen, C, Robak, T, de la Serna, J, Jaeger, U, Cartron, G, Montillo, M, Dubois, J, Eldering, E, Mellink, C, van der Kevie-Kersemaekers, A-M, Kim, SY, Chyla, B, Punnoose, E, Bolen, CR, Assaf, ZJ, Jiang, Y, Wang, J, Lefebure, M, Boyer, M, Humphrey, K & Seymour, JF 2020, 'Venetoclax Plus Rituximab in Relapsed Chronic Lymphocytic Leukemia: 4-Year Results and Evaluation of Impact of Genomic Complexity and Gene Mutations From the MURANO Phase III Study', *Journal of clinical oncology*, vol. 38, no. 34, pp. 4042-4054. <https://doi.org/10.1200/JCO.20.00948>
- Derks, S, de Klerk, LK, Xu, X, Fleitas, T, Liu, KX, Liu, Y, Dietlein, F, Margolis, C, Chiaravalli, AM, Da Silva, AC, Ogino, S, Akarca, FG, Freeman, GJ, Rodig, SJ, Hornick, JL, van Allen, E, Li, B, Liu, SX, Thorsson, V & Bass, AJ 2020, 'Characterizing diversity in the tumor-immune microenvironment of distinct subclasses of gastroesophageal adenocarcinomas', *Annals of Oncology*, vol. 31, no. 8, pp. 1011-1020. <https://doi.org/10.1016/j.annonc.2020.04.011>
- Haselager, MV, Kielbassa, K, ter Burg, J, Bax, DJC, Fernandes, SM, Borst, J, Tam, C, Forconi, F, Chiodin, G, Brown, JR, Dubois, J, Kater, AP & Eldering, E 2020, 'Changes in Bcl-2 members after ibrutinib or venetoclax uncover functional hierarchy in determining resistance to venetoclax in CLL', *Blood*, vol. 136, no. 25, pp. 2918-2926. <https://doi.org/10.1182/blood.2019004326>
- Salerno, F, Turner, M & Wolkers, MC 2020, 'Dynamic Post-Transcriptional Events Governing CD8+ T Cell Homeostasis and Effector Function', *Trends in Immunology*, vol. 41, no. 3, pp. 240-254. <https://doi.org/10.1016/j.it.2020.01.001>



- Brouwer, PJM, Caniels, TG, van der Straten, K, Snitselaar, JL, Aldon, Y, Bangaru, S, Torres, JL, Okba, NMA, Claireaux, M, Kerster, G, Bentlage, AEH, van Haaren, MM, Guerra, D, Burger, JA, Schermer, EE, Verheul, KD, van der Velde, N, van der Kooij, A, van Schooten, J, van Breemen, MJ, Bijl, TPL, Sliepen, K, Aartse, A, Derking, R, Bontjer, I, Kootstra, NA, Joost Wiersinga, W, Vidarsson, G, Haagmans, BL, Ward, AB, de Bree, GJ, Sanders, RW & van Gils, MJ 2020, 'Potent neutralizing antibodies from COVID-19 patients define multiple targets of vulnerability', *Science*, vol. 369, no. 6504, pp. 643-650. <https://doi.org/10.1126/science.abc5902>

2021

- Golebski, K, Layhadi, JA, Sahiner, U, Steveling-Klein, EH, Lenormand, MM, Li, RCY, Bal, SM, Heesters, BA, Vilà-Nadal, G, Hunewald, O, Montamat, G, He, FQ, Ollert, M, Fedina, O, Lao-Araya, M, Vijverberg, SJH, Maitland-van der Zee, A-H, van Drunen, CM, Fokkens, WJ, Durham, SR, Spits, H & Shamji, MH 2021, 'Induction of IL-10-producing type 2 innate lymphoid cells by allergen immunotherapy is associated with clinical response', *Immunity*, vol. 54, no. 2, pp. 291-307.e7. <https://doi.org/10.1016/j.immuni.2020.12.013>
- Jongsma, MLM, de Waard, AA, Raaben, M, Zhang, T, Cabukusta, B, Platzner, R, Blomen, VA, Xagara, A, Verkerk, T, Bliss, S, Kong, X, Gerke, C, Janssen, L, Stickel, E, Holst, S, Plomp, R, Mulder, A, Ferrone, S, Claas, FHJ, Heemskerk, MHM, Griffioen, M, Halenius, A, Overkleeft, H, Huppa, JB, Wuhrer, M, Brummelkamp, TR, Neefjes, J & Spaapen, RM 2021, 'The SPPL3-Defined Glycosphingolipid Repertoire Orchestrates HLA Class I-Mediated Immune Responses', *Immunity*, vol. 54, no. 1, pp. 132-150.e9. <https://doi.org/10.1016/j.immuni.2020.11.003>
- Hoepel, W, Chen, H-J, Geyer, CE, Allahverdiyeva, S, Manz, XD, de Taeye, SW, Aman, J, Mes, L, Steenhuis, M, Griffith, GR, Bonta, PI, Brouwer, PJM, Caniels, TG, van der Straten, K, Golebski, K, Jonkers, RE, Larsen, MD, Linty, F, Nouta, J, van Roomen, CPAA, van Baarle, FEHP, van Drunen, CM, Wolbink, G, Vlaar, APJ, de Bree, GJ, Sanders, RW, Willemsen, L, Neele, AE, van de Beek, D, Rispens, T, Wuhrer, M, Bogaard, HJ, van Gils, MJ, Vidarsson, G, de Winther, M & den Dunnen, J 2021, 'High titers and low fucosylation of early human anti-SARS-CoV-2 IgG promote inflammation by alveolar macrophages', *Science Translational Medicine*, vol. 13, no. 596, eabf8654. <https://doi.org/10.1126/scitranslmed.abf8654>
- Huinen, ZR, Huijbers, EJM, van Beijnum, JR, Nowak-Sliwinska, P & Griffioen, AW 2021, 'Anti-angiogenic agents – overcoming tumour endothelial cell anergy and improving immunotherapy outcomes', *Nature Reviews Clinical Oncology*, vol. 18, no. 8, pp. 527-540. <https://doi.org/10.1038/s41571-021-00496-y>
- Schneiders, FL & Senan, S 2021, 'Finding the Goldilocks zone in neoadjuvant radioimmunotherapy', *Nature Reviews Clinical Oncology*, vol. 18, no. 9, pp. 545-546. <https://doi.org/10.1038/s41571-021-00540-x>, <https://doi.org/10.1038/s41571-021-00540-x>
- van de Donk, NWCJ, Themeli, M & Usmani, SZ 2021, 'Determinants of Response and Mechanisms of Resistance of CAR T-cell Therapy in Multiple Myeloma', *Cancer discovery*, vol. 2, no. 4, pp. 302-318. <https://doi.org/10.1158/2643-3230.BCD-20-0227>



- Hoepel, W, Chen, H-J, Geyer, CE, Allahverdiyeva, S, Manz, XD, de Taeye, SW, Aman, J, Mes, L, Steenhuis, M, Griffith, GR, Bonta, PI, Brouwer, PJM, Caniels, TG, van der Straten, K, Golebski, K, Jonkers, RE, Larsen, MD, Linty, F, Nouta, J, van Roomen, CPAA, van Baarle, FEHP, van Drunen, CM, Wolbink, G, Vlaar, APJ, de Bree, GJ, Sanders, RW, Willemsen, L, Neele, AE, van de Beek, D, Rispens, T, Wuhrer, M, Bogaard, HJ, van Gils, MJ, Vidarsson, G, de Winther, M & den Dunnen, J 2021, 'High titers and low fucosylation of early human anti-SARS-CoV-2 IgG promote inflammation by alveolar macrophages', Science Translational Medicine, vol. 13, no. 596, eabf8654. <https://doi.org/10.1126/scitranslmed.abf8654>
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NEW PROFESSOR APPOINTMENT

2020

- *Niels van de Donk*, appointed Professor Hematology, in particular 'Multiple Myeloma' as of February 1, 2020.
- *Janneke Horn*, appointed Professor Neuro-intensive Care as of October 27, 2020.
- *Petra Elders*, appointed Professor of General Practice, in particular 'Diabetes care' as of November 1, 2020.

2021

- *Mette Hazenberg*, appointed Professor Internal Medicine, in particular 'Cell therapy in hematology' as of January 5, 2021.
- *Alexander Vlaar*, appointed Professor Translational Intensive Care Medicine as of February 2, 2021.
- *Marcel Bekkenk*, appointed Professor Dermatology as of March 1, 2021.
- *Nina van Sorge*, appointed Professor Translational Microbiology as of June 8, 2021.
- *Marc van der Valk*, appointed Professor Internal Medicine, in particular 'Treatment of HIV infection' as of June 22, 2021.
- *Dasja Pajkrt*, appointed Professor Viral Pediatric Infectious Diseases as of October 5, 2021.



PHD GRADUATIONS

2020



- Baardman, J. 'Metabolic orchestration of macrophages in disease'
- Barendregt, A. 'Markers of inflammation: Measuring disease activity in juvenile idiopathic arthritis using imaging and immunological biomarkers'
- Belegri, E. 'Diet-induced hypothalamic inflammation, cellular stress and the acute phase response'
- Biesbroek, PS. 'Inflammation and Cardiovascular Disease: Evaluation by CMR and Histology'
- Boshuizen, M. 'Modulating iron metabolism in anemia of inflammation in the critically ill'
- Braster, Q. 'Neutrophil-derived mediators in cardiometabolic inflammation'
- Brinkman, P. 'Biomedical engineering for breathomics: towards clinical application in respiratory diseases: Biomarkers, instruments and technology readiness levels'
- Bruggeman, CW. 'Expression and function of Fc-gamma receptors: Binding of immunoglobulin G and its glycoforms'
- Buijnen, STG. 'Positron Emission Tomography for early diagnosis and therapy monitoring of Rheumatoid Arthritis and Ankylosing Spondylitis'
- Coumou, H. 'Diagnostic and prognostic markers in adult-onset asthma'
- de Beer, FM. 'Pulmonary complement activation in ventilator induced lung injury and ARDS'
- Derada Troletti, C, 'nEUROinflammation in multiple sclerosis: from blood-brain barrier dysfunction to resolution'
- Eijlers, AJC. 'Cortical Disruption in Multiple Sclerosis: How accumulating pathology and functional network changes may explain cognitive decline'
- Farzan, N. 'Precision medicine in childhood asthma: The role of genetic variations in treatment response'
- Geerman, SC. 'Localization, phenotype and function of CD8+ T cells in the bone marrow'
- Hagens, MHJ. 'Novel imaging markers for neuroinflammation in multiple sclerosis'
- Hansen, IS. 'Fc receptor activation controls cytokine expression by human antigen-presenting cells'
- Hashimoto, S. 'Comprehensive treatment of patients with glucocorticoid-dependent severe asthma'
- Ingelse, SA. 'Less is more: Fluids in critically ill children with acute respiratory failure'
- Jansen-Koopman, ADM. 'Biological risk factors and sleep-related risk factors of type 2 diabetes mellitus: To refine characterization of high risk subjects and to identify novel risk factors'
- Korkmaz, HI. 'The local and systemic inflammatory responses after burn'
- Kusters, PJH. 'Evaluating the therapeutic potential of CD40 in low-grade chronic inflammation'
- Meinderts, SM. 'When it's not a match: Cellular and genetic factors in alloantibody-mediated red blood cell clearance'
- Michailidou, I. 'Complement in multiple sclerosis'
- Nijmeijer, SWR. 'Cervical dystonia: Muscle selection for botulinum toxin treatment'
- Overbeek, JA. 'Type 2 diabetes, its pharmacological treatment and associations with cancer: (Pharmaco)epidemiological studies'



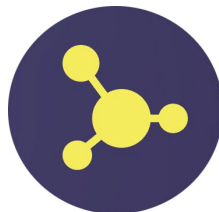
- based on data from the PHARMO DIAMANT cohort'
- Sabogal Pineros, YS. 'The damaging and protective features of eosinophils in healthy individuals and patients with chronic inflammatory respiratory diseases'
 - Schmidt, C. 'Diabetes-distress: a burden for patients with diabetes: Prevalence, consequences and clinical implications'
 - Schouten, LRA. 'The impact of age on the acute respiratory distress syndrome: From bedside to bench and back'
 - Seewann - Gaitatzis, A. 'MRI and histopathology in multiple sclerosis'
 - Sestito, C. 'Blood cell-derived human tissue Transglutaminase (TG2) in multiple sclerosis: -Implications for the pathogenesis and clinical outcome-'
 - Soltanipoor, M. 'Irritant contact dermatitis: A strategy for prevention in Dutch health care workers'
 - Sperna Weiland, NH. 'Cerebral haemodynamics during anaesthesia'
 - Strik, AS. 'Personalized treatment with anti-TNF agents in inflammatory bowel disease'
 - ter Horst, E. 'Clinical and experimental observations on the inflammatory response following a myocardial infarction'.
 - Tsang-A-Sjoe, MWP. 'Systemic lupus erythematosus: pathophysiological and clinical aspects'
 - Turk, SA. 'The evolution of early arthritis and cardiovascular risk'
 - van Beers-Tas, MH. 'Psychological and biological features influencing the risk for rheumatoid arthritis'
 - van Mens, LJJ. 'Towards clinical remission in psoriatic arthritis'
 - van Tok, MN. 'Preclinical studies of spondyloarthritis: Development of two novel disease models and pharmacologic targeting of the IL-17 pathway'
 - Wattjes, MP. 'The role of MRI in pharmacovigilance of natalizumab-treated MS patients: a "known unknown"?'
 - Wiebenga, OT. 'Advanced neuroimaging of therapy effects in multiple sclerosis: Exploring the short-term effects of natalizumab Including MR spectroscopy, diffusion tensor imaging, functional MRI and cognition'
 - Wieringa, TH. 'To thrive or just survive: Towards personalized care for type 2 diabetes with the help of decision aids and patient-reported outcomes'
 - Willemze, RA. 'Connecting innervation and intestinal inflammation'



- Engelen-Lee, J. 'Histopathology of bacterial meningitis: Snapshots of the brain'
- Houben, E. 'Early diagnosis and long-term complications in ANCA-associated vasculitis'
- Nijmeijer, BM. 'Dissemination of HIV-1 and HCV is directed by Langerhans cells: Interplay between receptors'
- Achterbergh, R. 'Sex, drugs and mental health among men who have sex with men'
- Babion, I. 'MicroRNAs in HPV-induced cervical cancer: Triage markers for cervical screening and drivers of carcinogenesis'
- Behr, FM. 'Transcriptional regulation and recall responses of tissue-resident memory T cells'
- Brouwer, L. 'The peculiar story of the ubiquitous Enterovirus and its enigmatic companion, the Parechovirus'
- de Vries, SG. 'Hiding in plain sight: Leptospirosis and rickettsial disease: Unmasking two causes of severe imported infections'



- Haak, BW. 'Intestinal microbiota and host defense in systemic infectious diseases: Translational studies in the healthy and the ill'
- Heuvelings, CC. 'TB challenges in hard-to-reach populations and children: Addressing TB control in Europe & imaging paediatric TB in Africa'
- Hoornenborg, E. 'PrEP in the Netherlands: The introduction of HIV pre-exposure prophylaxis'
- Kasanmoentalib, ES. 'Bacterial meningitis and the complement system'
- Kloek, AT. 'Genetics and outcome of bacterial meningitis'
- Lambers, FAE. 'Changing perspectives: Hepatitis C virus infection in key populations'
- Nduba, VN. 'TB vaccine trials in Kenya: Preparation and implementation'
- Newsum, AM. 'Acute hepatitis C virus infection among men who have sex with men: Epidemiology, diagnosis, treatment, and outcomes'
- Ng, SN. 'Utilization of molecular resistance test results as tools to support public health efforts for improved control of rifampicin-resistant tuberculosis'
- Novalic, Z. 'Cytolytic Virus Activation Therapy for Epstein-Barr virus associated nasopharyngeal and gastric carcinoma'
- Phommasone, K. 'Studies to provide recommendations on the pre-elimination of Plasmodium vivax in Lao PDR'
- Rottier, SJ. 'Etiology and treatment of diverticulosis, diverticulitis and abdominal infection: A new piece of the puzzle?'
- Segboer, CL. 'Title Etiology, diagnosis and treatment of non-allergic rhinitis'
- Singh, R. 'Infections after renal allograft transplantation'
- van den Hof, M. 'Growing up with HIV: Research into brain development and long-term health',
- van Velzen, P. 'Antibiotic treatment in exacerbations of chronic obstructive pulmonary disease'
- Welkers, MRA. 'Investigating viral evolution by next-generation sequencing'
- Zock, E. 'Time to treatment and preventive antibiotics in stroke'
- Lensen, KDF. '18F-FDG-PET/CT imaging in large artery vasculitis and atherosclerosis'



- Bartels, L. 'T-cell engaging antibodies against new tumor-associated targets'
- de Weerd, I. 'Unraveling immunity in chronic lymphocytic leukemia: Therapeutic implications'
- Hofland, T. 'Reinvigorating T and NK cells in chronic lymphocytic leukemia'
- Horrevorts, SK. 'Antigen delivery to dendritic cells: the route to induce anti-tumor T cell immunity'
- Koster, BD. 'Application of TLR agonists in cancer immunotherapy: from late to early, from systemic to local'
- Kremer, WW. 'Methylation markers for detection and management of women with cervical neoplasia'
- Li, RJE. 'The sweet key: to unlocking full dendritic cell potential'
- Schetters, STT. 'Orchestrating the immune system to initiate adaptive anti-tumor immunity'
- Tio, DCKS. 'Lentigo maligna: Clinical management and histopathological diagnosis'
- Treffers, LW. 'Modulation of antibody-dependent cancer cell destruction by neutrophils'



- van den Hout, MFCM. 'Arming the melanoma sentinel lymph node against metastatic spread'
- van Harten, AM. 'Targeting the cell cycle as treatment for head and neck cancer'
- van Leeuwen-Kerkhoff, N. 'Dendritic cells: From normal cell function to immunopathogenic involvement in myelodysplastic syndromes'
- Zeilstra, J. 'CD44 isoforms in intestinal cancer: Identity and functions'

2021



- Abay, A. 'Shaping erythropoiesis under in vitro flow'
- Agca, R. 'Cardiovascular Disease in Inflammatory Joint Disorders: The interplay between risk factors, inflammation and therapy'
- Aslam, MA. 'Decoding lymphocyte development and differentiation'
- Baniaamam, M. 'Collateral cardiovascular damage in inflammatory joint diseases: Focus on cardiac dysfunction'
- Boone, NW. 'Clinical pharmacological perspectives on drug treatment and outcomes in real world patients with rheumatoid arthritis'
- Bouma-Krijger, A. 'The role of fibroblast growth factor 23 in the relation between chronic kidney disease and cardiovascular disease and mortality'
- Breedveld, AC. 'IgA - The art of balancing between host protection and auto-immunity'
- Busard, CIM. 'A step towards personalized care for psoriasis'
- Datema, MR. 'Food sensitization and allergy: Defining phenotypes and their risk factors and biomarkers'
- de Groot, LES. 'Oxidative stress and the inflammatory nature of asthma exacerbations'
- Dijksteel, GS. 'Potential novel antimicrobial therapies for burn wounds: peptides and cold plasma', Vogelzang, EH. 'Pharmacokinetics and -dynamics of TNF-inhibitors in rheumatic diseases and opportunities during the COVID-19 pandemic'
- Ercig, B. 'A sweet touch on ADAMTS13: Insights into the pathophysiology of immune TTP'
- Glas, GJ. 'Respiratory care of critically ill burn patients: Mechanical ventilation and pulmonary coagulopathy'
- Gomes Graca, NA. 'A suit of armor around ADAMTS13: Exploring paths towards resistance against autoantibodies of immune TTP patients'
- Harmon, MBA. 'Exploring body temperature alterations in the critically ill'
- Hayfron-Benjamin, C. 'Macrovascular, microvascular, and pulmonary dysfunction in sub-Saharan Africans with type-2 diabetes'
- Heslinga, M. 'Cardiovascular risk in Rheumatoid Arthritis and other inflammatory disorders: Clinical management and interventional aspects'
- Hoepel, W. 'Unraveling the mechanisms of antibody-dependent inflammation'
- Hrdinová, J. 'ADAMTS13 and thrombotic thrombocytopenic purpura: On the edge between hemostasis and autoimmunity'
- Kangro, K. 'Anti-ADAMTS13 autoantibody profiles in the pathophysiology of thrombotic thrombocytopenic purpura'
- Klei, TRL. 'Erythrocyte samsara'
- Krabbendam, L. 'Human innate lymphoid cells: From helper to killer'



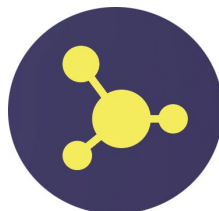
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