

AI&I Annual Report 2023



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RESEARCH BOARD

Directors



Theo Geijtenbeek



Reina Mebius

Management Support



Yvonne Duiker



Tine Sibbing



Esmée Vesseur

Business Development Team



Dilek Yusuf

Program Leaders



Inflammatory Diseases



Derk Amsen



Bianca Blom



Conny van der
Laken



Sander Tas



Infectious Diseases



Jeroen den
Dunnen



Joppe Hovius



Maria Prins



Marceline Tutu
van Furth



Cancer Immunology



Idris Bahce



Eric Eldering



Fons van de
Eertwegh



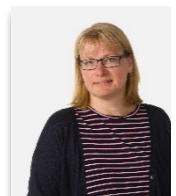
Marjolein van
Egmond



Tanja de
Gruijl



Arnon Kater



Joke den Haan

COMMITTEES

ANNUAL MEETING / SEMINARS

Chair:

- Derk Amsen

Members:

- Tanja de Gruijl
- Vanessa Harris
- Brenda Raud
- Henk Schallig
- Henry de Vries

PR & PUBLIC OUTREACH

Chair:

- Rosalie Luiten

Members:

- Rosalie Kempkes
- Esmée Vesseur
- Lotte de Winde

VALORISATION

Chair:

- Conny van der Laken

Members:

- Joppe Hovius
- Rosalie Luiten
- Kwinten Sliepen

TALENT POLICY

Chairs:

- Marjolein van Egmond
- Sander Tas

Members:

- Evelien Bos
- Jan van den Bossche
- Rieneke van de Ven

EDUCATION

Chair:

- Bianca Blom

Members:

- Jeroen den Dunnen
- Juan Garcia Vallejo
- Tessa van Horrik
- Yvonne Pannekoek
- Nicole van der Wel
- Eddy Wieringa

GRANTS

Chair:

- Marceline Tutu van Furth

Member:

- Joke den Haan
- Elena Rampanelli

RESEARCH POLICY

- Eric Eldering
- Marten Hoeksema
- Joppe Hovius
- Jan van den Bossche
- Gijs Kooij

POSTDOC COMMITTEE

- Alsya Affandi
- Merijn Bijlsma
- Kornel Golebski
- Melissa van Gool
- Kwinten Sliepen
- Myrthe van Delft

PHD STUDENT COMMITTEE

- Fabio Balzarini
- Nienke van der Bolt
- Bo Broens
- Tessa van Horrik
- Rosalie Kempkes
- Fatemeh Khodadustvaskasi
- Nadia van der Meijs
- Agner Parra Sanchez
- Nikitha Vavilthota

TECHNICIAN COMMITTEE

- Toni van Capel
- Jasmin Ersoz
- Nienke Haverkate
- Tanja Kaptein
- Laura Kruijssen
- Katarina Olesek
- Kim Schipper
- Sander Spiekstra

SCIENTIFIC MEETINGS

AII ANNUAL SYMPOSIUM

22 June 2023, Congress & symposium. Theme 'Immune Escapism'

AII ANNUAL PhD STUDENT RETREAT

5& 6 October 2023; Two days PhD retreat at hotel Heerlijkheid van Ermelo. Theme: *The All Olympics*. Full of networking, scientific presentations, social activities and a party.

AII SEMINAR SERIE

- 7 January 2023 - **Muzlifah Haniffa** - *Decoding the developing human immune system.*
- 7 March 2023 - **Aurélien Marabelle** - *Intratumoral immunotherapy for tumor-specific Treg depletion : from mice to patients.*
- 4 April 2023- **Ken Smith** - *Iron Dysregulation and Stress Erythropoiesis Associates with poor Long-Term Outcome of COVID-19.*
- 6 June 2023 - **Jennifer Guerriero** - *Targeting novel populations of macrophages for breast cancer therapy.*
- 4 September 2023 - **Carmen Gerlach** - *Diversification within the CD8 T cell response; Connecting human and murine T cell differentiation.*
- 3 October 2023 - **Dawit Wolday** - *Immunogenetic Risks and COVID-19 Clinical Outcomes.*
- 23 October 2023 - **Christopher Glass** – *Leveraging dynamic enhancer landscapes to decode macrophage phenotypes in health and disease.*
- 7 November 2023 - **Cleo Goyvaerts** – *In search for resistance mechanisms that hamper curative antitumor immunotherapy.*

AII INSIDE

- 24 January 2023; Research Group of Sue Gibbs.
- 21 March 2023; Research Group of Joke den Haan.
- 18 April 2023; Research Group of Monika Wolkers.
- 23 May 2023; Research Group of Marit van Gils.
- 19 September 2023; Research group of Theo Rispens.
- 17 October 2023; Research group of Henry de Vries. STI & Skin Infections: synergy through interdisciplinarity.
- 21 November 2023; Dermato-Oncology/ Melanoma Patient Research Group.

AII SYMPOSIA

- 12 May 2023; Mini symposium Infectious Diseases Congress & symposium Microbes and organoids: understanding transkingdom interactions. Location: AMC
- 14 December 2023, IDSA Infectious Diseases Symposium Amsterdam (IDSA) - 28th edition Theme: *Back to the lecture hall*. Location: AMC

AII EDUCATION

- 30 January - 10 February; *Postgraduate course Advanced Immunology*
Course & workshop Target audience: PhD students working on projects that require substantial knowledge of principles in immunology.

GRANTS PROVIDED BY AI&I (internal)

Collaboration Grant

The AI&I Collaboration Grant has the goal to stimulate new collaborations between research groups of at least 2 locations (AMC, VUmc, GGD, Sanquin, Reade).

Robin Temming, Marjolein van Egmond and Nina Sorge

“Boosting the elimination of antibiotic-resistant *Staphylococcus aureus* using the combined force of IgG and IgA effector functions”. The therapeutic efficiency of antibiotics has been declining as pathogenic bacteria have evolved drug resistance. Antimicrobial resistance (AMR) now represents one of the major health threats worldwide. If left unaddressed, common infections become untreatable and fatal. A well-known example is *Staphylococcus aureus* (*S. aureus*) or its antibiotic-resistant variant methicillin-resistant *S. aureus* (MRSA), which ranks second on the list of pathogens causing deaths associated with or attributable to AMR (2). Since the spectrum of antibiotic-resistant pathogens is continuously increasing with little new antibiotics in the pipeline, there is an urgent need for alternative strategies to treat and prevent bacterial infections. The project aims to engineer novel therapeutic *S. aureus* targeting antibodies that counter these bacterial interference mechanisms to shift the balance back in favour of the patient.

Tom van der Poll, Jeroen den Dunnen and Jan van den Bossche

Aim of the study is to develop a comprehensive, adaptable, and replicable immunometabolic CyTOF panel, and apply this in patients with a spectrum of inflammatory disorders, allowing the creation of an immunometabolic atlas of various immune cells and disorders.

Vanessa Harris, Bruno Sovran and Constance Schultsz

‘Testing tryptophan metabolites as therapeutic targets in rotavirus disease’. The aim of the project is to combine our expertise on tryptophan (Trp)-metabolism and rotavirus (RV)-virology to characterize Trp-metabolism and aryl hydrocarbon receptor (AhR)-agonism in pediatric RV-infections in low- and middle-income countries and test the capacity of Kynurenine to facilitate and indolate acetate and AhR activation to restrict RV-replication *in-vitro*.

Rosalie Luiten, Yvette van Kooyk and Esther de Jong

‘DC4color: Targeting DC to induce tolerance in vitiligo’. This project investigates a new approach to induce tolerance to treat autoimmune diseases. Autoimmune diseases cause chronic tissue damage and decreased quality of life. Most therapeutic approaches induce immune suppression, but do not specifically target the pathogenic autoimmune reactivity in an antigen-specific manner. Dendritic cells (DCs) have a crucial role in antigen-specific immune priming and regulation. This project joins the advanced expertise of collaborating teams to induce a tolerogenic phenotype in DCs to achieve antigen-specific tolerance in vitiligo.

Marten Hoeksema and Jan Willem Duitman

In this project, role of macrophages (and the transcriptional regulation of these cells) in pulmonary fibrosis will be investigated. The primary objective is to investigate EGR2 as a potential novel marker and therapeutic target for pulmonary fibrosis. Dr. Hoeksema's pioneering work has identified EGR2 as a transcriptional regulator of alternatively activated (M2-like) macrophages, known for their pro-fibrotic roles in human diseases. Recent research has shed light on the significant role of EGR2 in murine alveolar macrophage phenotypes, especially in lung fibrosis.

Reina Mebius and Rubina Baglio

Tumor-draining lymph nodes are the place in which the anti-tumor adaptive immune response starts, however this is also the place where regulatory T cells (T_{REGS}) are able to dampen an effective anti-tumor response. Tumor-derived factors might create an immune suppressive environment in tumor-draining lymph nodes by affecting lymph node stromal cells (LNSCs). In this project it will be determined whether also LNSCs upon imprinting by tumor-derived factors are indeed creating a pre-metastatic niche that is immunosuppressive in nature, stimulating the generation of T_{REGS} and suppressive myeloid cells. It will be determined at the functional as well as at the transcriptomic level.

Postdoc grant

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

- **Mathieu Claireaux** – *‘Deep profiling of tumor-specific B cell immunity’*

Clinical Research grant

This grant is to support clinical talent in the crucial phase of their innovative research towards successful future grant applications.

- **Matthijs Welkers** - *Investigating genetic diversity and molecular evolution of respiratory syncytial virus (RSV)*

Work visit grant

This grant is to stimulate young talent within the AI&I to visit a research facility important within the field of Immunology and Infectious Diseases to actively build their CV and network while also obtaining new knowledge (techniques, samples, data, competences etc.) valuable to AI&I.

- **Aiarpi Ezdoglian** - Durham University, UK
- **Celine Sewnath** - University of New-Mexico
- **Fatemeh Khodadustvaskasi** - University of Turku, Finland
- **Moyan Liu** - University of British Columbia, Canada
- **Joan Capella Pujol** - University of Washington, USA
- **Pamela Capendale** - Karolinska Institutet, Sweden

Technician grant

This grant is to stimulate technicians within the AI&I to visit a research facility elsewhere to learn/acquire new techniques/skills/knowledge, valuable to the research within AI&I.

- **Ana Campos** - Harvard Medical School, USA
- **Joanne Rietveld** - Lerner Research Institute, Cleveland, USA

Travel grant

This grant is to stimulate young talent within the AI&I to attend an international scientific conference important within the field of Immunology & Infectious Diseases to actively build their CV and network while also creating international exposure of AI&I.

In 2023, the travel grant was awarded to **42** PhD students.



GRANTS (external)

A selection of grants obtained

KWF

- **Sandra van Vliet** received KWF funding to investigate the role of FUT9 in the anti-tumor immune activity in colorectal cancer. For this research she received € 545,827.
- **Arjan Griffioen** received € 908,857.10 for his VICI project Overcoming cancer with immunotherapy by removing the blood vessel barrier
- **Lotte de Winde** obtained the Young Investigator Grant to investigate New treatments for patients with aggressive lymphoma that inhibit the tumor-promoting function of fibroblasts in the lymph node. The amount she received is € 611,399.
- **Derk Amsen** has received € 250,000 from the Dutch Cancer Society (KWF Kankerbestrijding) for his research on a form of immunological memory that suppresses our immune response against cancer. This could make it more difficult to combat metastases.
- **Arnon Kater** and **Armando van Bruggen** have secured €883,730 for their research on CAR-T cell therapy in chronic lymphocytic leukemia (CLL).

Rembrandt Grant

Annette Neele (AUMC) and **Sander Kooijman** (LUMC) received a Rembrandt Grant worth € 250,000. This Grant aims to stimulate the collaboration between researchers from Amsterdam UMC and Leiden UMC by covering a position for a PhD student who will be working at both sides.

ZonMW Grant

Kornel Golebski and **Anke-Hilse Maitland-van der Zee** received a ZonMW grant worth 248.000 euros to investigate preclinical technology for the development of COVID-19 therapy.

ERC Starting Grant

Marten Hoeksema has received an ERC Starting Grant worth €1.5 million from the European Research Council. With this grant he will study cytokine signaling in macrophages.

Dutch Research Council (NWO) – VIDI grant

Four AI&I researchers have been awarded with a VIDI-grant (grant can be up to 800,000 euros).

- **Sara Derks** for her research on Stomach-esophageal cancers as conductors of the immune system.
- **Lieuwe Bos** for his project Navigating treatment effects using a biological compass in patients with an acute lung attack.
- **Joep Grootjans** for his research entitled Immune cells in the abdominal cavity promote cancer cells
- **Elena Rampanelli** will investigate a natural metabolite for treating diabetes.

Dutch Research Council (NWO) – VENI grant

Five talented AI&I researchers received Veni grants of up to 280,000 euros from the Netherlands Organization for Scientific Research (NWO) These grants will provide them with the opportunity to advance their individual research concepts over a span of 3 years.

- **Nienke Alberts**: *Reducing cancers caused by infections among migrants in Europe*
- **Emma Birnie**: *Antibodies for the prevention and treatment of melioidosis*
- **Alvin Han**: *Linking human behavior and infectious diseases*
- **Annette Neele**: *Macrophage transdifferentiation in arterial calcification*
- **Catalin Bunduc**: *Caught in the Act: Deciphering the Inner Workings of the Type VII Secretion Mechanism in Mycobacterium tuberculosis.*

Amsterdam University Fund

Medical Researcher **Jelmer Savelkoel** received a grant from the Amsterdam University Fund for his research project on the tropical infectious disease melioidosis in Nigeria.

Amsterdam UMC Starter Grant

Gijs Kooij obtained a €315,000 Amsterdam UMC Starter Grant for his research project titled "Bio-active lipid mediators to combat chronic (neuro-)inflammation."

Bill & Melinda Gates Foundation Grant

Rogier Sanders has been awarded a new \$5,000,000 grant from the Bill & Melinda Gates Foundation to conduct preclinical research on an HIV-1 vaccine. The three-year grant involves collaboration with partners at Weill Medical College of Cornell University (John Moore), the University of Louisiana (Francois Villinger), and Stanford University (Bali Pulendran).

TKI-PPP Grant

- **Theo Geijtenbeek** secured €310,776 in subsidy for his research project, TRIM4Health Intracellular Biologicals, focusing on developing new antiviral agents to prevent infections.
- **Jochem Bernink** received €740,600 for his investigation into IL-23 signaling in IBD.

AWARDS & PRICES

A Selection of Awards and Prices Obtained

International Leadership Award

Henry de Vries received the International Leadership Award by the International League for Dermatological Societies at the International Union against Sexually Transmitted Infections (IUSTI) conference in Malta. This award acknowledges his significant contributions to international dermatology, impacting global health policies and practices.

Stairway to Impact Award

By receiving the Stairway to Impact Award from NWO (Dutch Organization for Scientific Research), **Nina van Sorge** aims to elevate awareness in the battle against Strep A infections. The awarded funds will be directed towards the monitoring of pathogenic bacteria. The Stairway to Impact Award of the NWO recognizes scientists making effective strides in applying their scientific discoveries to address societal issues and/or contribute economically. The award comprises a sum of €50,000.

Willy van Heumen Prize

Sue Gibbs received the Willy van Heumen Prize on December 12th for her lifelong dedication to animal-free scientific research. At the 'Ambition versus Realism' event, Sue Gibbs was honored with this award, presented in the form of a statuette, medal, certificate, and a €15,000 grant, which she is free to spend on research.

Van Bekkum Thesis Award

Ernesto Rodriguez earned the Van Bekkum award for the best thesis in Immunology from the NVvI/Dutch Society for Immunology. His thesis, supervised by Prof. Dr. Yvette van Kooyk with co-supervision from Dr. Juan J. Garcia-Vallejo, is titled *"Unravelling the tumor glyco-code: studying the role of glycosylation in cancer progression and immune evasion."*

NEW PROFESSOR APPOINTMENT

Derk Amsen has been appointed professor of Molecular T-Cell Immunology, effective January 1st 2023.

HIGHLIGHTS

A selection of highlights

Improved survival by screening for anal cancer precursors in people with HIV

Researchers from AUMC and Radboud UMC discovered that people living with HIV that were screened for anal cancer precursors were more likely to be diagnosed with anal cancer. This diagnosis occurred at an earlier disease stage than unscreened individuals, resulting in better survival. The results were published in The Lancet HIV.

Pioneering on the future of brain and skin organoids

Scientists at Amsterdam UMC are working on new forms of research that can reduce animal testing. They are doing this through the Transition animal-free innovations Amsterdam (Transitie Proefdiervrije Innovaties, TPI Amsterdam) initiative. **Dasja Pajkrt**, Professor of Viral Pediatric Infectious Diseases, develops brain organoids in the lab to study the effect of viruses on the brain. **Sue Gibbs**, Professor of Skin and Mucosa Regenerative Medicine at Amsterdam UMC, is pioneering in the lab with skin organoids: lifelike skin tissue, which can be used to study skin conditions, or the safety of certain dental procedures.

Cross-continental collaboration identifies new COVID-blocking natural product.

The research led by **Carla Ribeiro** identified Berbamine dihydrochloride as a potent inhibitor of SARS-CoV-2 entry and replication in human intestinal epithelial cells. Excitingly, berbamine displayed pan-SARS-CoV-2 antiviral activity by targeting machinery of the host autophagy pathway, including a striking nanomolar potency against SARS-CoV-2 Omicron subvariants. This work demonstrates that berbamine, a molecule derived from traditional Chinese medicinal herbs and under investigation for its anti-cancer properties, is a promising option for a cost-effective, over-the-counter antiviral that could be fast-tracked to reach COVID-19 patients.

HIV inhibitors are proving even more effective at preventing transmission than anticipated

Individuals with HIV who are on antiretroviral treatment and retain some viral particles in their blood (less than 1.000 particles per milliliter) exhibit minimal potential for transmitting the virus through sexual contact. This threshold surpasses earlier assumptions and stems from an analysis of prevailing research published in The Lancet. Formerly, healthcare practitioners adhered to a limit of 200 viral particles per milliliter of blood. With the unveiling of these novel insights, the World Health Organization (WHO) has issued a revised policy statement. **Maria Prins**, Professor of Public Health and Epidemiology of Infectious Diseases, shares her take on the Lancet insights.

Bottom reached in restrictive blood transfusion policy

The trend in hospitals and guidelines is to be more and more cautious with blood transfusions. Due to side effects associated with blood transfusion and the increasing scarcity and costs of blood products. For example, in recent years the number of patients receiving a transfusion during their ICU admission has halved. Researchers from Amsterdam UMC, in collaboration with eight other Dutch hospitals and funded by ZonMW, have shown that being increasingly restrictive in preventive blood transfusion is not, in all cases, understandable. The results of this study are published in the New England Journal of Medicine.

International hepatitis C virus transmission dynamics among men who have sex with men

Researchers from Amsterdam UMC found evidence for substantial international transmission of hepatitis C virus (HCV) among men who have sex with men (MSM). European MSM were more likely to be linked to each other than to non-European MSM. No transmission of highly resistant viruses was

observed. These findings support an international approach to achieve HCV elimination among MSM. The results of this study were published in *The Lancet Microbe*.

Targeted combination therapy more effective than chemotherapy in patients with chronic lymphatic leukemia

Chemotherapy has until now been the most effective treatment for young and fit patients with chronic lymphatic leukemia (CLL). The disease is the most common form of leukemia in the Netherlands, with 1,000 new patients each year, and until now has been incurable. According to research led by researchers from the University of Cologne, Amsterdam UMC and the University of Copenhagen targeted combination therapy without chemo is more effective and also produces fewer side effects. The results of this largest-ever study of chronic lymphatic leukemia (CLL) were recently published in *New England Journal of Medicine*.

Preventive Measures Effective for Kidney Transplant Patients During COVID-19 Pandemic

Half of kidney transplant recipients do not generate antibodies following the second COVID-19 vaccination. Alongside vaccination, an alternate method exists to prevent (severe) COVID-19—namely by adhering to behavioral guidelines. Nevertheless, the efficacy of this approach had remained unverified within this patient cohort until now. "Observing precautionary measures, both prior to and post-vaccination, demonstrates its effect," states **Suzanne Geerlings**, infectious disease physician at Amsterdam UMC. "This holds crucial implications for patients, their medical caregivers, and the future, given the potential gravity of a SARS-CoV-2 infection in this susceptible patient group."

The Impact of Plant-Based Nutrition on Your Joints

Dirkjan van Schaardenburg, Wendy Walravenstein and Carlijn Wagenaar indicates that a plant-based diet may be just as effective as painkillers and anti-inflammatories in alleviating symptoms for patients suffering from rheumatoid arthritis (RA) or osteoarthritis. The secret to the diet's effectiveness lies in the abundant fiber content. A diet rich in fiber alters the composition of intestinal bacteria in favor of those producing protective anti-inflammatory compounds. Conversely, a diet heavy in meat promotes inflammation-inducing gut bacteria. Saturated fat also adversely affects the microbiome, the gut flora.

TOP PUBLICATIONS

King, LA, Toffoli, EC, Veth, M, Iglesias-Guimaraes, V, Slot, MC, Amsen, D, van de Ven, R, Derks, S, Fransen, MF, Tuynman, JB, Riedl, T, Roovers, RC, Adang, AEP, Ruben, JM, Parren, PWHI, de Gruijl, TD, van der Vliet, HJ. *A Bispecific $\gamma\delta$ T-cell Engager Targeting EGFR Activates a Potent V γ 9V δ 2 T cell-Mediated Immune Response against EGFR-Expressing Tumors*. Cancer immunology research. 1 Sept 2023;11, 9, p. 1237-1252 16 p.

van de Donk, NWCJ & Zweegman, S. *T-cell-engaging bispecific antibodies in cancer*. 8 Jul 2023, The Lancet. 402, 10396, p. 142-158 17 p.

Gringhuis SI, Kaptein TM, Remmerswaal EBM, Drewniak A, Wevers BA, Theelen B, D'Haens GRAM, Boekhout T, Geijtenbeek TBH. *Fungal sensing by dectin-1 directs the non-pathogenic polarization of TH17 cells through balanced type I IFN responses in human DCs*. Nat Immunol. 2022 Dec;23(12):1735-1748.

Morfoloupou, S, van der Kuip, M, Gruppen, MP, Tutu-van Furth, AM & Kuijpers, TW, et al. *Genomic investigations of unexplained acute hepatitis in children*. Nature. 2023 May;617(7961):564-573.

Rispens, T & Huijbers, MG. *The unique properties of IgG4 and its roles in health and disease*. Nature reviews. Immunology. Nov 2023, 23, 11, p. 763-778 16 p.

Antunes-Ferreira, M, D'Ambrosi, S, Arkani, M, Post, E, in 't Veld, SGJG, Ramaker, J, Zwaan, K, Kucukguzel, ED, Wedekind, LE, Griffioen, AW, Oude Egbrink, M, Kuijpers, MJE, van den Broek, D, Noske, DP, Hartemink, KJ, Sabrkhan, S, Bahce, I, Sol, N, Bogaard, H-J, Koppers-Lalic, D, et al. *Tumor-educated platelet blood tests for Non-Small Cell Lung Cancer detection and management*. Scientific Reports. 1 Dec 2023. 13, 1, 9359.

Jongkees, M. J., Geers, D., Hensley, K. S., Huisman, W., GeurtsvanKessel, C. H., Bogers, S., Gommers, L., Papageorgiou, G., Jochems, S. P., den Hollander, J. G., Schippers, E. F., Ammerlaan, H. S. M., Bierman, W. F. W., van der Valk, M., Berrevoets, M. A. H., Soetekouw, R., Langebeek, N., Bruns, A. H. W., Leyten, E. M. S., Sigaloff, K. C. E., et al., *Immunogenicity of an Additional mRNA-1273 SARS-CoV-2 Vaccination in People With HIV With Hyporesponse After Primary Vaccination*. The Journal of infectious diseases, 1 Mar 2023, In: 227, 5, p. 651-662 12 p.

Zilver, S. J. M., de Groot, C. J. M., Grobbee, M., Rimmelzwaal, S., Burgers, E., Velasco, D. N., Juncker, H. G., van Keulen, B. J., van Goudoever, J. B., de Leeuw, R. A., van Gils, M. J., Ris-Stalpers, C. & van Leeuwen, E., *Vaccination from the early second trimester onwards gives a robust SARS-CoV-2 antibody response throughout pregnancy and provides antibodies for the neonate*. International Journal of Infectious Diseases. 1 May 2023, 130, p. 126-135 10 p.

Capella-Pujol, J., de Gast, M., Radić, L., Zon, I., Chumbe, A., Koekkoek, S., Olijhoek, W., Schinkel, J., van Gils, M. J., Sanders, R. W. & Sliepen, K., *Signatures of VH 1-69-derived hepatitis C virus neutralizing antibody precursors defined by binding to envelope glycoproteins*. Nature communications. 1 Dec 2023, 14, 1, 4036.

ANNUAL FIGURES

NUMBERS

Scientific core staff	320
Other scientific staff	201
PhD students	522
Technicians	147
Total # researchers	1190

	Cancer Immunology	Infectious Diseases	Inflammatory Diseases	Total
Refereed articles	665	1029	925	1949
Non-refereed articles	2	2	1	4
Books, chapters	2	6	3	8
Professional publication ¹				
Other research output ²				
PhD theses	16	47	41	81

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

FUNDING

2 nd cost flow	3 rd cost flow	4 th cost flow	TOTAL
12.771.863	12.085.685	4.798.268	29.655.816

PhD GRADUATIONS

- 10 Jan 2023; **Jara de la Court** - *Data-driven antimicrobial stewardship | Using local data to reduce antimicrobial consumption* - UVA
- 13 Jan 2023; **Liza Coyer** - *Sex, drugs, PrEP and STI: Trends among men who have sex with men* - UVA
- 18 Jan 2023; **Jolinda Elenbaas** - *Genomics approaches for characterising and tracking antimicrobial resistance in *Neisseria gonorrhoeae** - UVA
- 24 Jan 2023; **Stefania Principe** - *Precision Medicine As the new frontier for Asthma Treatment* - UVA
- 25 Jan 2023; **Massa dit Achille Bonko** - *Studies towards the improved diagnosis and management of febrile diseases in a rural area of Burkina Faso* - UVA
- 26 Jan 2023; **Melissa van Gool** - *An act of revision: IgA in health and disease* - VU
- 27 Jan 2023; **Clara Mar Guarch Perez** - *3D-printed drug delivery systems to prevent orthopedic infections* - UVA
- 27 Jan 2023; **Devica Umans** - *Idiopathic acute pancreatitis | advancing diagnostics and preventing recurrence* - UVA
- 09 Feb 2023; **Hannah Walter** - *Optimizing the diagnostic strategy and follow-up in | treatable idiopathic inflammatory myopathies* - UVA
- 10 Feb 2023; **Willemijn de Rooij** - *Eosinophilic esophagitis | New insights into an emerging disease* - UVA
- 16 Feb 2023; **Lucas Fleuren** - *The Data Driven Intensive Care Unit* - VU
- 22 Feb 2023; **Matthijs Bolmers** - *Efficiency and efficacy in the treatment of appendicitis* - UVA
- 17 Mar 2023; **Tineke de Jong** - *Premature aging of the stromal microenvironment in rheumatoid arthritis | Towards prevention of disease by targeting cellular aging* - UVA
- 29 Mar 2023; **Micah Heldeweg** - *Lung ultrasound in critical care* - VU
- 29 Mar 2023; **Arthur Lieveld** - *Acute and critical care diagnostics in COVID-19* - VU
- 29 Mar 2023; **Mark Haaksma** - *Point of Care Ultrasound of the Respiratory System in the Critically Ill* - VU
- 29 Mar 2023; **Sara Faria Fernandes Pereira Dias** - *Sex and gender differences in bacterial meningitis* - UVA
- 30 Mar 2023; **Job van Bragt** - *Optimizing treatment for airways diseases | Using exhaled biomarkers and real world data* - UVA
- 04 Apr 2023; **Jelle Koopsen** - *Virus Genomic Epidemiology to Inform Public Health Policy | Understanding hepatitis C virus and SARS-CoV-2 transmission in elimination and outbreak settings* - UVA
- 06 Apr 2023; **Michelle Klouwens** - *Vaccines to prevent Lyme Borreliosis* - UVA
- 12 Apr 2023; **Liza Pereverzeva** - *Perspectives on the Immune Response during Pneumonia* - UVA
- 13 Apr 2023; **Joanna Kaczorowska** - *Colonization, transmission and long-term dynamics of anelloviruses in humans* - UVA
- 14 Apr 2023; **Viola Franke** - *Oncolytic Virus Therapy in Early Metastatic Melanoma & the Importance of Adequate Staging* - UVA
- 20 Apr 2023; **Josse Depla** - *Neural organoids as preclinical tools for viral infection and gene therapy | Insights from enterovirus D68 and adeno associated virus studies* - UVA
- 21 Apr 2023; **Lianne Heuthorst** - *Surgical Strategies in Ulcerative Colitis: New Perspectives* - UVA
- 02 May 2023; **Yasmin de Wit** - *Hold your platelets | The role of complement and neutrophils in infection, inflammation and immunity* - UVA
- 08 May 2023; **Roel Willems** - *Acquisition of Drug-Resistant Bacteria: Role of Gastric Acid Suppression* - VU

- 12 May 2023; **Alexander Schuurman** - *Layers Understanding the host response to infection through high-dimensional data* - UVA
- 17 May 2023; **Xue Manz** - *Inflammation and endothelium-platelet interaction in pulmonary thrombosis* - VU
- 22 May 2023; **Annette Sohn** - *The post-pediatric HIV generation in Asia: Adolescent HIV care, treatment, and transitions into adult life* - UVA
- 24 May 2023; **Francesca Favaro** - *The UPR in cell death and inflammation* - UVA
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