



2019 ANNUAL REPORT

Oncologie Onderzoekschool Amsterdam
- OOA -
Oncology Graduateschool Amsterdam



OOA INSTITUTES



UNIVERSITEIT VAN AMSTERDAM



About the OOA

OOA is a large and successful joint graduate school of Amsterdam UMC (location AMC & VUmc) and NKI-AvL. The OOA, accredited by the KNAW for the period 2016 – 2021, is dedicated to the training and education of more than 850 PhD students working in the field of Oncology in Amsterdam. Our mission is to provide education in oncology research in the widest sense at an excellent level, and ensure proper supervision for PhD students in the Amsterdam region. The strength of OOA comes from integration of basic, translational and clinical research of the three participating institutes.

Our members are scientists-in-training who receive additional theoretical and practical education on various subjects related to cancer research. The main part of our educational program consist of a series of courses that cover specific topics in oncology and an annual retreat. Collaboration is encouraged between clinical, translational and fundamental researchers. Collaboration is also encouraged between researchers across the different institutes as well as (inter)nationally. In this way, the PhD students have the opportunity to conduct high-level research and attend courses that are organized by an outstanding faculty with excellent track records and high visibility in the international scientific literature.

OOA is one of the 23 Dutch research schools in the discipline 'Life sciences and medicine'. It is the only accredited school specifically focusing on training in basic, translational and clinical cancer research. We have a very valuable collaboration with the Medical Genetics Centre South-West Netherlands (ErasmusMC and LUMC), the Graduate Schools of the RadboudUMC and the Utrecht Graduate School of Life Sciences (CTO; UMC Utrecht/ Utrecht University). Through these collaborations, the educational programmes are accessible to all PhD students in oncology of the participating graduate schools.

PhD students in 2019

Click [here](#) for more details

22% international

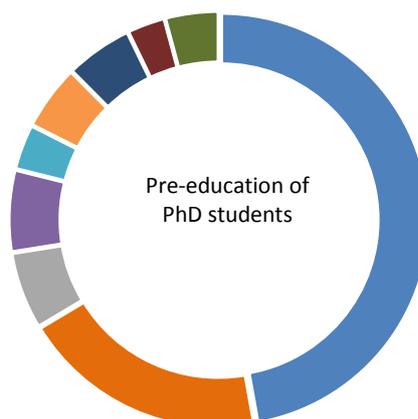
35% male, 65% female

25% of projects funded by the participating institutes

19% by public funds

39% by research contracts

17% financed by other funds



- Medicine
- Biomedical/ Biomolecular sciences
- Cancer/ Oncology
- Biotechnology/ Engineering
- Health/ Forensic/ Movement sciences
- Bioinformatics/ Mathematics/ Epidemiology
- Pharmacy/ Drug discovery/ Biochemistry
- Neurosciences/ Psychology
- Other

From the executive directors

The mission of the OOA is providing a setting for the teaching of all PhD-students in the Amsterdam area working in the field of Oncology. As for achieving a PhD-degree, there is a general requirement for a solid teaching program. The OOA provides a broad spectrum of courses, workshops, symposiums, conferences and organizes the annual PhD-student retreat. Next to oncology-related courses on a broad variety of subjects, the OOA is also dedicated to teaching transferrable skills, such as scientific writing, -presenting and -integrity. Especially during the annual retreat, students get trained in all skills – in a practical way – that a scientist needs throughout his/her career. PhD-students increasingly find their way to the teaching program and highly appreciate joining the program. This increasing interest from our PhD-students gives us the enthusiasm to continuously expand and improve our course program.

The merger of AMC and VUmc and the establishment of the new Amsterdam UMC, which was effectuated in 2018, generated an increased collaboration between the two academic institutes. This initiated a joint ambition of continuously improving patient care, research, as well as teaching of PhD-students, technicians, postdocs, nurses and faculty.

Next to the executive directors, the OOA management team is composed of a coordinator and administrators from the participating institutes. It is important to mention that the management team is assisted by an advisory board and by the PhD council, a team of 6 PhD-students, two from each institute. The council advises the

management team on e.g. course subjects, but also organizes the yearly PhD-day, an event that is focused on teaching and social interactions.

It is our pleasure to owe a debt of gratitude to the many faculty members of the participating institutes that are involved in the teaching activities of the OOA.

The OOA management team is ready to do its utmost to offer the highest level of graduate student education in the Amsterdam area.

On behalf of the OOA team,



Arjan Griffioen
OOA director location VUmc
Chair

OOA TEAM

Executive directors

Prof. dr. Arjan W. Griffioen
Amsterdam UMC

Prof. dr. Hein te Riele
NKI-AvL

Dr. Marcel Spaargaren
Amsterdam UMC

Coordination

Dr. Esther M. Ruhe
Amsterdam UMC

Staff

Karin van der Heijden
Patty Lagerweij
NKI-AvL

PhD student council

Lenka Boyd
Aafke Creemers
Iris van 't Erve
Margarida Ferreira Martins
Sanne van Neerven
Bram Priem

Advisory board

Prof. dr. Eric Eldering
Prof. dr. Jan Paul Medema
Amsterdam UMC

Prof. dr. René H. Medema
Prof. dr. Titia K. Sixma
NKI-AvL

Prof. dr. Chris J.L.M. Meijer
Prof. dr. Tom Würdinger
Amsterdam UMC

Faculty

OOA has 200 faculty members. Click [here](#) for a list of all members.



Research themes

THEME 1. EXPERIMENTAL BIOLOGY

The transformation of a normal cell into a malignant tumor cell requires multiple (epi)genetic alterations affecting genes that constitute cellular pathways. Studying the genes and proteins involved in these pathways results in better understanding of tumor development, progression and therapy resistance. Candidate markers are tested for their ability to detect cancer at an early stage and to predict its course and response to therapeutic interventions. Disease profiling is being improved using innovative research tools that include high-throughput methods for (epi)genetic, transcriptomic and proteomic analyses. At the cellular level, processes like cell-cell communication, differentiation, adhesion, migration, survival, proliferation and apoptosis are studied using e.g. advanced microscopy, which are complemented by mechanistic studies using e.g. structural biology. Advanced autochthonous mouse models and sophisticated xenotransplant models have been developed for the genetic dissection of cancer and testing of novel therapeutic strategies, including immunological interventions. Furthermore, the mechanisms of therapy resistance and metastasis are being investigated.

Viral oncogenesis projects focus on the role of human papilloma viruses and Epstein-Barr virus in the development of human cancer. Viral and host markers are being tested for their capability to assess the risk associated with the development of cancer.

THEME 2. EXPERIMENTAL CLINICAL RESEARCH

Improvements of clinical care are based on improved detection, development of innovative therapies and personalized treatment strategies. The emerging and rapidly growing fields of molecular imaging and genomics are providing new opportunities to study the biology of a malignancy in individual patients and thus allowing for the development of highly valuable indicators for diagnosis and prediction of disease outcome. Modern state-of-the-art techniques like MRI, SPECT, PET and PET/CT are enabling tumor imaging with high precision and unique molecular and biological information at the tissue level. Mouse models are being used to follow drug sensitivity in several types of cancer and for developing clinical strategies for imaging. Another important focus of research is targeted cancer therapy which should ensure optimal treatment benefits. Research include (pre)clinical evaluations of neoadjuvant treatment and the application of new molecular therapies and anti-angiogenic agents against novel targets in the tumor and its environment. The pharmacological optimization of cytotoxic drugs is an important line of research, as is the passage of drugs through the blood-brain barrier. Development of immunotherapies based on adoptive transfer and vaccination strategies are at the forefront of research. Another important research focus is quality of life for childhood and adult cancer patients.

The institutes provide state-of-the-art research facilities. New initiatives are being launched and innovative technologies are developed and implemented. This often occurs in the context of research programmes in which PhD students are actively involved. Please [click here](#) for an overview of all facilities.

OOA research has an excellent (inter)national status, as demonstrated by the large number of research projects granted in open (inter)national calls, including several of the prestigious new grants. The faculty is strongly represented in the Dutch science foundation (NWO) 'vernieuwingsimpuls', the Veni, Vidi and Vici grants for junior researchers and participated widely in numerous EU integrated projects and networks of excellence. Funding is also strongly supported by the Dutch cancer society (KWF).



Educational Programme

OOA has a longstanding tradition of providing an education programme made up of high quality courses on a wide range of topics in oncology. This programme is supplemented by courses on transferable skills, work discussions, journal clubs, conferences and meetings that are actively organized by the participating institutes. Prominent international scientists visit the OOA research institutes within the context of existing or new research collaborations in which PhD students are also involved. In 2019, a total number of 49 international visitors/speakers were welcomed (please [click here](#) for the full list).

The main part of the OOA education programme consists of a series of courses that cover specific topics on oncology. Students make a selection from these courses, in compliance with their interest and background. This educational programme is flexible and focuses on cutting edge scientific topics and the core research activities of the OOA, covering diverse topics in oncology and new technologies that provide the students with the skills and expertise to apply these methods in their own research. Courses are typically given by senior staff members, i.e., full professors, as well as associate- and assistant professors.

A highlight of the educational programme is the three-day annual PhD student retreat, which focuses entirely on the research conducted by the students themselves. Students present their work as a poster in the first year of their PhD and as an oral presentation in subsequent years. PhD students are also responsible for chairing sessions and participation in the peer review of presentations given by others to award the prizes for the best poster and oral presentations. The retreat aims to develop important skills in presentation and peer review but it also provides an overview of the research conducted within the OOA at an early stage of the student's career, contributing significantly to active networking between groups. To encourage this interaction, an abstract book outlining the research activities of all participating students is distributed. The retreat enables the students to learn about oncology research outside their immediate environment. Basic science students benefit from clinical science exposure and vice versa.

For on-the-job training, the PhD student gets support in his/her work from the project leader, post-docs and technicians, and this research is embedded in established research groups within the participating institutes. Adequate supervision is an important issue at the OOA institutes. The participating institutes each have their own system for PhD student registration and monitoring the progress of the research and training plan. The OOA strives to promote best practises.

COURSE ORGANIZERS

Prof. dr. Reuven Agami
Dr. Judy van Beijnum
Dr. Jeroen Beliën
Prof. dr. Piet Borst
Dr. Lenny Brocks
Prof. dr. Vincent Christoffels
Dr. Lucia Clemens-Daxinger
Naomi Donner
Zuhir Elkarghali
Dr. Juan Garcia-Vallejo
Prof. dr. Arjan Griffioen
Prof. dr. Michael Hauptmann
Karin van der Heijden
Dr. Peter Hohenstein
Dr. Else Huijbers
Hans Janssen
Patty Lagerweij
Prof. dr. Fred van Leeuwen
Dr. Marjolijn Mertz
N. Nijhuis
Prof. dr. Eric Reits
Prof. dr. Hein te Riele
Dr. Esther Ruhé
Dr. Jurgen Seppen
Dr. Peter Sminia
Prof. dr. Jan Jakob Sonke
Prof. dr. Bas van Steensel
Prof. dr. Lucas Stalpers
Dr. Els Robanus Maandag
Dr. Nicole van der Wel
Albert Wenisch

15 Educational activities organized throughout 2019

4.3

Average evaluation rate of our courses (1 – 5 point scale)

1.5 ECTS average number of credits per course

136

Total number of participants OOA retreat 2019

25

Average number of participants per course

Courses organized in 2019



Indesign thesis printing

Februari 17

Adobe InDesign is a desktop publishing software application for creating layouts. PhD students can use InDesign for creating their thesis. Nicole Nijhuis will give an introductory workshop to InDesign.



Radiation Oncology

March 25 – 29 -> 1.5 ECTS

This course provided an overview of 1) radiobiological and physical principles of radiation oncology, 2) technical innovation in precision radiotherapy, and 3) the route of the radiotherapy patient - via diagnosis, imaging and treatment planning – to therapy.



Mouse morphology, genetics & function

April 8 -12 -> 1.5 ECTS

Animal experiments, especially using mice and rats, are an important part of many PhD projects. Course participants were introduced into various aspects of research with rodents. The aim was to increase awareness of the physiology and genetics of experimental animals, thereby enabling better planning and execution of animal research.



In the footsteps of Antoni van Leeuwenhoek – Basic Microscopy

May 6 – 10 -> 1.5 ECTS

This course covered the application of a range of imaging possibilities at Amsterdam UMC and NKI-AvL. They were presented in lectures, discussions and hands-on demonstrations. The individual research projects of the attending participants were discussed, allowing exchange of ideas with fellow participants and microscopy

experts and operators. Topics covered included: basic principles, specimen preparation and staining methods, quantitative analysis, electron microscopy techniques, confocal laser scanning m Imagestream, ultramicroscop & 2-photon and live cell imaging.



O2Flow Cytometry

May 13 – 17-> 1.5 ECTS

This comprehensive course covered the fundamentals of flow cytometry analysis and sorting, as well as mass cytometry in a lecture format supplemented by practical lab and data analysis sessions. The course was designed to gain in depth knowledge on general technical aspects of the different types of cytometers available and how the different components and their configuration influence data acquisition.



Epigenetics & epitranscriptomics

May 20 – 24 -> 1.5 ECTS

It has become clear that regulation of gene expression is much more complex than previously anticipated. On top of the classical transcription factors, also non-coding RNAs and the epigenetic state of the genome are powerful gene regulatory mechanisms. Importantly, they affect normal development and impact disease states such as cancer. This OOA course is aimed to offer an overview of this field - and to provide insight into new discoveries and state-of the art knowledge of the subject.



Genetic engineering in model organisms

June 17-21 -> 1.5 ECTS

The ability to modify genes at the level of the germ line by

transgenesis and gene targeting has been crucial for our understanding of gene function and has yielded many highly valuable models for human diseases. This course will deal with the basic principles underlying the generation of transgenic, knock-out, and knock-in mice. The first three days of the course will prepare participants for the two-day international workshop on Innovative Mouse Models.



Histopathology of Human Tumors

September 12 and 13 -> 0.6 ECTS

Aim of this course is to give an introduction in the histology of malignant tumors and their precursor lesions. Microscopical structures, growth patterns, grading and staging systems, and different cell types present in selected tumor types will be explained and discussed by pathologists.



Annual Graduate Student Retreat

October 9 - 11 -> 2.0 ECTS

Each year OOA organizes a 3-day retreat for all graduate students participating in the OOA, to stimulate communication between the students of the different participating institutes (Amsterdam UMC and NKI-AvL) and also between the students of different divisions within the same institute. The retreat is generally highly appreciated and considered stimulating both scientifically as well as socially.



BioBusiness

October 28 – November 8 -> 3,0

This two-week BioBusiness course focusses on both the theory and practice of entrepreneurship and business in the bioscience industry.



The course consists of seminars given by a selection of top-notch speakers, and independent learning on the basis of exploring literature and business reports on selected topics.

Ongoing

Intervision Group

November 7 2019 – February 2020

An intervision group is a small group of professionals working in similar fields, who meet on a regular basis to gain insight into the problems they encounter at work. The participants try not to come up with solutions, but by asking questions, encourage the case provider to gain insight into his own case and how to take action on this. Important elements are to learn from the experience and ideas of colleague PhD students and to discuss problems without any hierarchical differences.



O2Flow Cytometry

November 11 – 15 -> 1.5 ECTS

This comprehensive course covers the fundamentals of flow cytometry analysis and sorting, as well as mass cytometry in a lecture format supplemented by practical lab and data analysis sessions. The course is designed to gain in depth knowledge on general technical aspects of the different types of cytometers available in the market and how the different components and their configuration influence data acquisition.



How to write research papers and grant proposals

November 25 – 29 -> 1.5 ECTS

This course is designed to help you to develop effective academic writing skills. During the first part of the course, we will review the principles of effective writing, ethical values, what happens behind the scene once you have

submitted your manuscript. During the second part of the course, we will focus on how to be(come) a successful grant applicant and how to prepare yourself during your PhD.



In the footsteps of Antoni van Leeuwenhoek – Basic Microscopy

November 25 – 29 -> 1.5 ECTS

This course covers the application of a range of imaging possibilities at Amsterdam UMC and NKI-AvL. They are presented in lectures, discussions and hands-on demonstrations. The individual research projects of the attending participants will be discussed, allowing exchange of ideas with fellow participants and microscopy experts and operators.



Basic Medical Statistics / SPSS

December 2 – 6 -> 1.5 ECTS

The course will explain statistical techniques for the evaluation of biomedical data. It provides an introduction into design aspects, methods of summarizing and presenting data, estimation, confidence intervals and hypothesis testing, including multivariable regression methods for the assessment of association. Although the course focusses somewhat on methods and examples from clinical research, it should be useful for experimental researchers as well. The emphasis will be on practical application and interpretation rather than theory. An optional half-day introduction to the statistical software SPSS will be given for those not familiar with this program.

The annual costs of the teaching programme and administrative costs are financed by the participating institutes.

The institutes also provide administrative support:

AMC: 0.15 FTE administration
 NKI-AVL: 0.60 FTE administration
 VUmc: 1.05 FTE coordination and administration



Publications

A total number of [89 theses](#) were defended throughout 2019 and published almost [1800 peer reviewed papers](#) were published by NKI-AvL and/or AmsterdamUMC CCA researchers. Highlights of papers published by the OOA PhD students include:

Myron Best et al. RNA sequencing and swarm intelligence–enhanced classification algorithm development for blood-based disease diagnostics using spliced blood platelet RNA. *Nature Protocols*. 2019, 14(4):1206-1234.

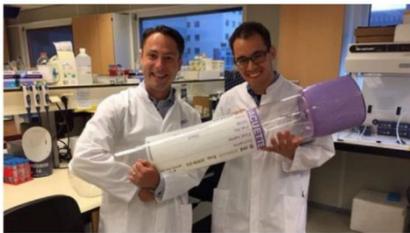
Lisette A. Rozeman et al. Identification of the optimal combination dosing schedule of neoadjuvant ipilimumab plus nivolumab in macroscopic stage III melanoma (OpACIN-neo): a multicentre, phase 2, randomised, controlled trial. *Lancet Oncology*. 2019, 20(7):948-960.

Max D. Wellenstein et al. Loss of p53 triggers WNT-dependent systemic inflammation to drive breast cancer metastasis. *Nature*. 2019, 572(7770):538-542.

Nicole J. Polman. Performance of human papillomavirus testing on self-collected versus clinician-collected samples for the detection of cervical intraepithelial neoplasia of grade 2 or worse: a randomised, paired screen-positive, non-inferiority trial. *Lancet Oncology*, 2019, 20(2):229-238.

Leidsch Dagblad

Kankerdiagnose met slechts één buisje bloed weer stapje dichterbij



OOA PhD students in the national media

Regularly, the media pays attention to the research which is carried out by the faculty, staff and PhD students. Many of them in newspapers like NRC, Het Parool, Trouw, AD, de Volkskrant and Leidsch Dagblad, online tools like NOS, Nu.nl, RTLnieuws, computable.nl or wetenschap.nu. And also on radio and TV programs like NOS journaal, 5 uur live, DWDD, nieuwsuur and topdokters. Highlights of OOA PhD students in the media included:

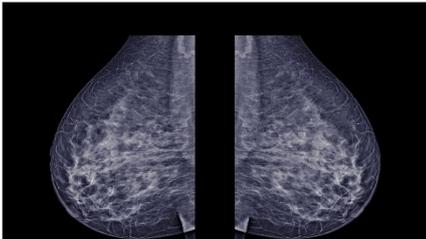
Myron Best/ Thomas Wurdinger, Leidsch Dagblad, April

Christel de Blok, Wetenschap.nu, May

Lisette Rozeman/ Christian Blank/ Ton Schumacher, Trouw, June

Rianne de Vries / Mirthe Muller, RTLnieuws, September

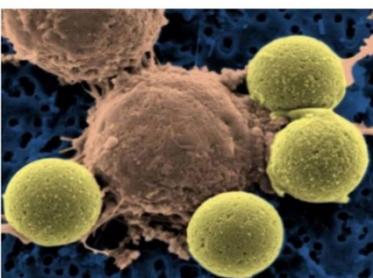
wetenschap.nu



Risico op borstkanker neemt toe bij transvrouwen door hormoonbehandeling

Trouw

Immuuntherapie tegen kanker slaat aan, maar er is meer geld nodig voor onderzoek



T-cel (in het midden), een type afweercel. Beeld Microbe World/Creative Commons

RTLnieuws

Wat of geen immuuntherapie

'Slimme neus' helpt longkankerpatiënt bij bepalen behandeling

18 september 2019 01:06
Aangepast: 18 september 2019 06:29



De wiskundige neus

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