Preface

Dear Reader,

This is the third Annual Report of the Academic Center for Urogenital Tumors which is participating in the Erasmus Cancer Institute of the Erasmus MC, University Medical Centre in Rotterdam. This Academic Center represents scientists and medical professionals that integrate basic, translational and clinical research, education and care at the Erasmus MC around the theme Urogenital Tumors (UT). The various ACs are connecting the inner environment of the official Erasmus MC research and care departments, and have become the trigger points for innovation and improvements in science and technology to improve patient care.

This report lists the activities of the group of contributors from ten different departments in the field of UT, in order to highlight the dimensions and level of research at the Erasmus MC. It does so by providing general information topped up by fact sheets of the individual work group leaders. The AC functions as an open and dynamic society for those that prioritize their interest and work in improving the outcome of prevention and treatment of UT. Exchange of knowledge, sharing ideas, and critical review of results are central, as well as finding novel opportunities. Promising young scientists are given special support to build their academic careers. The administration of the AC is supported by 0.1 fte (Mrs Diana Brusik).

The year 2018 has been characterized by the following activities:

- Continuation of monthly sessions for exchange of scientific information and management (SUNRISE meetings and beyond)
- Quarterly creative sessions with representatives of the patient advisory boards, resulting in optimisation of existing and generation of novel research ideas
- Construction of the biobank overview and Annual Report
- Further development of the AC-UT, amongst others based on the feedback obtained during the first audit (September 2018) on ACs at the Erasmus MC
- Initiating and further development and implementation of two umbrella projects on AR-activity, and on methylation markers

During regular meetings and the annual retreat, the group rephrased their annual agenda. For the year 2019 we will emphasize on:

- Selecting of new candidates for the Young Scientist initiative
- Involving new basic scientists in the field of bladder cancer
- Build and improve the technologic research collaboration with the Technical University Delft
- Linking with relevant ACs within Erasmus MC (innovations in Surgery, Genetics, biomarkers, ...)
- Supporting bioinformatics and computational biology expertise
- Inventory of teaching activities, and definition of their relation with ongoing research
- Initiation of a regional biobank on prostate cancer including data and materials in the south west region of the Netherlands (Anser Prostate Cancer Network).

Currently, the management team of the AC consists of five representatives of the founding departments Pathology, Radiotherapy, Medical Oncology, and Urology, also representing the main themes of UT of interest at the Erasmus MC, being prostatic, bladder, and gonadal tumors. However, future developments into the direction of other tumors, like renal cell carcinoma, are feasible dependent on the clinical role and research interest of individual scientists and physicians.

This report represents the building spirit of the group, and we hope that it provides the information you are looking for. For sure, we appreciate your comments in order to improve. Above all, this report should function as an open invitation to contact us for exchange of ideas and hopefully future collaborations.

April 2019, Chris Bangma, Ronald de Wit, Ellen Zwarthoff, Luca Incroci, Leendert Looijenga
# Preface

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General Introduction

Vision
Translational research and education are the basis for innovations in patient care.

Mission
Improving care for patients with urogenital tumors.

Philosophy
Basic research creates knowledge and forms the fundament of translational research. Translation of new knowledge to care creates impact. Individualised patient care creates success.

Goals

2. Interdisciplinary research projects (based on critical preparation of grant applications).
3. Validation and valorisation network (regional, international partnerships in research/care/industry).
4. Leading centre of regional research.
5. Patient participation (participation groups, patient laboratories).

Research Focus

1. Efficient early detection
2. Targeted curative therapy
3. Decrease therapy resistance
4. Improve quality of life
All via translational research (Qs >> bench >> bed >> validation >> valorisation)

Founding departments

1. Urology
2. Pathology
3. Medical oncology
4. Radiotherapy

Audits archive

- Bostwick report 2014 (available via administration)
Patient Advisory Board

The Patient Advisory Board was installed in 2016 in order to optimize the exchange of information between patient representatives and (pre)clinical scientists. Twice annually a meeting is organized in which project proposals as well as results are presented by PI’s.

During 2018 we have been working on the following three research ideas, originally initiated by the Patient Advisory Board:

1. Scrotal self-examination in young men: is it useful for the timely diagnosis and treatment of gonadal cancer?
2. Can invasive bladder cancer be treated by local and bladder sparing techniques?
3. How can the androgen receptor be blocked selectively in prostate cancer cells in order to prevent systemic side effects of androgen deprivation therapy in patients?

“As the representatives of three patient associations (the Association Living with Bladder or Kidney cancer, the Prostate Cancer Foundation and the Foundation Testicular Cancer) this is our second year that we participate in the AC Urogenital tumors EMC.

As utterly Ignorami we have noticed how smoothly the researchers invite and involve us in their research proposals to participate with our patient’s perspectives.

It is inspiring for us to look in the scientific kitchen and to experience how there are the discussions about the pros and cons of certain proposals.

We feel that our contribution is taken very seriously and we have the idea that by feed back to our patient associations we can (continue to) encourage participation in the trials, trials then also assessed from the patient’s viewpoints.”

Drs. Thomas Knap, psychiatrist; Testicular Cancer (Stichting Zaadbalkanker)
Drs. Harm Niekus, als niet biggeregistreerde: neuroloog niet praktizerend; Prostate Cancer Foundation (Prostaatkanker Stichting)
Drs. Ed van Hezik, retired physician; the Association Living with Bladder or Kidney cancer (Stichting leven met blaas- of nierkanker)
Unique selling points (expertise)

Internal
The AC Urogenital tumors is based on long-term existing and fruitful collaborations of research groups in the participating departments regarding research on prostate, bladder and gonadal tumors.

External
Mondial early detection/treatment networks (ERSPC, GAP3), gonadal biobank, tumor models, phase 1 trials.

Composition AC UT 2018 Scientific research groups

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Dr. Ir. Wytske van Weerden, PhD – Urology ..........................................................20
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Dr. Joost Boormans, MD PhD – Urology ................................................................30
Dr. Wim Kirkels, MD PhD – Urology ....................................................................32
Dr. Paul Verhagen, PhD – Urology ........................................................................33
Drs. Martijn Busstra, MD – Urology .....................................................................34
Maaike van de Kamp, MSc MD FEBU – Urology ....................................................35
Dr. Geert van Leenders, MD PhD Associate Professor–Pathology .................36
Prof. Dr. Ellen Zwarthoff, PhD – Pathology ..........................................................38
Dr. Martin van Royen, PhD – Pathology .................................................................41
Prof. Dr. Leendert Looijenga, PhD – Pathology ....................................................46
Dr. Peter Riegman, PhD – Pathology ....................................................................49
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Dr. Martine Franckena, MD PhD – Radiation Oncology ..................................53
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Dr. Ivo G. Schoots, PhD – Radiology & Nuclear Medicine ...............................67
Prof. Dr. Marion de Jong, PhD – Radiology & Nuclear Medicine .....................70
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Dr. Dirk C. Gent, PhD – Molecular Genetics .......................................................76
Dr. Johannes Hofland, PhD – Internal Medicine ................................................78
Dr. Andrew Stubbs, PhD – Clinical Bioinformatics Unit ......................................80
Dr. ir. Harmen van de Werken, PhD – Urology/CCBC .......................................83
## Structure and meetings

<table>
<thead>
<tr>
<th>Definition</th>
<th>Task</th>
<th>Meeting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>All Participants</strong></td>
<td>All Erasmus MC scientists interested on the mailing list</td>
<td>Presenting work for cross talk in translational projects</td>
</tr>
<tr>
<td><strong>PI’s</strong></td>
<td>Group leaders</td>
<td>Defining AC projects</td>
</tr>
<tr>
<td><strong>MT</strong></td>
<td>Representatives from founding departments (one each: Bangma, Zwarthoff, de Wit, Incroci, Looijenga)</td>
<td>Running affairs Agenda for meetings, PR Bridging information to founding departments on strategy and finances Designing logistic strategies</td>
</tr>
<tr>
<td><strong>PI’s</strong></td>
<td>Group leaders</td>
<td>Also: designing and facilitating strategic research program</td>
</tr>
<tr>
<td><strong>All participants</strong></td>
<td>Patient representatives and scientists</td>
<td>Presentation and discussion on research proposals</td>
</tr>
<tr>
<td><strong>Task teams</strong></td>
<td>Selection of PIs</td>
<td>Completing defined logistic/research projects</td>
</tr>
</tbody>
</table>

* * notes are made available via the administration
<table>
<thead>
<tr>
<th>Date</th>
<th>Name</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>19 Jan</td>
<td>E.C. Zwarthoff</td>
<td>Comprehensive molecular characterization of muscle-invasive bladder cancer</td>
</tr>
<tr>
<td></td>
<td>G.J.L.H. van Leenders</td>
<td>1. Tumor growth patterns in therapeutic guidance</td>
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<tr>
<td></td>
<td></td>
<td>2. 3D architecture of prostate cancer</td>
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<tr>
<td></td>
<td></td>
<td>3. Molecular and biological background of growth patterns</td>
</tr>
<tr>
<td>23 Feb</td>
<td>M.E. van Royen</td>
<td>EVQuant techniek voor kwantificeren van extracellulaire vesicles</td>
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<td></td>
<td>P.C.M.S. Verhagen</td>
<td>HORAD studie</td>
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<tr>
<td>20 Apr</td>
<td>W.M. van Weerden</td>
<td>GAP1 xenograft project integration plan (Movember</td>
</tr>
<tr>
<td></td>
<td>I.G. Schoots/J.F. Veenland</td>
<td>MRI imaging in prostate cancer</td>
</tr>
<tr>
<td>25 May</td>
<td>J.E.M.A. Debets</td>
<td>Oncolytic adenovirus therapy in 12 prostate cancer patients</td>
</tr>
<tr>
<td></td>
<td>M.J. Roobol</td>
<td>PIONEER – Prostate Cancer Diagnosis and Treatment Enhancement through big data. (EU-IMI project Big data for better outcome)</td>
</tr>
<tr>
<td>21 Sep</td>
<td>G.W. Jenster</td>
<td>Widespread and functional RNA circularization in localized Cancer</td>
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<tr>
<td></td>
<td>M. Franckena</td>
<td>Bladder cancer treatment in the elderly/fragile patient</td>
</tr>
<tr>
<td></td>
<td>J.L. Hofland</td>
<td>Steroid metabolome analysis in prostate cancer</td>
</tr>
<tr>
<td>14 Dec</td>
<td>C.H. Bangma</td>
<td>Radical prostatectomy or watchful waiting in prostate cancer 29yr follow up NEJM</td>
</tr>
<tr>
<td></td>
<td>R.H.N. van Schaik</td>
<td>Germline variation at 8q24 and pca risk in men of EU ancestry</td>
</tr>
</tbody>
</table>
Internationalization

Network analyses of publication output are used to identify strategic collaborations worldwide to improve innovative research aiming at better patient treatment modalities.
Overview AC UT 2018 Scientific research groups

Prof. Dr. Ir. Guido Jenster, PhD – Urology
Discovery and analysis of (novel) genes and pathways that contribute to especially prostate cancer progression using DNA and RNA sequencing, for which new bioinformatics tools, in vitro/vivo model systems and nanobodies are being generated. .......................... 13

Dr. Elena Martens, PhD – Urology
Investigation of small non-coding RNAs derived from snoRNA and tRNA for their possible function in cancer cells, their biogenesis pathways and their potential as minimally invasive markers for the detection and prognosis of prostate cancer. ............................................................. 18

Dr. Ir. Wytse van Weerden, PhD – Urology
Modelling: establishment of novel PDXs of prostate cancer patients progressive on contemporary therapies, metastatic PDXs and complex in vitro systems (tissue slices, 3D (co-) cultures, organoids); Targeted imaging and radionuclide therapy. Resistance mechanisms. ............................................................. 20

Prof. Dr. Monique Roobol, PhD – Urology
The epidemiological research related to several (international) population-based and/or clinical databases (directly connected to biobanks) to develop decision aids (including new biomarker discoveries) for daily urological clinical practice. Related research on (cost) efficiency and quality of life. ............................................................................................. 23

Prof. Chris Bangma, MD PhD – Urology
Integration of preclinical and clinical aspects of urologic cancers ............................................................................................. 27

Dr. Joost Boormans, MD PhD – Urology
Clinical and translational research on bladder cancer ............................................................................................. 30

Dr. Wim Kirkels, MD PhD – Urology
Therapeutic aspects of treatment of urologic cancers, especially invasive bladder cancer and retroperitoneal germ cell cancer ............................................................................................. 32

Dr. Paul Verhagen, PhD – Urology
Therapeutic aspects of treatment of urologic cancers, especially kidney cancer. ............................................................................................. 33

Drs. Martijn Busstra, MD – Urology
Clinical aspects of prostate cancer, especially diagnostic imaging with PSMA-targeted tracers. ............................................................................................. 34

Maaike van de Kamp, MSc MD FEBU – Urology
Therapeutic aspects of treatment of urologic cancers ............................................................................................. 35

Dr. Geert van Leenders, MD PhD Associate Professor – Pathology
Clinical outcome and to support therapeutic decision-making in prostate and bladder cancer patients by in depth evaluation of diagnostic tissue biopsies. Evaluation of tumor growth patterns beyond current gradi ............................................................................................. 36

Prof. Dr. Ellen Zwarthoff, PhD – Pathology
Identification and validation of diagnostic and prognostic biomarkers for bladder tumors NMIBC and MIBC. Investigation of new treatment options for (N)MIBC. ............................................................................................. 38

Dr. Martin van Royen, PhD – Pathology
Quantitative (live-cell) imaging approaches to (1) unravel the molecular mechanism of androgen receptor function and inhibition in health and disease, (2) study role and use of extracellular vesicles in PCa, (3) improve our insight in 3D architecture of PCa growth patterns.. ............................................................................................. 41

Prof. Dr. Leendert Looijenga, PhD – Pathology
Development and application of diagnostic, prognostic and predictive markers (including gonadal development; germ cell cancers as well as (in)fertility) in germ cell cancers. ............................................................................................. 46
Erasmus MC Tissue Bank collects tissues at the pathology department for diagnostic purposes under ISO 15189:2014.

Prof. Luca Incrocci, MD PhD – Radiation Oncology
The development of radiation techniques to improve treatment outcome and decrease side effects of radiation therapy for urological malignancies, in particular prostate cancer. Quality of life of cancer patients plays an important role in these research projects. Evaluation of techniques such as hypofractionation, bladder-sparing chemo-radiotherapy, use of radiosensitizers during radiotherapy.

Dr. Martine Francken, MD PhD – Radiation Oncology
Improved radiation techniques and quality of life by use of hyperthermia, elucidating the biological mechanisms.

Prof. Ronald de Wit, MD PhD – Medical Oncology
Systemic treatment of Urological Cancers.

Dr. Martijn Lolkema, MD PhD – Medical Oncology
Generating proof of concept for medical treatment of metastatic prostate cancer patients. To this end we perform pre-clinical studies using mouse models of prostate cancer, early biomarker studies and intervention studies in human subjects.

Dr. Reno Debets, PhD – Medical Oncology
Development of therapeutic strategies to (re-)establish tumor-specific immune responses, in particular those of T lymphocytes.

Dr. Ivo G. Schoots, PhD – Radiology & Nuclear Medicine
Exploration of MRI-based strategies to improve diagnostic accuracy, reduce the number of biopsy cores needed, and improve therapeutic decision-making in prostate cancer.

Prof. Dr. Marion de Jong, PhD – Radiology & Nuclear Medicine
Peptide receptor-targeted imaging and peptide receptor-targeted radionuclide therapy of receptor-positive cancers with radiolabelled peptides.

Prof. Dr. Ron H.N. van Schaik – Klinische Chemie
Translation of promising biomarkers for risk estimation, early detection, progression and therapy responsiveness of prostate cancer into clinical practise, with a focus on molecular targets.

Dr. Dirk C. Gent, PhD – Molecular Genetics
Mechanistic aspects and (clinical) consequences of DNA repair pathways and DNA repair defects in tumors, including prostate and bladder cancer.

Dr. Johannes Hofland, PhD – Internal Medicine
Steroid metabolome analysis in hormone-dependent cancers. Steroid endocrinology and endocrine oncology.

Dr. Andrew Stubbs, PhD – Clinical Bioinformatics Unit
The Translational Bioinformatics Team develops bioinformatics methods and services to support biomarker discovery and validation in clinical research projects.

Dr. ir. Harmen van de Werken, PhD – Urology/CCBC
Erasmus MC Cancer Computational Biology Center facilitating ICT and bioinformatics for research and the clinic, with a focus on computational biology of gene expression and genome organization in cancer. Development of new computational algorithms, analysis methods and visualisation tools.
Collaborating PI’s not further mentioned in this report:

<table>
<thead>
<tr>
<th>Name</th>
<th>Department</th>
<th>Email</th>
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</thead>
<tbody>
<tr>
<td>Prof. Adriaan Houtsmuller, PhD</td>
<td>Pathology</td>
<td><a href="mailto:a.houtsmuller@erasmusmc.nl">a.houtsmuller@erasmusmc.nl</a></td>
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<tr>
<td>Prof. Stefan Sleijfer, MD PhD</td>
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<td><a href="mailto:s.sleijfer@erasmusmc.nl">s.sleijfer@erasmusmc.nl</a></td>
</tr>
<tr>
<td>Prof. Wiro Niessen, PhD</td>
<td>Radiology/Nuclear Medicine</td>
<td><a href="mailto:w.niessen@erasmusmc.nl">w.niessen@erasmusmc.nl</a></td>
</tr>
<tr>
<td>Dr. Jifke Veenland, PhD</td>
<td>Radiology/Nuclear Medicine</td>
<td><a href="mailto:j.veenland@erasmusmc.nl">j.veenland@erasmusmc.nl</a></td>
</tr>
<tr>
<td>Prof. Harry de Koning, MD PhD</td>
<td>Public Health and Screening Evaluation</td>
<td><a href="mailto:h.dekoning@erasmusmc.nl">h.dekoning@erasmusmc.nl</a></td>
</tr>
<tr>
<td>Prof. Jan Hoeijmakers, PhD</td>
<td>Molecular Genetics</td>
<td><a href="mailto:j.hoeijmakers@erasmusmc.nl">j.hoeijmakers@erasmusmc.nl</a></td>
</tr>
</tbody>
</table>
Aim of the group
The research in Prof. Jenster’s group is focused on the discovery and analysis of (novel) genes and pathways that contribute to cancer progression using DNA and RNA sequencing. The discovery that cancer-associated transcripts are secreted by cancer cells via extracellular vesicles forms the basis for biomarker research in urine and blood. Assays are being designed to specifically capture and analyze these vesicles to improve diagnosis and prognosis of urogenital tumors. To support this research, new bioinformatics tools, in vitro/vivo model systems and nanobodies are being generated.

Important Memberships/honours
- Board member of the EAU Research Foundation (EAU-RF)
- Member Mrace committees ‘Equipment & Infrastructure’ and ‘Personal Subsidies’
- Chair of Scientific Advisory Board of Movember GAP3 ‘Active surveillance’
- Founding member of Netherlands Society for Extracellular Vesicles (NLSEV)
- Board member of the Postgraduate School Molecular Medicine
- Member of Hartwig Medical Foundation focus groups on ‘Prostate Cancer’ and ‘Structural Variants’

Top 5 Scientific Publications (2018)
3. Australian Prostate Cancer BioResource (APCB); IMPACT Study; Canary PASS Investigators; Breast and Prostate Cancer Cohort Consortium (BPC3); PRACTICAL (Prostate Cancer Association Group to Investigate Cancer-Associated Alterations in the Genome) Consortium; Cancer of the Prostate in Sweden (CAPS); Prostate Cancer Genome-wide Association Study of Uncommon Susceptibility Loci (PEGASUS); Genetic Associations and Mechanisms in Oncology (GAME-ON)/Elucidating Loci Involved in Prostate Cancer Susceptibility (ELLIPSE) Consortium. *Association analyses of more than 140,000 men identify 63 new prostate cancer susceptibility loci*. Nat Genet. 2018 Jul;50(7):928-936.

**Top Non-Scientific Publications (2018)**
- KWF Sterrenstage Vraag Vandaag Feb 2018:
  - https://www.youtube.com/watch?v=EboxZWiOx_k&feature=youtu.be&t=34m48s
  - https://www.kwf.nl/over-kwf/wereldkankerdag/Pages/default.aspx#nohref
- RTL 5 uur live Feb 2018:
  - https://www.koffietijd.nl/uitzending-5ul-050218
  - https://www.koffietijd.nl/gdl-npl-topstory-prostaatkanker
- ANSER 2018

<table>
<thead>
<tr>
<th>Role</th>
<th>Member</th>
<th>First name</th>
<th>Surname</th>
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<tbody>
<tr>
<td>Secretarial support</td>
<td>Diana</td>
<td>Brusik-van Houten</td>
<td></td>
</tr>
<tr>
<td>As Professor and Director of Experimental Urological Oncology:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Associate Professor &amp; Group leader</td>
<td>Wytske</td>
<td>van Weerden</td>
<td></td>
</tr>
<tr>
<td>Assistant Professor &amp; Group leader</td>
<td>Elena</td>
<td>Martens</td>
<td></td>
</tr>
<tr>
<td>Managing director CCBC</td>
<td>Harmen</td>
<td>van de Werken</td>
<td></td>
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<tr>
<td>Senior Postdoc</td>
<td>Rute</td>
<td>Marques</td>
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<tr>
<td>As direct supervisor:</td>
<td></td>
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</tr>
<tr>
<td>Visiting Postdoc</td>
<td>Jim</td>
<td>Grey</td>
<td></td>
</tr>
<tr>
<td>Visiting Scientist</td>
<td>Nea</td>
<td>Bister</td>
<td></td>
</tr>
<tr>
<td>Bioinformatician, PhD student</td>
<td>Youri</td>
<td>Hoogstrate</td>
<td></td>
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<tr>
<td>PhD student</td>
<td>Yasir</td>
<td>Abozaid</td>
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<tr>
<td>Scientist</td>
<td>Jeroen</td>
<td>Van Dorp</td>
<td></td>
</tr>
<tr>
<td>Research assistant</td>
<td>Natasja</td>
<td>Dits</td>
<td></td>
</tr>
<tr>
<td>Research assistant</td>
<td>Mirella</td>
<td>van den Berg</td>
<td></td>
</tr>
<tr>
<td>Research assistant</td>
<td>Joke</td>
<td>Veldhoven-Zweistra</td>
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<tr>
<td>MSc student</td>
<td>Maarten</td>
<td>Ligtenberg</td>
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<tr>
<td>MSc student</td>
<td>Tanja</td>
<td>Van de Nadort</td>
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</tr>
<tr>
<td>Student</td>
<td>Caitlin</td>
<td>Jenster</td>
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Projects running

**Effibody**
The consortium will deliver an innovative platform technology including bioinformatics tools for the selection, characterization and production of monoclonal antibodies (mAbs), integrating mass spectrometry, next generation sequencing and bioinformatics tools. The resulting EffiBody platform technology will be more reliable, faster and cost-effective than current methods, ensuring high competitiveness on market. To achieve Proof of Concept, mAbs against cancer targets will be generated.

Funded by Eurostars | € 2000K | 2016 - 2019 | Renato Chirivi
Consortia: MidiQuest, PubGene, Erasmus MC

**IMMPROVE**
The aim of the project is to develop robust minimally invasive assays for the diagnosis and prognosis of prostate cancer. The assays will be based on our ability to measure the PCA-associated changes in extracellular vesicles (EVs) secreted by PCa cell into the urine. Assays that determine EV number (WP2) and protein (WP1) and RNA content (WP3) will be developed and validated (WP4).

Funded by KWF/Alpe d’Huzes Unieke Kansen | €2000K | 2016 - 2020 | Guido Jenster
Consortia: Erasmus MC, VUmc, Radboud UMC, TU Delft

**The Urinome Project**
This project aims to provide a diagnosis and prognosis for any disease of the kidney, bladder and prostate by sequencing of RNA and DNA extracted from urine.

Funded by SUWO & Erasmus MC vriendenfonds | € 65K | 2016-2019 | Guido Jenster, Chris Bangma
Consortia: Departments of Urology, Microbiology, Internal Medicine, Pathology Erasmus MC: [www.urinome.nl](http://www.urinome.nl)

**Cancer Therapy Screening Facility**
This is a support grant to facilitate high-content / high throughput screenings from assay design to quantitative imaging and analysis for all cancer research funded by the DDH Foundation and the Erasmus MC Cancer Center.

Funded by DDHSt | € 1200K | 2015-2018 | Pim French
Consortia: Departments of Neurology, Urology, Medical Oncology, Pathology, Hematology Erasmus MC: [http://ctsf.erasmusmc.nl](http://ctsf.erasmusmc.nl)

**Cancer-ID**
The aim of the Cancer-ID program ([https://www.utwente.nl/tnw/cancer-id/](https://www.utwente.nl/tnw/cancer-id/)) is to develop novel technology for monitoring Cancer therapy through revealing the extracellular vesicle IDentity (Cancer-ID).

Funded by STW Perspectief | € 5787K | 2015-2019 | Leon Verstappen
Consortia: 23 Companies and 7 Dutch Universities: [www.utwente.nl/tnw/cancer-id](http://www.utwente.nl/tnw/cancer-id)

**CCBC**
This is a support grant to initiate a bioinformatics facility for all cancer research funded by the DDH Foundation and the Erasmus MC Cancer Center.

Funded by DDHSt | € 682K | 2014-2021 | Guido Jenster
Consortia: Departments of Urology, Medical Oncology, Pathology, Erasmus MC: [https://ccbc.erasmusmc.nl](https://ccbc.erasmusmc.nl)
**PROSCANEXO**

Exploitation of extracellular vesicles for precision diagnostics of prostate cancer. PI: Jesus M De la Fuente.

Partner: Guido Jenster. €311,779.61 (EMC)


Consortia: Erasmus MC; CIBER-BBN Spain; Oslo University Hospital Norway; Latvian Biomedical Research and Study Centre Latvia; University of Tartu Estonia

**EV-UPTAKE**

Specificity and inhibition of EV mediated cell-cell communication in cancer

Funded by MRace Erasmus MC | € 50K | 2018-2020 | Martin van Royen and Guido Jenster

Consortia: Pathology and Urology, Erasmus MC

**Androgen Receptor profiling**

Biomarker discovery for prognostication and treatment selection in prostate cancer through Androgen Receptor profiling

Funded by KWF | € 655K | 2017-2020 | Wilbert Zwart & Andre Bergman

Consortia: NKI and EMC

### Current collaborations within AC

<table>
<thead>
<tr>
<th><strong>Project Title</strong></th>
<th><strong>Partners</strong></th>
<th><strong>Funding agency</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>TraIT</td>
<td>Andrew Stubbs</td>
<td>CTMM</td>
</tr>
<tr>
<td>CCBC</td>
<td>Harmen van de Werken, Leendert Looijenga</td>
<td>DDHSt</td>
</tr>
<tr>
<td>CTSF</td>
<td>Martin van Royen, Leendert Looijenga</td>
<td>DDHSt</td>
</tr>
<tr>
<td>EVs in blood</td>
<td>Ronald de Wit, Martijn Lolkema, Wytske van Weerden</td>
<td>Erasmus MC Mrace, Sanofi-Aventis</td>
</tr>
<tr>
<td>IMMPROVE</td>
<td>Elena Martens, Martin van Royen</td>
<td>KWF</td>
</tr>
<tr>
<td>The Urinome Project</td>
<td>Chris Bangma, Ellen Zwarthoff, Andrew Stubbs, Harmen van de Werken, Arno van Leenders</td>
<td>SUWO</td>
</tr>
<tr>
<td>EffiBody</td>
<td>Theo Luider</td>
<td>Eurostars</td>
</tr>
<tr>
<td>EV-uptake and assay development</td>
<td>Martin van Royen</td>
<td>MRace</td>
</tr>
<tr>
<td>NGS ProToCol</td>
<td>Andrew Stubbs</td>
<td>CTMM</td>
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### Educational activities

<table>
<thead>
<tr>
<th>School</th>
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<tbody>
<tr>
<td><em>Postgraduate: MolMed</em></td>
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<td><em>Master: MolMed</em></td>
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<tr>
<td><em>Bachelor/Master Medicine Erasmus MC</em></td>
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Additional supervision of 2 MSc. students and 10 PhD students

### Hosting visiting scientists

<table>
<thead>
<tr>
<th>Name visiting scientist</th>
<th>Institute visiting scientist</th>
<th>Location Institute</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nea Bister</td>
<td>University of Eastern Finland</td>
<td>Finland</td>
</tr>
<tr>
<td>Jim Grey</td>
<td>Newcastle University</td>
<td>UK</td>
</tr>
</tbody>
</table>
Aim of the group
My current research is focused on small non-coding RNAs and their function and links to in RNA modification. Within my new research line on Epitranscriptomics I investigate their possible function in cancer cells, their marker potential for the detection and prognosis of prostate cancer and their possible utilization as therapeutic targets.

Specialties: Transcriptomics, Epitranscriptomics, Molecular biology, Biochemistry, NGS, small RNA.

Important Memberships/honours
- Memberships: EAU, RNA society; ISEV
- Honours: EUR fellowship 2018 fellow; FCD13 fellow 2016; Talent extraordinary fellow, EUR 2012; NWO-VENI fellow 2012; TEMPUS-EU fellow 1998; Best paper in fundamental urological research, 2013 EAU; Outstanding abstract 2014 and 2010 ESUR, EAU; Best European poster presentation 2009 ATRIP

Top Scientific Publications (2018)

Current members of group

<table>
<thead>
<tr>
<th>Role</th>
<th>Member</th>
<th>First name</th>
<th>Surname</th>
</tr>
</thead>
<tbody>
<tr>
<td>PhD student</td>
<td>Daniela</td>
<td>Baros Silva</td>
<td></td>
</tr>
<tr>
<td>Student</td>
<td>Jeffrey</td>
<td>Slagter</td>
<td></td>
</tr>
</tbody>
</table>
Projects running

**CARIBEAn— a Cancer Ribosomes Epitranscriptomic Atlas for the mapping and functional analysis of tissue- and cancer-associated differences in ribosome 2-O-methylation**

Principal Investigator. The aim of the project is to characterize the differences in ribosomal 2-O-methylation between normal and tumor tissues in prostate, bladder and kidney and gain insight into how such changes affect tumor growth and aggressiveness.

Funded by Erasmus University Fellowship | €150K | 2019 - 2022 | Elena Martens

**Epigenetic regulation of non-coding RNAs in Prostate Cancer**

Co-PI. The primary goal of this project is to identify epi-transcriptionally regulated ncRNAs implicated in the development of advanced PCa and CRPC and the functional consequences of these alterations.

Funded by Foundation for Science and Technology, FCT, Portugal | €65K | 2019 - 2023 | Carmen Jeronimo

**IMMPROVE - Urinary extracellular vesicles and their content as novel markers for minimally invasive diagnosis and prognosis of prostate cancer**

Work package leader of WP3. The aim of the project is to develop robust minimally invasive assays for the diagnosis and prognosis of prostate cancer. The assays will be based on our ability to measure the PCa-associated changes in extracellular vesicles (EVs) secreted by PCa cell into the urine. Assays that determine EV number (WP2) and protein (WP1) and RNA content (WP3) will be developed and validated (WP4).

Funded by KWF/Alpe d’Huzes Unieke Kansen | €2000K | 2016 - 2020 | Guido Jenster

Consortia: Erasmus MC, VUmc, Radboud UMC, TU Delft

Current collaborations within AC

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Partners</th>
<th>Funding agency</th>
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</thead>
<tbody>
<tr>
<td>CARIBEAn</td>
<td>Dr. Martin van Royen, Cancer Treatment Screening Facility (CTSF)</td>
<td>Erasmus University Fellowship</td>
</tr>
<tr>
<td>IMMPROVE</td>
<td>Dr. Martin van Royen, Cancer Treatment Screening Facility (CTSF)</td>
<td>KWF Alpe d’Huzes</td>
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Educational activities

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<tr>
<th>School</th>
<th>Number of courses</th>
<th>Number of hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor Medicine 1st year VO</td>
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<td>4</td>
</tr>
<tr>
<td>Coordinator Bachelor Medicine 2nd year KO</td>
<td>1</td>
<td>36</td>
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Hosting visiting scientists

<table>
<thead>
<tr>
<th>Name visiting scientist</th>
<th>Institute visiting scientist</th>
<th>Location Institute</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daniela Barros Silva, PhD student</td>
<td>Portuguese Oncology Institute</td>
<td>Porto, Portugal</td>
</tr>
<tr>
<td>Nea Bister, PhD student</td>
<td>University of Eastern Finland</td>
<td>Kuopio, Finland</td>
</tr>
<tr>
<td>Stefania Crucitta, PhD student</td>
<td>University of Pisa, Dep. of Clinical and Experimental Medicine</td>
<td>Pisa, Italy</td>
</tr>
<tr>
<td>Tarik Ould-Braham, MSc student</td>
<td>University Paris-Est Créteil (UPEC)</td>
<td>Paris, France</td>
</tr>
</tbody>
</table>
Aim of the group
My research is built on our unique set of patient derived xenografts (PDXs) and aims to unravel regulatory pathways and their crosstalk, identify novel targets for intervention, and to test and validate new and optimised treatment strategies. These aims are embedded in the following research pillars: **Modelling**: establishment of novel PDXs of patients progressive on contemporary therapies, human-immunis system (HIS)-PDXs, metastatic PDXs and complex in vitro systems (tissue slices, 3D organoid cultures); **Metastasis**: clonality, homing and therapeutic interventions; **Resistance mechanisms**: mechanisms of castration-resistance, chemo (taxane)-resistance and their (putative) cross-talk, radioresistance and potential sensitisation strategies; **Targeted imaging and radionuclide therapy**: exploiting the theranostic concept using small inhibitors and nanobodies (anti-PSMA) and natural small peptides (bombesin analogs); and **Immune therapy**: immune profiles in aggressive vs indolent MuCaP mouse model.

Top Scientific Publications (2018)
### Current members of group

<table>
<thead>
<tr>
<th>Role</th>
<th>First name</th>
<th>Surname</th>
</tr>
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<tbody>
<tr>
<td>Postdoc</td>
<td>Rute</td>
<td>Marques</td>
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<tr>
<td>PhD</td>
<td>Eline</td>
<td>Ruigrok</td>
</tr>
<tr>
<td>PhD</td>
<td>Lisanne</td>
<td>Mout</td>
</tr>
<tr>
<td>PhD</td>
<td>Matthijs</td>
<td>Moll</td>
</tr>
<tr>
<td>PhD</td>
<td>Annelies</td>
<td>Van Hemelryk</td>
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<tr>
<td>PhD</td>
<td>Merle</td>
<td>Van Gelder</td>
</tr>
<tr>
<td>technician</td>
<td>Wilma</td>
<td>Teubel</td>
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<tr>
<td>technician</td>
<td>Sigrun</td>
<td>Erkens</td>
</tr>
<tr>
<td>technician</td>
<td>Ashraf</td>
<td>Aghai</td>
</tr>
<tr>
<td>biotechnician</td>
<td>Corrina</td>
<td>De Ridder</td>
</tr>
<tr>
<td>biotechnician</td>
<td>Debra</td>
<td>Stuurman</td>
</tr>
</tbody>
</table>

### Projects running

**Immunogenomics**

Immune interactions in novel syngenic prostate cancer model.
Funded by MRace OIO | € 150K | 2017 - 2021 | Rute Marques, Reno Debets, Wytske van Weerden

**Role of S49076 in prostate cancer metastasis**

Role of inhibitor of AXL, MET and FGF pathways, S49076 in preclinical model of spontaneous metastatic disease.
Funded by Servier | € 395K | 2017 - 2019 | Rute Marques, Wytske van Weerden

**Radiosensitisation by ARN509**

Effect of ARN509 on tumor vascularization and hypoxia, and consequently EBRT efficacy.
Funded by JNJ/Janssen | € 171K | 2017 - 2019 | Wytske van Weerden, Luca Incrocci

**PSMA-targeted therapy**

Improved safety and sensitivity for PSMA-targeted therapies.
Funded by KWF | € 591K | 2017 - 2021 | Marion de Jong, Wytske van Weerden, Dik van Gent

**Taxanes and ADT**

Efficacy of taxanes in combination with ADT.
Funded by Sanofi | € 238K | 2017 - 2019 | Ronald de Wit, Wytske van Weerden

**Translational Research Network in Prostate Cancer (TRANSPOT)**

ITN training PC targets and drug screening.
Funded by MSCA-ITN-ETN TRANSPOT | € 2647 K | 2016 - 2021 | H. Leung (Glasgow Univ)

In consortia

**Development in vivo model of prostate cancer bone metastasis**

Co-grafting of PDX-bearing mice with human bone pellets to establish metastatic bone model.
Funded by Mrace | € 50 K | 2016 - 2017 | Wytske van Weerden, E. Farrell
**Liquid biopsies through leukapheresis: organoids of circulating tumor cells (CIRCLE)**

CTC-based organoids by leukapheresis.

Funded by KWF Unieke Kansen, CIRCLE | € 221 K | 2016 - 2018 | Martijn Lolkema, John Martens, Wytske van Weerden

**Near-patient’ prostate cancer models for prognosis and therapy response (PROPER)**

Model development of PC and drug screening.

Funded by KWF Alpe/dHuzes, PROPER | € 1831 K | 2015 - 2021 | Gabri vd Pluijm (LUMC)

In consortia

**Interactions between androgens and taxane efficacy**

Mechanisms of cross-resistance between antiandrogens and cabazitaxel.

Funded by Sanofi | € 864 K | 2014 - 2018 | Ronald de Wit, Wytske van Weerden

**Immunogenomics**

Tumor-immune interactions in aggressive and indolent prostate cancer: immunogenomic and intervention studies in unique syngeneic model.

Funded by MRace OIO | € 150K | 2017 - 2021 | Rute Marques, Reno Debets, Wytske van Weerden

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<table>
<thead>
<tr>
<th>Current collaborations within AC</th>
<th>Project Title</th>
<th>Partners</th>
<th>Funding agency</th>
</tr>
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<tbody>
<tr>
<td>Radiosensitisation by ARN509</td>
<td>Incrocci</td>
<td>JNJ-Janssen</td>
<td></td>
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<tr>
<td>Taxanes and anti-androgens</td>
<td>De Wit, Lolkema, Mathijssen</td>
<td>Sanofi</td>
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</tr>
<tr>
<td>CIRCLE – CTC organoids</td>
<td>Lolkema</td>
<td>KWF/Unieke Kansen</td>
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</tr>
<tr>
<td>PSMA theranostics of prostate cancer</td>
<td>De Jong, van Gent</td>
<td>KWF 2016</td>
<td></td>
</tr>
<tr>
<td>Immune-interactions of prostate cancer</td>
<td>Debets</td>
<td>MRace 2016</td>
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**Educational activities**

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<tr>
<th>School</th>
<th>Number of courses</th>
<th>Number of hours</th>
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<tbody>
<tr>
<td>VO practicum</td>
<td>1/year</td>
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<tr>
<td>Dierproefcursus (“WOD-Art 9”)</td>
<td>2/year</td>
<td>2</td>
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</table>

Additional supervision of 1 BSc. Student, 2 MSc. students and 5 PhD students.

- BSC. Hogeschool Rotterdam 4e jaars: Jasper Dumas: 7 months (Nov 2017-May 2018)
- MSC MD Erasmus MC: Hajar Chtatou: 6 months (Feb-July 2018)
- MSc MD Erasmus MC: Cihan Denisz: 7 months (Sep 2018 – March 2019)
Prof. Dr. Monique Roobol, PhD – Urology

Aim of the group
The epidemiological research office of the department of urology is responsible for research related to several (international) population-based and/or clinical databases (directly connected to biobanks) with the main goal to develop decision aids (including new biomarker discoveries) for daily urological clinical practice (both functional and oncology related). Directly connected to this epidemiological/statistical pathway is research focusing on (cost) efficiency and quality of life.

Important Memberships/honours
(Co)-authored over 300 scientific publications, book chapters and reviews. Member of the American Urology Association (AUA), the European Association of Urology (EAU), Société Internationale d’Urologie (SIU) and the Dutch Association of epidemiology and the Dutch Association of statistics and Operational Research

Awards:
• the “van Stockum prize” from the Dutch Urological Association for best thesis
• the EAU best clinical paper 2009
• the European Urology Platinum Award 2011
• the BJUI best urological mobile application award 2015
• the European Urology Platinum Award 2018

Committee membership:
• MRace Grant committee Erasmus MC
• Medical Ethical Committee South-West Netherlands

Top 5 Scientific Publications (2018)
1. Verbeek JFM, Bangma CH, Kweldam CF, van der Kwast TH, Kümmerlin IP, van Leenders GJLH, Roobol MJ. Reducing unnecessary biopsies while detecting clinically significant prostate cancer including cribriform growth with the ERSPC Rotterdam risk calculator and 4Kscore. Urol Oncol. 2018


<table>
<thead>
<tr>
<th>Current members of group</th>
<th>Role Member</th>
<th>First name</th>
<th>Surname</th>
</tr>
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<tbody>
<tr>
<td>Professor</td>
<td>Monique J.</td>
<td>Roobol</td>
<td></td>
</tr>
<tr>
<td>Postdoc</td>
<td>Lionne D.</td>
<td>Venderbos</td>
<td></td>
</tr>
<tr>
<td>Postdoc</td>
<td>Jozien.</td>
<td>Helleman</td>
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<tr>
<td>PhD</td>
<td>Arnout R.</td>
<td>Alberts</td>
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<tr>
<td>PhD</td>
<td>Frank-Jan</td>
<td>Drost</td>
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<tr>
<td>PhD</td>
<td>Jan F.M.</td>
<td>Verbeek</td>
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<tr>
<td>PhD</td>
<td>Nuno</td>
<td>Pereira-Azevedo</td>
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<tr>
<td>PhD</td>
<td>Peter K.</td>
<td>Chui</td>
<td></td>
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<tr>
<td>PhD</td>
<td>Kai</td>
<td>Zhang</td>
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<tr>
<td>Statistician</td>
<td>Daan</td>
<td>Nieboer</td>
<td></td>
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<tr>
<td>Jr. Statistician</td>
<td>Sebastiaan</td>
<td>Remmers</td>
<td></td>
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<tr>
<td>Data manager</td>
<td>Conja G.A.M.</td>
<td>Franken-Raab</td>
<td></td>
</tr>
<tr>
<td>Data manager</td>
<td>Maaike</td>
<td>Den Rooijen</td>
<td></td>
</tr>
<tr>
<td>Data manager</td>
<td>Marlies E.</td>
<td>Van Slooten-Middenrigh</td>
<td></td>
</tr>
</tbody>
</table>

Projects running

**MRI guided biopsy in the 5th screening round of ERSPC**
Side study within ERSPC where men with PSA>= 3.0 are invited for MRI and systematic and TBx. Part of PhD thesis.
Funded by SWOP | € 180K | Sep 2013 – Dec 2016 | M. Roobol

**A prostate cancer risk prediction tool for primary care practice**
Combining risk prediction with life expectancy using easy to retrieve parameters available in 1st line of care.
Funded by PCUK | € 189.660 | June 2016 | C. Parker, M. Roobol, E.W. Steyerberg, M. Kattan, R. Nam
In consortia

**PRODRoME-study PROstate cancer Detection by additional Risk stratification and MRI Evaluation**
Combining risk stratification with risk calculator with MRI.
Funded by MRace | € 150K | Oct 2016 | I. Schoots, M.J. Roobol

**Global Action Plan on Active Surveillance**
Constructing global ASdatabase, analyse AS pathway and write guidelines.
Funded by Movember | € 1,6 mil | Feb 2014 | CH. Bangma, M.J. Roobol
In consortia
**PRIAS: Webbased support tool for urologist treating low risk PC patents with AS**
Open web based database system which is basis for ongoing research on AS.
Funded by SWOP | € 100K | Dec 2016 | M.J. Roobol, Ch. Bangma
In consortia

**The European Randomized Study of Screening for Prostate Cancer (ERSPC Rotterdam) Follow-up and improvement of testing exploiting effects of screening**
Continuation of ERSPC, follow-up and development on risk calculators.
Funded by KWF | € 300K | Dec 2010 - Dec 2014 | M.J. Roobol, F.H. Schröder

**Gemline genetics of active surveillance for prostate cancer (SPORE)**
to study gemline genetic variants associated with failure or success of active surveillance.
Funded by US/Catalona | € 7K | Mar 2016 – Dec 2016 | M.J. Roobol
In consortia

**Phi in PRIAS**
Study predictive value of Phi in AS setting.
Funded by Beckman | € 22,500 | Sep 2016 | M.J. Roobol
In consortia

**Prostate Glove study**
Study reliability of prostate volume assessment in prostate glove in GP/urology setting.
Funded by Medimetrix | € 70K | Jan 2017 | M.J. Roobol

**Global Action Plan-4**
Effect of exercise on outcome (quality of life, survival) in men with advanced prostate cancer.
Funded by Movember | € | Feb 2017 | M.J. Roobol
In consortia

**Prostate Vision: ‘Visual technology integrating quantitative patient outcomes to support multidisciplinary clinical decision making’**
To develop technology to significantly improve decision making in tumor boards, by enabling the integration of quantifiable data in algorithms, and by visualisation and analysis of heterogeneous data needed for the clinical decision process.
Funded by KWF-STW | €514K | June 2017 | CH Bangma

**Verstandig Kiezen: Gebruik Verstandige keuzes in de urologische spreekkamer**
Assessing rate of implementation of previously developed smart choise within the field of Urology
Funded by ZonMW | € 91K | June 2017 | M.J. Roobol

**MR Proper: Risk assessment and MR Imaging in prostate cancer diagnosis; an impact analysis**
To study the effect on prostate cancer detection of clinically significant prostate cancer with combining individual risk stratification with MR Imaging in Dutch urology clinics.
Funded by ZonMW | € 300K | August 2017 | I Schoots, M.J. Roobol
### Current collaborations within AC

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Partners</th>
<th>Funding agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>A prostate cancer risk prediction tool for primary care practice</td>
<td>E.W. Steyerberg</td>
<td>PCUK</td>
</tr>
<tr>
<td>PRODROME-study (PROstate cancer Detection by additional Risk stratification and MRI Evaluation)</td>
<td>I. Schoots</td>
<td>MRace</td>
</tr>
<tr>
<td>Mr Proper</td>
<td>I. Schoots</td>
<td>ZonMW</td>
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### Educational activities

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<th>School</th>
<th>Number of courses</th>
<th>Number of hours</th>
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<tbody>
<tr>
<td>KOW2 bachelor, Student curriculum Medicine Erasmus MC</td>
<td>1/year</td>
<td>8</td>
</tr>
<tr>
<td>Student curriculum Technical Medicine, TU Delft</td>
<td>1/year</td>
<td>4</td>
</tr>
<tr>
<td>Statistics bachelor, Student curriculum Medicine Erasmus MC (in preparation)</td>
<td>1/year</td>
<td>16</td>
</tr>
<tr>
<td>LUMC population health management opleiding. 14 mei 2018</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Supervision of 6 PhD students.
Prof. Chris Bangma, MD PhD – Urology

Important Memberships/honours

- President Dutch Urologic Association (NVU) November 2009 t/m November 2011.
- Member of American Association of Genito-Urinary Surgeons (AAGUS) from 2008 onwards
- Member Scientific Advisory Committee of Foundation Dr. Daniel den Hoed.
- Vice-Chair Erasmus Cancer Institute.
- Member Scientific Committee of European Association of Urology (EAU)
- Chairman of Convent of Professors and Scientists in Urology (NVU).
- Corresponding member of the German Urological Association (DGU) 2015.
- Member Advisory Committee Science and Innovation, Dutch Federation of Medical Specialists
- Founder of the first multidisciplinary prostate centre in the Netherlands in 2010 PCzwNL, and the network raised following named ProstatePartners (2014).
- Network raised following prostate partners 2014

List of dissertations (2016)

21-6-2016 Leonard Bokhorst - Prostate Cancer Screening and Active Surveillance (Promotor)

Top 5 Scientific Publications (2018)


Current members of group

<table>
<thead>
<tr>
<th>Role Member</th>
<th>First name</th>
<th>Surname</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinician on PSMA-imaging</td>
<td>Martijn</td>
<td>Busstra</td>
</tr>
<tr>
<td>Risk stratification, epidemiology</td>
<td>Monique</td>
<td>Roobol</td>
</tr>
<tr>
<td>Molecular research</td>
<td>Guido</td>
<td>Jenster</td>
</tr>
</tbody>
</table>

Projects running

**Movember GAP3 active surveillance**

Construction of a legal and digital network for data on Active Surveillance for low risk prostate cancer, optimizing guidelines and treatment protocols including MRI-based imaging.

Funded by Movember | € 100K | 2014 - 2018 | CH. Bangma, M. Roobol, E. Steijerberg

Consortia: Worldwide network of 23 expert institutes in 4 continents

**PRIAS active surveillance**

Digital network of clinicians treating patients with low risk prostate cancer according to PRIAS protocols Funded by Erasmus MC dept of Urology | € 100K | Continuous | CH. Bangma, M. Roobol

Consortia: PRIAS clinical network: www.prias-project.org

**ProstaatPartners (Pca care path quality network: www.prostaatpartners.nl)**

Improving the quality of the regional multidisciplinary care path for prostate cancer by consensus, by clinical research projects, and biobanking.


Consortia: Multidisciplinary Amphia Hospital (Breda), LUMC (Leiden), Jeroen Bosch Hospital (Den Bosch), Franciscus Gasthuis (Rotterdam), Verbeeten Institute (Tilburg)
CTMM (Dutch government)
Validation of diagnostic and prognostic genetic prostate cancer markers (MDxHealth) in urine and tissue.
Funded by ProCaMolMed | € 250K | 2015-2017 | CH. Bangma
Consortia: Philips Research, Radboud University (Nijmegen), UMCG (Groningen)

Gene therapy for Pca
Clinical fase 1-2 dose finding neoadjuvant virolytic therapy with Adv-IPPT for tissue specific replication preop to radical prostatectomy.
Funded by ZonMw | € 250K | Till clinical completion | CH. Bangma
Consortia: Dept. of Medical Oncology Erasmus MC

Integrating visual diagnostics for Pca (ProVision)
Integrating automatic reading of MRI and pathology elements, into prognostic algorithms for prostate cancer, and visualised in a dashboard for multidisciplinary tumor board meetings.
Funded by STW-KWF | € 600K | 2017-2020 | CH. Bangma, W. Niessen, M. Roobol, G. van Leenders, R. Pelger
Consortia: LUMC, TU-Delft

Current collaborations within AC

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Partners</th>
<th>Funding agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Movember GAP3 active surveillance</td>
<td>Epidemiology (MGZ)</td>
<td>Movember</td>
</tr>
<tr>
<td>PRIAS active surveillance</td>
<td>Dept. of Pathology and Radiology</td>
<td>Erasmus MC Dept. of Urology</td>
</tr>
<tr>
<td>ProstaatPartners <a href="http://www.prostaatpartners.nl">www.prostaatpartners.nl</a></td>
<td>Depts. of Radiotherapy, Medical Oncology, and Urology</td>
<td>Network institutes, ZilverenKruis Health care insurances</td>
</tr>
<tr>
<td>ProCaMolMed</td>
<td>Dept. of Pathology</td>
<td>CTMM (Dutch government)</td>
</tr>
<tr>
<td>Gene therapy for Pca</td>
<td>Dept. of Medical Oncology</td>
<td>ZonMw</td>
</tr>
<tr>
<td>Integrating visual diagnostics for Pca</td>
<td>Dept. of Pathology and Radiology</td>
<td>STW-KWF</td>
</tr>
<tr>
<td>PSMA-based imaging in Pca</td>
<td>Dept. of Radiology and Nuclear Medicine</td>
<td>Dept. of Urology and Radiology</td>
</tr>
</tbody>
</table>

Educational activities

<table>
<thead>
<tr>
<th>School</th>
<th>Number of courses</th>
<th>Number of hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student curriculum Medicine Erasmus MC</td>
<td>Bachelor and master</td>
<td>4</td>
</tr>
<tr>
<td>Student curriculum Technical Medicine, TU Delft</td>
<td>Bachelor</td>
<td>2</td>
</tr>
</tbody>
</table>

Additional supervision of 5 PhD students.
Aim of the group

Clinical research:
- Circulating tumor cells to guide neoadjuvant chemotherapy in MIBC (CirGuidance study)
- Hyperthermia + PARP-inhibition in irresectable bladder tumors (HYPPI trial) trial
- NIMBUS trial: full vs reduced regimen of intravesical BCG for NMIBC
- Study on the safety and efficacy of a PD1-inhibitor for BCG unresponsive NMIBC (Keynote 057)
- REBACARE, a clinical trial on neoadjuvant intravesical Mitomycin before nephro-ureterectomy or partial ureterectomy for urothelial cancer of the upper urinary tract.
- Validation of a urine assay to detect bladder cancer in hematuria patients: HEMA study

Translational research:
- A comprehensive genomic screen of mutational hotspots associated with response to neoadjuvant chemotherapy
- Gene expression profiling for individual genomic subtyping of MIBC
- Molecular urine diagnostics for the detection and surveillance of bladder cancer
- Molecular characterization of upper urinary tract urothelial carcinoma and paired bladder recurrences

Important Memberships/honours
- International Bladder Cancer Network
- Board member Dutch Uro-Oncology Study Group
- European Association of Urology
- Dutch Association of Urology
- European Society for Hyperthermic Oncology
- Associate Member European School of Oncological Urology
- Fellow of the European Board of Urology
- Member of EAU Testicular Cancer Guidelines Panel
- 2007: Pfizer Young Urology Master Class (€ 1.000,-)
- 2014: ‘Stichting Jacoba’ (€ 16.500,-)
- 2014: EAU Best Paper on Fundamental Research Award (€ 5.000,-)
Top 5 Scientific Publications (2018)

Top 5 Non-Scientific Publications (2018)
• Oncology up-to-date
• Magazine of the Patient Advocay Leven met Blaas of Nierkanker
• Interview Dutch television NPO1

Current collaborations within AC

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Partners</th>
<th>Funding agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>CirGuidance study</td>
<td>Dept of Medical Oncology</td>
<td>Mrace (150k EUR)</td>
</tr>
<tr>
<td>REBACARE trial</td>
<td>Dept of Exp Pathology</td>
<td>Dutch Cancer Society (440k EUR)</td>
</tr>
<tr>
<td>Clonality of upper and lower urinary tract cancer</td>
<td>CCBC and Dept of Mol Pathology</td>
<td>DUOS (15k EUR)</td>
</tr>
<tr>
<td>MOLCARUTUC</td>
<td>CCBC and Dept of Mol Pathology</td>
<td>ERA-NET (960k EUR)</td>
</tr>
<tr>
<td>KN-057 study</td>
<td>Dept of Medical Oncology, dept of cancer immunology</td>
<td>MSD (75k EUR)</td>
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</tbody>
</table>

Educational activities

<table>
<thead>
<tr>
<th>School</th>
<th>Number of courses</th>
<th>Number of hours</th>
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</thead>
<tbody>
<tr>
<td>KOW2 bachelor, Student curriculum Medicine Erasmus MC</td>
<td>2/year</td>
<td>8</td>
</tr>
<tr>
<td>Keuze onderwijs bachelor, Student curriculum Medicine Erasmus MC</td>
<td>1/year</td>
<td>4</td>
</tr>
</tbody>
</table>

Supervision of 2 MSc. student and 3 PhD students (co-promotor).
Important Memberships/honours

- AUA international member
- EAU
- EORTC GU group

Top Scientific Publications (2016)


Current members of group

<table>
<thead>
<tr>
<th>Role Member</th>
<th>First name</th>
<th>Surname</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urologist, staff member</td>
<td>Wim J.</td>
<td>Kirkels</td>
</tr>
</tbody>
</table>

Current collaborations within AC

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Partners</th>
<th>Funding agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDR single dose brachytherapy for prostate cancer</td>
<td>Department Radiotherapy, Erasmus MC, Incrocci</td>
<td></td>
</tr>
</tbody>
</table>
Dr. Paul Verhagen, PhD – Urology

Aim of the group
Clinical activities with emphasis on renal cancer, minimal invasive surgery, robotic surgery.

Important Memberships/honours
- NVU
- SWEN
- WINO
- EAU

Top Scientific Publications (2018)
1. Minnee RC, Kimenai HJAN, Verhagen PC, von der Thüsen JH, Dwarkasing RS, van de Wetering J, IJzermans JN. Algorithm for Boevé LMS, Hulshof MCCM, Vis AN, Zwinderman AH, Twisk JWR, Witjes WPJ, Delaere KPJ, Moorselaar RJAV, Verhagen PCMS, van Andel G. Effect on Survival of Androgen Deprivation Therapy Alone Compared to Androgen Deprivation Therapy Combined with Concurrent Radiation Therapy to the Prostate in Patients with Primary Bone Metastatic Prostate Cancer in a Prospective Randomised Clinical Trial: Data from the HORRAD Trial. Eur Urol. 2018 Sep 25. PMID: 30266309
Drs. Martijn Busstra, MD – Urology

Aim of the group
New imaging technologies in prostate cancer will change detection and treatment strategies in the coming 5 years. PSMA-receptor-imaging and PSMA-guided therapies will be the subject of interest with the main goal to find out the exact clinical benefit of the application of this new and promising imaging technique.

Important Memberships/honours
- Member of the Dutch Urologic Society NVU
- Member of the Working Group Uro-Oncology (WOU) of the NVU
- Member of the Working Group Urological Tumors of the Dutch integral Cancer center (IKNL)
- Member of the Dutch Uro-Oncology Studygroup (DUOS), active member of the section metastatic prostate cancer and section local prostate cancer
- Member of ‘Prostaatpartners’, a collaboration of six large Dutch prostate cancer dedicated hospitals.
Maaike van de Kamp, MSc MD FEBU – Urology

Aim of the group
Clinical research:
- Study on small cell carcinoma of the bladder. Bladder sparing treatments and results.
- Study on value based bladder cancer care, PROM’s and implementation of care monitoring

Important Memberships
- European Association of Urology
- Dutch Association of Urology
- Member of the working group for the new educational program for Residents in Urology
- Board member of the BBC, working group for professional interests in Urology
- Member of the SWEN, Dutch Society of Endourology
- Board member of the NVEC, the Dutch Society for Endoscopic Surgery
- Fellow of the European Board of Urology
- Certified Curriculum for ERUS for Robotic Radical Prostatectomy
- Fellow of the Netherlands Cancer Institute – Antoni van Leeuwenhoek
- Medical coordinator of the clinical urology department Erasmus MC
- Coordinator of the urological planning of surgery

Top Scientific Publications (2018)

Top Non-Scientific Publications (2018)

Educational activities

<table>
<thead>
<tr>
<th>School</th>
<th>Number of courses</th>
<th>Number of hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education on diagnosis and treatment of Urologic Cancers for OR nurses Erasmus MC</td>
<td>2-4/ year</td>
<td>4</td>
</tr>
</tbody>
</table>
Aim of the group
The aim of our group is to predict clinical outcome and to support therapeutic decision-making in prostate and bladder cancer patients by in depth evaluation of diagnostic tissue biopsies. For that purpose, we relate tumor growth patterns beyond current grading systems to underlying molecular alterations, actual three-dimensional composition and clinical outcome. In particular, we have been developing pathologic parameters for risk stratification of intermediate-risk prostate cancer patients, determining who are safely eligible for active surveillance and who should undergo immediate treatment.

Important Memberships/honours
- Board European Network of Urologic Pathologists (ENUP)
- F. Stephen Vogel Award for best Modern Pathology manuscript 2016
- Best abstract at European Multidisciplinary Meeting on Urological Cancers (EMUC) 2016
- Best abstract at European Society of Pathology meeting (ESP) 2016
- Vlietstra Award for best abstract at Dutch Society of Urology (NVU) 2016


Current members of group

<table>
<thead>
<tr>
<th>Role Member</th>
<th>First name</th>
<th>Surname</th>
</tr>
</thead>
<tbody>
<tr>
<td>PhD graduate</td>
<td>Esther I.</td>
<td>Verhoef</td>
</tr>
<tr>
<td>PhD graduate</td>
<td>Eva</td>
<td>Hollemans</td>
</tr>
<tr>
<td>PhD graduate</td>
<td>Joep</td>
<td>Jong, de</td>
</tr>
<tr>
<td>PhD graduate</td>
<td>Michelle</td>
<td>Slot, van der</td>
</tr>
</tbody>
</table>

Projects running

*Centralisatie van prostaatkanker operaties in de regio Rijnmond: door volume-verhoging en intra-operatieve vriescoupes betere kwaliteit?*
Quality assessment in the novel Anser high-volume radical prostatectomy center.
Funded by BeterKeten | € 191K | 01/01/2019 – 01/01/2022 | M.A. den Bakker, G.J.L.H. van Leenders, O.S. Klaver, C.H. Bangma

*De toegevoegde waarde van cribriforme groei bij risico-stratifcatie van prostaatkanker patiënten*
Assessment of added value of cribriform growth in prostate biopsy decision models.
Funded by Jaap Schouten Foundation | € 400K | 01/09/2018 – 01/09/2022 | G.J.L.H. van Leenders

Current collaborations within AC

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Partners</th>
<th>Funding agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCMM transition grant: Prostate Cancer Molecular Medicine (ProCaMolMed)</td>
<td>C.H. Bangma, G.W. Jenster</td>
<td>CTMM</td>
</tr>
<tr>
<td>Active surveillance for prostate cancer</td>
<td>C.H. Bangma, M.J. Roobol-Bouts</td>
<td></td>
</tr>
<tr>
<td>Risk calculators in prostate cancer</td>
<td>M.J. Roobol-Bouts</td>
<td></td>
</tr>
<tr>
<td>MRI in prostate cancer biopsies</td>
<td>I.G. Schoots, M.J. Roobol-Bouts</td>
<td></td>
</tr>
<tr>
<td>Molecular stratification of bladder patients</td>
<td>E.C. Zwarthoff, J. Boormans</td>
<td></td>
</tr>
</tbody>
</table>

Educational activities

<table>
<thead>
<tr>
<th>School</th>
<th>Number of courses</th>
<th>Number of hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicine, Erasmus University, Rotterdam</td>
<td>4</td>
<td>70</td>
</tr>
<tr>
<td>Life Sciences, University College Rotterdam</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Clinical Technology, EUR/TU Delft/LUMC</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>
Aim of the group
Identification and validation of diagnostic biomarkers for bladder tumors in patients presenting with hematuria and for patients under surveillance after resection of a non-muscle invasive tumor (NMIBC) or during surveillance after chemoradiotherapy of patients with unoperable MIBC. Identification and validation of biomarkers that predict progression of NMIBC to MIBC. Investigate new treatment options for (N)MIBC.

Important Memberships/honours
- Associate editor Bladder Cancer.
- Associate Editor Nature Reviews Urology.
- International Bladder Cancer Network Annual Meeting (Rotterdam, organizer and chair)
- Advisory Board MDxHealth.
- Member MT AC Urogenital Tumors
- European Society for Urological Research 2018, invited lecture
- Honorary Member International Bladder Cancer Network

Top Scientific Publications (2018)
Current members of group

<table>
<thead>
<tr>
<th>Role</th>
<th>First name</th>
<th>Surname</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group leader</td>
<td>Ellen</td>
<td>Zwarthoff</td>
</tr>
<tr>
<td>PhD</td>
<td>Kim</td>
<td>Van Kessel</td>
</tr>
<tr>
<td>PhD</td>
<td>Chris</td>
<td>De Jong</td>
</tr>
<tr>
<td>PhD</td>
<td>Joep</td>
<td>De Jong</td>
</tr>
<tr>
<td>Postdoc</td>
<td>Tahlita</td>
<td>Zuiverloon</td>
</tr>
<tr>
<td>Technician</td>
<td>Angelique</td>
<td>Van der Made</td>
</tr>
</tbody>
</table>

Projects running

**Reducing costs of surveillance of patients with non-muscle invasive bladder cancer**
Funded by ZonMw | € 250K | Nov 2015 - Feb 2019 | Zwarthoff

**Validation study of methylation biomarkers for detection of primary bladder cancers in a natural cohort of urine samples from patients with hematuria. Project agreement IV-EMC-MDxHealth**
Funded by MDxHealth | € 273K | 2015 - 2018 | Zwarthoff

**Reducing costs of surveillance of patients with non-muscle invasive bladder cancer. Project agreement I-EMC-MDxHealth**
Funded by MDxHealth | € 287K | 2015-2019 | Zwarthoff

**Potential new treatments for patients with non-muscle invasive bladder cancer with a high risk of progressive disease, Alpe/d’Huzes/KWF**
Funded by Alpe d’Huzes/KWF | € 150.544 | 2016 - 2018 | Zwarthoff, Bangma, van der Pluijm (LUMC)

**Validation study of methylation biomarkers for detection of primary bladder cancers in a natural cohort of urine samples from patients with hematuria (LSHM16007)**
Funded by LSH-TKI | € 68.263 | 2016 - 2018 | Zwarthoff

**Impact of molecular subtypes in muscle-invasive bladder cancer on predicting response and survival outcome to neoadjuvant chemotherapy: a multi-institutional validation study**
Funded by GenomeDX (Vancouver) / own fund | € in kind | 2015-2017 | Black, Genome DX, (Vancouver), Seiler (Bern), Boormans, Van Kessel, Zwarthoff (USA: UNC, LCC, UWS, UT, Baylor UCD: Canada: UAE: UK: NL: NCI: se: LUM)
In consortia

**Prognostic signatures NMIBC**

Spin-off research projects and publications.
Funded by FP7 UROMOL | € 927K | Project funding ended in 2014 | Omtoft, Dyrsjot, Real, Malats, Algaba, Steyerberg, Zwarthoff
In consortia

**Predicting response to BCG treatment in high-risk non-muscle invasive bladder cancer patients**
MRACE project 2017-2019 Zuiverloon, Zwarthoff, Boormans, Van Leenders, Debes, de Jong
<table>
<thead>
<tr>
<th>Project Title</th>
<th>Partners</th>
<th>Funding agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual genomic subtyping and circulating tumor cells for clinical decision-making in muscle-invasive bladder cancer</td>
<td>Boormans, Sleijfer, Zwarthoff</td>
<td>MRace 2012/ GenomeDx &amp; new application</td>
</tr>
<tr>
<td>Reducing costs of surveillance of patients with non-muscle invasive bladder cancer</td>
<td>Zwarthoff, Bangma, Steyerberg, Zuiverloon</td>
<td>ZonMW/ MDxHealth</td>
</tr>
<tr>
<td>Potential new treatments for patients with non-muscle invasive bladder cancer with a high risk of progressive disease, Alpe/d’Huzes/KWF</td>
<td>Zwarthoff, Bangma, Van der Pluijm (LUMC)</td>
<td>Alpe d’Huzes/KWF</td>
</tr>
<tr>
<td>Predicting response to BCG treatment in high-risk non-muscle invasive bladder cancer patients</td>
<td>Zuiverloon, Zwarthoff, van Leenders, Debets</td>
<td>MRace</td>
</tr>
<tr>
<td>FGFR3 mutations as a prognostic marker in MIBC</td>
<td>Zuiverloon, Van Rhijn (NKI), Zwarthoff</td>
<td>None</td>
</tr>
</tbody>
</table>
Aim of the group
Our research focusses on mechanisms that drive tumor growth, development of tools to detect and grade PCa in clinical samples and development of novel therapeutic approaches for (resistant) PCa. These aims are reflected in three parallel research lines: 1) Unraveling the molecular mechanism of androgen receptor function in health and disease. 2) Improved understanding of the role of extracellular vesicles in PCa and develop minimally-invasive methods for diagnosis and prognosis of PCa. 3) Improving insight in 3D architecture of growth patterns in clinical cancer samples for use in research and pathologic practice. These research questions will mainly be addressed using our (often newly developed) quantitative (live-cell) imaging approaches (within the OIC and CTSF).

Important Memberships/honours
- Dutch Microscopy Society (NVvM), 2004-present
- Dutch Society for Biochemistry and Molecular Biology (NVBMB), 2010-present
- International Society for Extracellular Vesicles (ISEV), 2015-present
- European Association of Urology (EAU), 2016-present

Top Scientific Publications (2018)


<table>
<thead>
<tr>
<th>Current members of group</th>
<th>Role Member</th>
<th>First name</th>
<th>Surname</th>
</tr>
</thead>
<tbody>
<tr>
<td>PhD student</td>
<td>Thomas</td>
<td>Hartjes</td>
<td></td>
</tr>
<tr>
<td>Group leader (Prof.), Scientific director OIC</td>
<td>Adriaan</td>
<td>Houtsmlller</td>
<td></td>
</tr>
<tr>
<td>Scientist (UD), Technical director OIC</td>
<td>Gert (Wiggert)</td>
<td>Van Cappellen</td>
<td></td>
</tr>
</tbody>
</table>
Projects running

**IMMPROVE - Urinary extracellular vesicles and their content as novel markers for minimally invasive diagnosis and prognosis of prostate cancer**

Within this project we will develop, test and validate novel minimally invasive biomarker assays for the diagnostic and prognostic testing for PCa in urines. By detecting, quantifying, capturing and characterize prostate (cancer)-specific EVs from clinical samples, we are able to diagnose PCa and prognostically test prostate cancer patients.

Funded by KWF | € 2.015.599 | 2016 - 2020 | Guido Jenster
In consortia: Erasmus MC, VUmc, Radboud UMC, TU Delft

**Live cell imaging of long non-coding RNA function in the dynamic regulation of androgen receptors**

In this project we will establish a fluorescent IncRNA-imaging approach to visualize RNA-protein interactions in living prostate cancer cells in order to study the spatio-temporal organization of IncRNAs relevant in prostate cancer (PCa) and gain insight in their dynamic role as regulators of androgen receptor (AR) function.

Funded by Erasmus MC Grant | € 50K | 01/06/2014 – 31/05/2016 | M.E. van Royen and E. Martens-Uzunova

**Nuclear EGFR in Glioblastomas as target for therapy**

The overall goal of this project is to determine whether nuclear EGFR is a valid target for therapy in glioblastomas.

Funded by KWF, Unique High Risk Project | € 165K | 2017 – 2019 | P. French, P. Sillevis Smitt and M.E. van Royen

**Extracellulair Vesicles as biomarker for non-invasive monitoring of temozolamide resistance in glioblastoma**

In this project we will develop an EV-based technology for early diagnosis of Temozolomide resistance in glioblastoma.

Funded by [www.STOPhersentumoren.nl](http://www.STOPhersentumoren.nl) | € 49K | 2017-2019 | J. de Vrij, T. Luider and M.E. van Royen

**Screening therapeutics for bone metastatic disease in a human model**

Develop, validate and implement a human in vitro bone metastasis model for high-throughput therapeutic screening.

Erasmus MC Human Disease Model Award 2018 | € 50K | 2018 | MJJE van Driel, C. Zillikens, P. French, M.E. van Royen

**Specificity and inhibition of EV-mediated cell-cell communication in cancer**

This pilot study aims to determine the level of selectivity in EV-mediated cell-cell communication in cancer (metastasis) and generate novel tools to intervene with EV uptake that can be used for in depth follow-up studies.

Funded by Erasmus MC Grant | €50K | 2018-2020 | Martin E. van Royen, Guido Jenster
### Current collaborations within AC

<table>
<thead>
<tr>
<th><strong>Project Title</strong></th>
<th><strong>Partners</strong></th>
<th><strong>Funding agency</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>3D Pathology</td>
<td>Arno van Leenders</td>
<td>n.a.</td>
</tr>
<tr>
<td><strong>Molecular mechanism of action and role of exosomes in prostate cancer</strong></td>
<td>Guido Jenster &amp; Adriaan Houtsmuller</td>
<td>Prostate Cancer UK (funding ended in 2014)</td>
</tr>
<tr>
<td><strong>Development and utilization of a EV quantification assay (EVQuant)</strong></td>
<td>Guido Jenster</td>
<td>n.a.</td>
</tr>
<tr>
<td><strong>IMMPROVE - Urinary extracellular vesicles and their content as novel markers for minimally invasive diagnosis and prognosis of prostate cancer</strong></td>
<td>Guido Jenster &amp; Elena Martens-Uzunova</td>
<td>KWF</td>
</tr>
<tr>
<td><strong>Quantification of PCa tissue slice derived EVs</strong></td>
<td>Dik van Gent</td>
<td>n.a.</td>
</tr>
<tr>
<td><strong>Live cell imaging of long non-coding RNA function in the dynamic regulation of androgen receptors</strong></td>
<td>Elena Martens-Uzunova</td>
<td>MRace</td>
</tr>
<tr>
<td><strong>CTSF</strong></td>
<td>Guido Jenster, Leendert Looijenga (Founder: Pim French (Neurology))</td>
<td>DDHSt</td>
</tr>
<tr>
<td><strong>Multiple collaborations (also within the AC) related to quantitative imaging (OIC and CTSF)</strong></td>
<td>Several (also within the AC)</td>
<td>n.a.</td>
</tr>
</tbody>
</table>

### Educational activities

<table>
<thead>
<tr>
<th><strong>School</strong></th>
<th><strong>Number of courses</strong></th>
<th><strong>Number of hours</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>University, Medicine Bachelor</td>
<td>1</td>
<td>14</td>
</tr>
<tr>
<td>Research Master, Infection &amp; Immunity, Neuroscience and Molecular Medicine (OIC)</td>
<td>1</td>
<td>13</td>
</tr>
<tr>
<td>School</td>
<td>Number of courses</td>
<td>Number of hours</td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>-------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Research Master Molecular Medicine</td>
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<td>10</td>
</tr>
<tr>
<td>University, Nanobiology</td>
<td>2</td>
<td>20</td>
</tr>
<tr>
<td>University, Clinical Technology</td>
<td>1</td>
<td>18</td>
</tr>
<tr>
<td>Postgraduate, OIC course</td>
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<td></td>
</tr>
<tr>
<td>Functional Imaging and Super Resolution</td>
<td>1</td>
<td>20</td>
</tr>
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</table>

Additional supervision of 2 BSc. students.

<table>
<thead>
<tr>
<th>First name</th>
<th>Surname</th>
<th>Institute</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fatma</td>
<td>Özgün</td>
<td>Koc Univeristy</td>
<td>Istanbul, Turkey</td>
</tr>
</tbody>
</table>
Aim of the group
The research is focused on development and application of diagnostic, prognostic and predictive markers (including gonadal development; germ cell cancers as well as (in)fertility). The latter topic relates to regulation of Disorders of Sex Development (DSD), pluripotency and cisplatin sensitivity and resistance, sex determination (gonadal development), germ cell maturation and transformation. During a period of more than 25 years, a large series of unique tumors, freshly frozen, including control tissue (peripheral blood, serum, etc.) as well as clinical follow up, has been collected. The archive has proven itself to be highly informative for both fundamental as well as translational research. Since October 1st, Looijenga is also part time PI (50%) at the Princess Maxima Center for Pediatric Oncology (Utrecht).

Important Memberships/honours
- WAR Daniel den Hoed Foundation (till October 1st)
- Management Team Department of Pathology (till October 1st)
- Head Expert Center DSD
- MRace Grant committee Erasmus MC (till October 1st)
- Integrity Officer Department of Pathology (till October 1st)
- Organiser NVvO Basiscursus Oncology
- Co-chair (with M. Idrees, Indiana University) Working Group on Testis Cancer USCAP ISUP Consultation Conference on molecular genetic tests
- Editorial Board member of (amongst others) Cancer Cell, Nature Scientific Reports

Top 5 Scientific Publications (2018)
Top 5 Non-Scientific Publications (2018)

Current members of group

<table>
<thead>
<tr>
<th>Role Member</th>
<th>First name</th>
<th>Surname</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postdoc</td>
<td>Lambert</td>
<td>Dorssers</td>
</tr>
<tr>
<td>Technician</td>
<td>Ad</td>
<td>Gillis</td>
</tr>
<tr>
<td>Postdoc</td>
<td>Remko</td>
<td>Hersmus</td>
</tr>
<tr>
<td>Postdoc</td>
<td>Ton</td>
<td>Van Agthoven</td>
</tr>
<tr>
<td>Postdoc</td>
<td>Hans</td>
<td>Stoop</td>
</tr>
<tr>
<td>Postdoc</td>
<td>Katharina</td>
<td>Biermann</td>
</tr>
</tbody>
</table>

These are (full or part time) involved in the studies on gonadal development and germ cell tumors.

Projects running

Uncovering novel prognostic and predictive epigenetic biomarkers in malignant testicular germ cell tumors.
The grant proposal aims at elucidation of the exceptional sensitivity as well as rare resistance to systemic cisplatin-based chemotherapy based on unique patient samples. This based on high throughput omics approaches on archival tissue.
Funded by FCT Portugal | € 60K | 2 years Rotterdam, 2017-2018 | Hendrique, Jeronimo, Looijenga,

Substitution of the mouse tumorigenicity assay with a complete in vitro microRNA based assay for testing malignancy of human induced pluripotent stem cells.
The project will investigate the value of specific microRNAs determined in liquid biopsies to predict the malignant behavior of stem cells derivatives in a pre-clinical model.
Funded by ZonMW | € 240K | 3 years, till Dec 1, 2021 | Salvatori, Looijenga, Prins, Mummery, Perreta.

Continuation: Erasmus MC Cancer Institute Cancer treatment Screening Facility (CTSF).
The facility stimulates the use of high throughput screening possibilities for cancer research using the PE Opera system.
Funded by Daniel den Hoed Foundation | 3 years till 2021 | French, Martens, Looijenga, Jenster.

Continuation: Erasmus MC Cancer Institute – Integrated Cancer Biology Center (CCBC).
The facility support design and interpretation of bioinformatical datasets related to cancer research.
Funded by Daniel den Hoed Foundation | 3 years till 2020 | Jenster, Martens, Looijenga.

Current collaborations within AC

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Partners</th>
<th>Funding agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSD</td>
<td>Drs. K. Wolffenbuttel (Urology); Y. van Bever (Clinical Genetics)</td>
<td>Internal</td>
</tr>
<tr>
<td>Early diagnosis tumors and (in)fertility</td>
<td>Drs. L. Elzinga-Tinke; Drs. W. Boellaard; Dr. M. Dinkelman-Smid (Urology)</td>
<td>Internal</td>
</tr>
</tbody>
</table>
Educational activities

<table>
<thead>
<tr>
<th>School</th>
<th>Number of courses</th>
<th>Number of hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postgraduate Molec. Medicine</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>Research Master Molec. Medicine</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Nanobiology</td>
<td>2</td>
<td>12</td>
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<tr>
<td>Curriculum Erasmus MC, including Minor, VO, etc.</td>
<td>2</td>
<td>36</td>
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</table>

Additional supervision of 4 BSc, 3 MSc and 9 (4 related to AC UT) students.

Hosting visiting scientists

<table>
<thead>
<tr>
<th>First name</th>
<th>Surname</th>
<th>Institute</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silvia</td>
<td>Schmidtova</td>
<td>Cancer Research Institute</td>
<td>Belgrado, Slovakia</td>
</tr>
<tr>
<td>Duncan</td>
<td>McGregor</td>
<td>Royal Children’s Hospital</td>
<td>Melbourne, Australia</td>
</tr>
<tr>
<td>Christoph</td>
<td>Oink</td>
<td>Eppendorf University</td>
<td>Hamburg, Germany</td>
</tr>
</tbody>
</table>

Invited lectures:
- Menarini users meeting Soest, February 14, 2018.
- Nacholing Uro-Oncologie, Rotterdam, April 4, 2018.
- Master Oncology, University of Porto, Portugal, May 7-8, 2018.
Aim of the group
Erasmus MC Tissue Bank collects tissues at the pathology department for diagnostic purposes under ISO 15189:2014. Left over tissues are made available for medical research purposes in frozen and FFPE form. Frozen tissue collection is enhanced for later use in medical research. The tissue bank is an integral part of the Pathology department, where all procedures for tissue banking are described in SOP’s under ISO 15189.

Important Memberships/honours
- ESBB and ISBER membership and former president
- NEN commissioner and contributor to CEN/TC140/WG4 and ISO/TC212/WG3 technical standards on sample collection; Liaison to ISO/TC276/WG2
- Contributed to the WMA declaration of Taipei on biobanks, concept tekst Wet zeggenschap lichaams materiaal, GDPR of WGA Nederlands deel

Top 5 Scientific Publications (2017)
- Multicenter fresh frozen tissue sampling in colorectal cancer: does the quality meet the standards for state of the art biomarker research?

Top 5 Non-Scientific Publications (2017)
- Abstract ESBB 2017: Opt out for residual materials preferred over signed informed consent (WMA declaration of Taipei
- Abstract ESBB 2017: Technical specifications for collecting diagnostic samples the tool to increase the reproducibility of results

Current members of group

<table>
<thead>
<tr>
<th>Role Member</th>
<th>First name</th>
<th>Surname</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technician</td>
<td>Monique</td>
<td>Oomen</td>
</tr>
<tr>
<td>Technician</td>
<td>Shazia</td>
<td>Arshad</td>
</tr>
</tbody>
</table>
Projects running

**SPIDIA4P**
SPIDIA for Personalized Medicine - Standardisation of generic Pre-analytical procedures for In-vitro DIAgnostics for Personalized Medicine.
Funded by EC | € 10M | 01/01/2017 – 31/12/2021 | Qiagen
In consortia

**EEC**
Ewing Sarcoma trials and biomaterials.
Funded by EC | € 6M | 01/10/2014 – 01/10/2018 | University College of London
In consortia

Current collaborations within AC
Alles waar weefsels van pathologie aan de orde komen.

Educational activities

<table>
<thead>
<tr>
<th>School</th>
<th>Number of courses</th>
<th>Number of hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Molecular Medicin postgraduate school</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Summer Course II - Researchmaster</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infection &amp; Immunity 2017</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Aim of the group
The current research is focused on the development of radiation techniques to improve treatment outcome and decrease side effects of radiation therapy for urological malignancies, in particular prostate cancer. Quality of life of cancer patients plays an important role in these research projects. The on-going PhD programs are focused on new techniques such as hypofractionation and stereotactic radiotherapy for prostate cancer, bladder-sparing chemo-radiotherapy, use of radiosensitizers during radiotherapy for prostate cancer, personalized radiotherapy, and quality of life of patients irradiated for urological cancers.

Important Memberships/honours
- Achievement Award Republic of Sri Lanka (2017)

Top 5 Scientific Publications


Projects running

*Hypofractionated irradiation for prostate cancer*

To demonstrate an absolute reduction of 10% of the relapse rate at 5 years in the hypofractionation arm (19x3.4 vs 39x2 Gy) and non-inferiority of the hypo-fractionated schedule for the cumulative incidence of grade ≥2 acute and late toxicity. The reduction in fractions means a step forward in patient’s comfort.

Funded by Dutch Cancer Society, KWF-CKTO 2006-08 | € 1 mil | 2007 – 2010, analyses running | lead applicant

In consortia

*Cobalt versus linear accelerator based therapy: Toxicity of radiotherapy in Ethiopia*

To analyze the toxicity patterns of radiotherapy in low-income countries (cobalt treatments) compared to the modern linear accelerators.

*Does ARN-509 affect tumor vascularization and reduce hypoxia in prostate cancer? A preclinical study in patient-derived xenograft models*

To evaluate the effect of novel antiandrogen drugs on radiosensitization during radiotherapy for prostate cancer.

<table>
<thead>
<tr>
<th>Current collaborations within AC</th>
<th>Project Title</th>
<th>Partners</th>
<th>Funding agency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><em>Does ARN-509 affect tumor vascularization and reduce hypoxia in prostate cancer? A preclinical study in patient-derived xenograft models</em></td>
<td>Experimental Urology Dr. W. van Weerden</td>
<td>Janssen</td>
</tr>
</tbody>
</table>

Educational activities

Supervision of 2 PhD students.

Teaching courses at national and international meetings.

Teaching of residents in radiation oncology.

Teaching of radiation oncologists in developing countries (Ethiopia, Zambia, Rwanda).
Aim of the group
Improved organ-preserving radiation techniques for locally advanced pelvic tumors, improved methods for adequate patient selection and elucidating the biological mechanisms of hyperthermia as a radiosensitizer.

Important Memberships/honours
- Member NVRO: Radiation-oncology Dutch association.
- Member KNMG: Royal Dutch society of medicine.
- Member LPRU: Landelijk Platform Urologische Tumoren.
- Member ESTRO: European association for radiation oncology.
- Member ESHO: European Society for Hyperthermic Oncology
- Member DUOS (Dutch Uro-Oncology Study group),

List of dissertations (2017)
01-11-2017 Nathalie van den Tempel - Hyperthermia-induced degradation of BRCA2 (co-promotor)

Top 5 scientific publications
Current members of group

<table>
<thead>
<tr>
<th>Role</th>
<th>First name</th>
<th>Surname</th>
</tr>
</thead>
<tbody>
<tr>
<td>PhD student</td>
<td>Nathalie</td>
<td>Van den Tempel</td>
</tr>
<tr>
<td>PhD student</td>
<td>Tim (H.T.)</td>
<td>Mulder</td>
</tr>
<tr>
<td>Medical Physicist</td>
<td>Jeremy</td>
<td>Godart</td>
</tr>
<tr>
<td>Radiotherapy Technician</td>
<td>Nicole</td>
<td>Bahnerth-Cornelissen</td>
</tr>
<tr>
<td>Postdoc</td>
<td>Michiel</td>
<td>Kroesen</td>
</tr>
<tr>
<td>Master Student</td>
<td>Noortje</td>
<td>Verschoor</td>
</tr>
</tbody>
</table>

Projects running

**MRI guided locoregional hyperthermia: exploiting new insights in dose, fractionation and scheduling**
Elucidating biological mechanisms of hyperthermia for improvement of fractionation schedules and clinical efficacy.
Funded by KWF | € 817.500 | Dec 2013 - Dec 2019 | M. Franckena, G.C. van Rhoon, R. Kanaar

**Personalised MR-guided Hyperthermia Control for Adaptive Cancer Therapy (CONTROL-2-ACT)**
Funded by KWF-STW €620.000 2016-2020 W. Heemels, M.M. Paulides, M. Franckena

Educational activities
Supervision of 3 MSc. and 2 PhD students.
Aim of the group

The section experimental therapy of Urological Cancers is an integral component of the Department of Medical Oncology and aims to initiate and collaborate in investigator as well as Industry initiated and sponsored clinical trials in Urological cancers. The spectrum includes the entire range of metastatic and non-metastatic and phase 1-3 clinical trials as well as post-marketing (phase 4) health-economics studies. The section leads (RdW is founding Chairman) the Dutch Uro-Oncology Study group (DUOS) and collaborates with other national groups in Europe, such as the Scandic Group and the Spanish Oncology Genitourinary Group (SOGUG), as well as Oncology Trials Insights (OTI) in the United States.

The section is closely linked to the sections Early Clinical Trials, Translational Pharmacology and personalized medicine, and Translational Cancer Genomics and Proteomics, the latter comprising several clinical and translational research programs on Circulating Tumors cells and exosomes, including gene profiling (prostate cancer and bladder cancer). The section also works together with the Center of Personalized Cancer Treatment (CPCT), a collaborative network of Erasmus MC with several academic and supraregional hospitals in the Netherlands. This personalized medicine research is aimed at establishing individualized treatments of patients with solid tumors that are highly effective and show least side effects. Our ambitious vision: “The treatment of an individual with cancer is determined by specific characteristics of that individual patient, the cancer cells, and their micro-environment, and needs to be constantly adjusted according to the changes observed in these characteristics”.

List of dissertations (2016-2017)

03-11-2016 Belderbos, B.P.S.I. Promotietraject in gang gezet (1ste Promotor)

08-12-2016 Dessel, van, L.F. Promotietraject in gang gezet (1ste Promotor)

Mout, L.M. Verzoek tot toelating (1ste Promotor)

Riet, van, J. Verzoek tot toelating (1ste Promotor)

Rijnders, Maud, Verzoek tot toelating (1ste Promotor)

Robbrecht, Debbie, Verzoek tot toelating (1ste Promotor)

De Jong, Anouk. Verzoek tot toelating (1ste Promotor)
**Important Memberships/honours**

- ASCO and ESMO Faculty and Program Committee member, Alternate Prostate and Non-Prostate tracks, 2004 – present
- ESMO Educational Committee member, including ESMO postgraduate meetings of ESMO-Americas and ESMO-Asia, 2010-present
- Founding Chairman of the Dutch Uro-Oncology Study Group (DUOS) comprising a network of 25 hospitals in the Netherlands, 2011- present

**Top 5 Scientific Publications (2018)**


**Current members of group**

<table>
<thead>
<tr>
<th>Role</th>
<th>First name</th>
<th>Surname</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical Oncologist</td>
<td>Martijn P.J.</td>
<td>Lolkema</td>
</tr>
<tr>
<td>Medical Oncologist</td>
<td>Stefan</td>
<td>Sleijfer</td>
</tr>
<tr>
<td>Medical Oncologist</td>
<td>Ate</td>
<td>Van der Gaast</td>
</tr>
<tr>
<td>Medical Oncologist</td>
<td>Ron H.J.</td>
<td>Mathijssen</td>
</tr>
<tr>
<td>Medical Oncologist</td>
<td>Astrid A.M.</td>
<td>Van der Veldt</td>
</tr>
</tbody>
</table>
### RoleMember | First name | Surname
---|---|---
*MD, PhD student* | Debbie G.J. | Robbrecht
*MD, PhD student* | Bodine P.S.I. | Belderbos
*MD, PhD student* | Lisanne F. | Van Dessel
*PhD student* | Lisanne | Mout
*MD, PhD student* | Maud | Rijnders
*MD, PhD student* | Anouk C. | De Jong

#### Projects running

**Phase 3 study of abiraterone vs abiraterone plus ARN509 in mCRPC**
2018

**Pembrolizumab open label in BCG refractory non-muscle invasive bladder cancer**
2018

**Non-randomized phase 2 study determining the response to cabazitaxel in mCRPC patients with AR-V7 positive circulating tumor cells**
2018

**Preclinical study of the mechanisms underlying enhanced efficacy of Cabazitaxel therapy with ADT in prostate cancer**
2018

**Phase 3 study of cabazitaxel vs an AR targeted agent in mCRPC patients previously treated with docetaxel and who rapidly failed another AR targeted agent (CARD)**
2018

**A Phase 3 Randomized, Controlled Clinical Trial of Pembrolizumab with or without Platinum-Based Combination Chemotherapy versus Chemotherapy in Subjects with Advanced or Metastatic Urothelial Carcinoma (KN361)**
2018

**A Randomized Study Comparing Nivolumab and Ipilimumab Combination vs Placebo in Participants with Localized Renal Cell Carcinoma Who Underwent Radical or Partial Nephrectomy and Who Are at High Risk of Relapse**
2018

**An Efficacy and Safety Study of Niraparib in Men with Metastatic Castration-Resistant Prostate Cancer and DNA-Repair Anomalies**
2018

**Mitochondrial DNA and fatigue (FIESTA); Changes to the mitochondrial DNA in non-cancer cells induced by chemotherapy and the relation with fatigue in men with germ-cell cancer of the testis: a feasibility study.**
2018

**Multicenter safety, feasibility and pharmacokinetic phase I trial of ModraDoc006/r in patients with metastatic castration-resistant prostate cancer**
2018

**A validation study of an oncological-multidimensional prognostic index (Onco-MPI) for one-year mortality prediction in older men with metastatic castration resistant prostate cancer.**
2018
Generation of circulating tumor cell derived organoids through enrichment by leukapheresis. A novel drug screening system in metastatic prostate cancer.
2018

CIRCUS; A Quantification of Circulating tumor DNA derived Structural variants to assess treatment response in metastatic prostate cancer patients
2018

PAZO-SPLIT Increasing pazopanib exposure by splitting intake moments
2018

RECEC Onderzoek naar circulerende endotheel cellen bij patiënten met lokaal uitgebreid of gemetastaseerd heldercellig niercelcarcinoom
2018

A randomized, open label, multicenter study to evaluate the efficacy and safety of rogaratinib (BAY 1163877) compared to chemotherapy in patients with FGFR-positive locally advanced or metastatic urothelial carcinoma who have received prior platinumcontaining chemotherapy

RESPONDER: Biomarker discovery study to identify patients with advanced urothelial cancer benefitting from pembrolizumab treatment
2018

<table>
<thead>
<tr>
<th>Educational activities</th>
<th>Number of courses</th>
<th>Number of hours</th>
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<tbody>
<tr>
<td>Postgraduate ESMO Faculty educational committee</td>
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<td>10</td>
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<tr>
<td>Postgraduate ESMO Faculty educational committee/scientific committee / GU Track Chair for ESMO-Americas, ESMO-Africa, ESMO-Middle-East and ESMO-Asia</td>
<td>4</td>
<td>60</td>
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</table>
Aim of the group
Our research group focuses on generating proof of concept for medical treatment of metastatic prostate and bladder cancer patients. To this end we perform pre-clinical studies using mouse models of prostate cancer, early biomarker studies and intervention studies in human subjects.

Important Memberships/honours
- Member scientific advisory board Targeted Anti Cancer Treatment (TAT) conference
- Member editorial board the Oncologist

List of dissertations (2016)
Nov. 2016  Geert Cirkel - Co-Promotor

Top 5 Scientific Publications


Current members of group

<table>
<thead>
<tr>
<th>Role</th>
<th>First name</th>
<th>Surname</th>
</tr>
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<tbody>
<tr>
<td>PhD student</td>
<td>Lisanne</td>
<td>Mout</td>
</tr>
<tr>
<td>PhD student</td>
<td>Lisanne</td>
<td>Van Dessel</td>
</tr>
<tr>
<td>PhD student</td>
<td>Bodine</td>
<td>Belderbo</td>
</tr>
<tr>
<td>PhD student</td>
<td>Debbie</td>
<td>Robbrecht</td>
</tr>
<tr>
<td>PhD student</td>
<td>Anouk</td>
<td>De Jong</td>
</tr>
<tr>
<td>PhD student</td>
<td>Job</td>
<td>Van Riet</td>
</tr>
<tr>
<td>PhD student</td>
<td>Maud</td>
<td>Rijnders</td>
</tr>
</tbody>
</table>

Projects running

**Biomarker discovery study to identify a genomic profile predictive for response to enzalutamide in patients with castration resistant prostate cancer**

Collecting genomic biomarkers in biopsies pre enzalutamide treatment
Funded by Astellas Pharmaceuticals | € 550K | 2014 - 2018 | M. Lolkema
In consortia

**Finding the optimal predictors for response to abiraterone.**

Collecting genomic biomarkers in biopsies pre-abiraterone treatment
Funded by JnJ Pharmaceuticals | € 500K | 2015 – 2019 | M. Lolkema
In consortia

**Non-randomized phase 2 open-label multicenter study determining the response to Cabazitaxel in metastatic prostate cancer patients with AR-V7 positive circulating tumor cells (CTCs)**

Clinical study to select patients for cabazitaxel treatment based on ARv7 testing
Funded by Sanofi Pharmaceuticals | € 800K | 2016 – 2020 | M. Lolkema
In consortia

**Towards liquid biopsies through leukapheresis: organoid culture of circulating tumor cells from blood of prostate cancer patients; is it feasible?**

High risk project to determine whether using leukapheresis we can generate patient derived organoids
Funded by Dutch Cancer Foundation | € 221K | 2016 – 2018 | M. Lolkema
In consortia

**Genetic causes of resistance to new androgen receptor signaling inhibitors in circulating tumor DNA of metastasized castration resistant prostate cancer patients.**

Validation of the use of ctDNA to detect and follow mutations.
Funded by Alpe d'Huzes/ KWF #7080 | € 1.5M | 2015 – 2019 | M. van der Heijde
In consortia

**Biomarker discovery for pembrolizumab in advanced Urothelial Cancer**

Clinical study to discover novel biomarkers for response to pembrolizumab in patients receiving 2nd line pembrolizumab treatment in urothelial cancer
Funded by MSD pharmaceuticals | € 770K | 2017 – 2020 | M. Lolkema
### Educational activities

<table>
<thead>
<tr>
<th>School</th>
<th>Number of courses</th>
<th>Number of hours</th>
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</thead>
<tbody>
<tr>
<td>Clinical Trial Development Course</td>
<td>1/y</td>
<td>120</td>
</tr>
<tr>
<td>Coordinator of Minor Oncology, department of medical oncology Erasmus MC, graduate students medicine</td>
<td>1/y</td>
<td>100</td>
</tr>
</tbody>
</table>

Additional supervision of 7 PhD students.
Dr. Reno Debets, PhD – Medical Oncology

Aim of the group
Research in Reno Debets’ laboratory (currently 18 people) is based on the notion that ‘Tumors and T cell evasion – it is difficult to have one without the other’, and aims to understand how solid tumors evade immune control, and develop and explore therapeutic strategies to (re-)establish tumor-specific T cell responses.

More specifically 3 activities are defined towards new or ongoing patient studies:
(1) Develop and test T cell treatments, particularly adoptive T cell therapy
(2) Understand and intervene with cross-talk between tumor cells and micro-milieu
(3) Monitor patient T cell immunity

Important Memberships/honours
Reno Debets obtained his MSc degree (1991, cum laude), and PhD degree (1996, cum laude). He obtained an Erasmus MC Research Award (1997), became a certified Immunologist (2005) and an Associate professor (2010).


He is chair of the tumor immunology and immune therapy research at Erasmus MC (one of the Academic Centers of Expertises); panel chair to review grant applications in the field of immune-oncology for the ‘Institut National du Cancer’, Paris, France (2016, 2017); scientific council member of the Dutch Society of Immunology (2018, 2019); member of the American Association of Immunologists; and member of organizing committees of multiple meetings (amongst others Cellular Therapy of Cancer Symposium in 2006, 2009, 2010 and 2013).

List of dissertations
5-6-2003 Niels Schaft - Redirecting human T cells to tumors via transfer of T cell receptor genes. (Co-promotor).
23-6-2010 Nadine Pouw - Towards effective TCR gene therapy: preclinical requirements. (Co-promotor).
3-10-2012 Gertruda Straetemans - Towards clinical TCR gene therapy: tumor models and receptors. (Co-promotor).
2-10-2013 Coen Govers - Engineering of T cell receptor genes to advance T cell therapy: studies into TCR pairing, signaling and binding strength. (Co-promotor).
4-4-2018 Andre Kunert - T cell therapy: safe target antigens and overcoming immune suppression. (Co-promotor).
Top 5 Scientific Publications (2018)

Top 5 Non-scientific Publications

Current members of group (2018)

<table>
<thead>
<tr>
<th>Role Member</th>
<th>First name</th>
<th>Surname</th>
</tr>
</thead>
<tbody>
<tr>
<td>PI, Assoc prof</td>
<td>Reno</td>
<td>Debets</td>
</tr>
<tr>
<td>Assist prof</td>
<td>Cor</td>
<td>Lamers</td>
</tr>
<tr>
<td>Postdoctoral fellow</td>
<td>Emrah</td>
<td>Balcioğlu</td>
</tr>
<tr>
<td>PhD student</td>
<td>Dora</td>
<td>Hammerl</td>
</tr>
<tr>
<td>PhD student</td>
<td>Bas</td>
<td>Weenink</td>
</tr>
<tr>
<td>PhD student</td>
<td>Maud</td>
<td>Rijnders</td>
</tr>
<tr>
<td>PhD student</td>
<td>Priscilla</td>
<td>De Graaff</td>
</tr>
<tr>
<td>PhD student</td>
<td>Chumut</td>
<td>Phanthunane</td>
</tr>
<tr>
<td>PhD student</td>
<td>Merle</td>
<td>Van Geldrop</td>
</tr>
<tr>
<td>PhD student</td>
<td>Dian</td>
<td>Kortleve</td>
</tr>
<tr>
<td>PhD student</td>
<td>Shweta</td>
<td>Mahajan</td>
</tr>
<tr>
<td>Clinical fellow</td>
<td>Pim</td>
<td>Mutsaers</td>
</tr>
<tr>
<td>Research technician</td>
<td>Cor</td>
<td>Berrevoets</td>
</tr>
<tr>
<td>Research technician</td>
<td>Mandy</td>
<td>Van Brakel</td>
</tr>
<tr>
<td>Research technician</td>
<td>Rebecca</td>
<td>Wijers</td>
</tr>
<tr>
<td>Research technician</td>
<td>Astrid</td>
<td>Oostvogels</td>
</tr>
</tbody>
</table>

Annual Report AC - Urogenital Tumors 25-4-19 63
Role | Member | First name | Surname
--- | --- | --- | ---
Msc student | Amy | Kessler
Bachelor student | Tessa | van het Leengoed
Secretary | Rosita | Pherai

Projects running (2018)

**Oncolytic adenovirus therapy as a neoadjuvant treatment for localized prostate cancer**
Immune monitoring of patients with prostate cancer treated with adenovirus
Funded by ZonMw | € 130K | 2008 – Clinical and immune monitoring ongoing | Coordinator: Chris Bangma (Urology)
Partner PIs: Cor Lamers, Reno Debets
In Consortia

**Cranking up tumor-specific T cell responses in metastatic breast cancer.**
Defining T cell target antigens plus immune evasive mechanisms to better design treatments for patients with aggressive breast cancer.
Funded by Dutch Cancer Society | € 560K | 2015-2019 | PIs: Reno Debets, John Martens (Medical Oncology)

**T cell therapy for gliomas targeting the IDH1R132H neoantigen.**
Obtaining and testing an anti-miDH1 TCR for the treatment of glioma.
Funded by Erasmus MC PhD Grant | € 75K | 2015-2019 | PIs: Pim French (Neurology), Reno Debets, Martine Lamfers (Neurosurgery)

**Adoptive therapy with T cells gene-engineered with a co-stimulatory TCR to treat patients with MAGE-C2-positive melanoma and head-and-neck cancer.**
Performing clinical trial with TCR-engineered T cells to treat melanoma and head-and-neck carcinoma.
Funded by Dutch Cancer Society | € 570K | 2015-2019 | PIs: Cor, Lamers, Stefan Sleijfer, Reno Debets

**Support towards therapy to treat melanoma and head-and-neck cancer with T lymphocytes.**
Supporting vector production for a clinical trial with TCR-engineered T cells to treat melanoma and head-and-neck carcinoma.
Funded by St. Coolsingel, Rotterdam + Jan Ivo Stichting | € 100K | 2015-2019 | PIs: Cor, Lamers, Stefan Sleijfer, Reno Debets

**Food-derived β-glucans and fungal proteins to support anti-melanoma immune therapy.**
Testing and therapeutically exploiting the effects of food components on anti-melanoma immune responses.
Funded by Dutch Cancer Society | € 520K | 2015-2019 | PIs: Coen Govers (Wageningen Univ), Harry Wichers (Wageningen Univ), Reno Debets

**Harnessing miRNAs to restore CTL immunity to cancer**
Identification and targeting of miRNAs that are related to inactivity of tumor-infiltrating lymphocytes.
Funded by World Cancer Research | € 50K | 2016-2018 | PIs: Peter Katsikis (Immunology), Stefan Erkeland (Immunology), Debets R
In consortia.

**Pembrolizumab to treat advanced bladder cancer: combined profiling of immune and molecular status of patients to predict therapeutic efficacy**
Genome and immune monitoring of patients with bladder cancer and treated with anti-PD1 antibody.
Funded by Merck | € 735K | 2017-2021 | PIs: Martijn Lolkema (Medical Oncology), Reno Debets, Ronald de Wit (Medical Oncology)
In consortia.
**Immune monitoring using PBMC from patients with PDAC**

Genome and immune monitoring of patients with bladder cancer and treated with anti-PD1 antibody.
Funded by Foundation for Liver and Gastrointestinal Research (SLO) | € 200K | 2017-2018 | PI: Cor Lamers, Casper v Eijck (General Surgery), Reno Debets
In consortia.

**Tumor Micro-Environment Screening Center**

Integrate multiplex in situ assessment with computer-guided quantifications to comprehensively analyze tumor microenvironment in different cancers.
Funded by Erasmus MC Daniel den Hoed Foundation | € 600K | 2017-2019 | PI: Reno Debets
In consortia.

**Toward dendritic cell immunotherapy as a maintenance treatment for patients with pancreatic cancer**

Immune monitoring of patients with pancreatic cancer treated with DC vaccination
Funded by Holland Health TKI | € 150K | 2017-2019 | PIs: Casper v Eijck (General Surgery), Joachim Aerts (Pulmonary Diseases), Reno Debets together with Amphaer
In consortia.

**Immune monitoring of oral cancers**

Inter-institutional grant to facilitate collaboration with Chulabhorn Institute
€ 60K | 2017-ongoing | Debets R, Sleijfer R, Baatenburg

**Predicting response to BCG treatment in high-risk non-muscle invasive bladder cancer patients**

Funded by MRACE | € 150K | 2017-2019 | Zuiverloon, Zwarthoff, Boormans, Van Leenders, Debets, De Jong

**Immunogenomics**

Tumor-immune interactions in aggressive and indolent prostate cancer: immunogenomic and intervention studies in unique syngeneic model.
Funded by MRace OIO | € 150K | 2017-2021 | Rute Marques, Reno Debets, Wytske van Weerden

**Current collaborations within AC (2018)**

<table>
<thead>
<tr>
<th><strong>Project Title</strong></th>
<th><strong>Partners</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Oncolytic adenovirus therapy as a neoadjuvant treatment for localized prostate cancer</strong></td>
<td>Chris Bangma (Urology)</td>
</tr>
<tr>
<td><strong>Pembrolizumab to treat advanced bladder cancer: combined profiling of immune and molecular status of patients to predict therapeutic efficacy</strong></td>
<td>Astrid van der Veldt (Medical Oncology); Martijn Lolkema (Medical Oncology); Ronald de Wit (Medical Oncology)</td>
</tr>
<tr>
<td><strong>Tumor Micro-Environment Screening Center</strong></td>
<td>Martijn Lolkema (Medical Oncology); Ronald de Wit (Medical Oncology); Peter Riegman (Pathology); Arno van Leenders (Pathology); Ellen Zwarthoff (Pathology); Wytske van Weerden (Urology); Guido Jenster (Urology); Chris Bangma (Urology)</td>
</tr>
<tr>
<td><strong>Predicting response to BCG treatment in high-risk non-muscle invasive bladder cancer patients</strong></td>
<td>Tahlita Zuiverloon (Urology); Ellen Zwarthoff (Pathology); Joost Boormans (Urology); Arno van Leenders (Pathology); de Jong (Pathology)</td>
</tr>
<tr>
<td><strong>Tumor-immune interactions in aggressive and indolent prostate cancer: immunogenomic and intervention studies in unique syngeneic model</strong></td>
<td>Rute Barbosa Marques (Urology); Harmen van der Werken (Urology); Wytske van Weerden (Urology); Guido Jenster (Urology); Chris Bangma (Urology)</td>
</tr>
</tbody>
</table>
### Educational activities (2018)

<table>
<thead>
<tr>
<th>School</th>
<th>Number of courses</th>
<th>Number of hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post Graduate Research School of Molecular Medicine</td>
<td>2 (moderator/co-organizer)</td>
<td>24</td>
</tr>
<tr>
<td>Post Graduate Research School of Infection and Immunity</td>
<td>2 (moderator/co-organizer)</td>
<td>24</td>
</tr>
<tr>
<td>Post Graduate Research School of Nanobiology</td>
<td>1 (moderator/co-organizer)</td>
<td>12</td>
</tr>
<tr>
<td>Various schools/departments/universities</td>
<td>10 lectures</td>
<td>20</td>
</tr>
<tr>
<td>Curriculum of Medicine</td>
<td>Laboratory visits during minor 'oncology'</td>
<td>4</td>
</tr>
<tr>
<td>Department of Medical Oncology</td>
<td>Coordinator of research internships</td>
<td>24</td>
</tr>
</tbody>
</table>

Additional supervision of 1 BSc, 2 MSc and 8 PhD students in 2018
Aim of the group
Means to detect prostate tumors at an early stage and to robustly characterize the aggressiveness. Research is focused on how MR imaging can benefit this population. This group intends to explore strategies to improve diagnostic accuracy, reduce the number of biopsy cores needed, and improve therapeutic decision-making, thereby lowering morbidity, increasing quality of life, and reducing costs.

Important Memberships/honours
- Panel member European prostate cancer guidelines of the European Association of Urology (EAU)
- Panel member Dutch prostate cancer guidelines of the Nederlandse Vereniging van Urologie (NVU)
- Member of international working groups on prostate cancer imaging (ESUR-PCa, PRECISE, START)

Top 5 Scientific Publications (2017)
Current members of group

<table>
<thead>
<tr>
<th>Role</th>
<th>First name</th>
<th>Surname</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radiologist</td>
<td>Ivo G.</td>
<td>Schoots</td>
</tr>
<tr>
<td>Professor</td>
<td>Wiro</td>
<td>Niessen</td>
</tr>
<tr>
<td>Assistant professor</td>
<td>Jifke</td>
<td>Veenland</td>
</tr>
<tr>
<td>Radiologist</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Postdoc / research fellow</td>
<td>Arif</td>
<td>Muhammed</td>
</tr>
<tr>
<td>PhD-student</td>
<td>Frank-Jan</td>
<td>Drost</td>
</tr>
<tr>
<td>PhD-student</td>
<td>Daniel</td>
<td>Osses</td>
</tr>
<tr>
<td>PhD-student</td>
<td>Jose</td>
<td>Castillo Tovar</td>
</tr>
</tbody>
</table>

Projects running

**PRODRoME-study** PROstate cancer Detection by additional Risk stratification and MRI Evaluation
Combining risk stratification with risk calculator with MRI.
Funded by MRace | € 150K | 10-2015 | I. Schoots, M.J. Roobol

**Radiomics STRaTegy** - Non-invasive STRatification of Tissue heterogeneity for personalized medicine
MR imaging features of relevant prostate cancer.
Funded by STW | € 670K | 09-2016 | W. Niessen
In consortia: EMC, VUmc, Maastricht, Radboudumc

**Integrating visual diagnostics for Pca**
Integrating automatic reading of MRI and pathology elements, into prognostic algorithms for prostate cancer, and visualised in a dashboard for multidisciplinary tumor board meetings.
Funded by STW-KWF | € 600K | 2017-2020 | CH. Bangma, W. Niessen, M. Roobol, G. van Leenders, R. Pelger
In consortia: EMC, LUMC, TU-Delft

**MR PROPER study**: MRI in PROstate cancer diagnosis with Prior Risk assessment
Upfront risk stratification with risk calculator, combined with MRI in primary diagnosis:
Funded by ZonMW | € 300K | 4-2017 | I. Schoots, M.J. Roobol

Current collaborations within AC

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Partners</th>
<th>Funding agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>MRI guided biopsy in the 5th screening round of ERSPC: Side study</td>
<td>Roobol, Bangma</td>
<td>SWOP</td>
</tr>
<tr>
<td>PRODRoME-study</td>
<td>Bangma, Roobol</td>
<td>EMC - MRace</td>
</tr>
<tr>
<td>Radiomics STRaTegy</td>
<td>Bangma, Van Leenders</td>
<td>STW</td>
</tr>
<tr>
<td>MR PROPER study</td>
<td>Roobol, Bangma</td>
<td>ZonMW</td>
</tr>
<tr>
<td>School</td>
<td>Number of courses</td>
<td>Number of hours</td>
</tr>
<tr>
<td>-----------------------------------------------------------------------</td>
<td>-------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Nederlandse Vereniging van Urologie: multidisciplinary meeting in Prostate Cancer</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Technical Medicine BSc, Imaging, lecturer</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>
Aim of the group

Multimodality molecular imaging and therapy of (oncological) lesions

The SPECTRIM group at the Erasmus MC in Rotterdam aims to enhance targeted imaging and targeted radionuclide therapy of receptor-positive cancers with e.g. radiolabelled peptides. Selective receptor-targeting radiopeptides have emerged as a very important class of radiopharmaceuticals for molecular imaging and therapy of tumors that overexpress receptors on the cell membrane. We currently work on novel analogues with superior imaging characteristics and enhanced therapeutic efficacy.

Publications > 300, H-Index 67, Invited Lectures > 100

Important Memberships/honours

- Member of the German National Academy of Sciences ‘Leopoldina’
- Chair of the Translational Molecular Imaging and Therapy Committee EANM
- Member of the Molecular Imaging Subcommittee ECR
- Member of the ZonMW Committee Apparatuur Groot en Middelgroot
- Member of the board of the postgraduate school Molecular Medicine
- Member of Mrace Committee Erasmus MC

List of dissertations (2017)

- 21-02-2017  Simone Dalm - The Application of Radiotracers for Theranostic Use in Breast Cancer CUM LAUDE (Promotor)
- 26-09-2017  Hendrik Bergsma - Peptide Receptor Radionuclide Therapy & Oncology (Promotor)
- 17-10-2017  Costanza Santini - Trace and Treat: Biodistribution and Therapeutic Potential of Radiolabeled Molecular and Supramolecular Carriers (Promotor)
- 31-10-2017  Ho Sze Chan - 213Bi-DOTATATE for Targeted Alpha Therapy in Neuroendocrine Tumors (Promotor)
Top 3 Scientific Publications (2017)


### Current members of group

<table>
<thead>
<tr>
<th>Role</th>
<th>First name</th>
<th>Surname</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assistant Professor</strong></td>
<td>Monique</td>
<td>Bernsen</td>
</tr>
<tr>
<td><strong>Postdoc</strong></td>
<td>Julie</td>
<td>Nonnekens</td>
</tr>
<tr>
<td><strong>Postdoc</strong></td>
<td>Simone</td>
<td>Dalm</td>
</tr>
<tr>
<td><strong>Coordinator AMIE-F</strong></td>
<td>Joost</td>
<td>Haeck</td>
</tr>
<tr>
<td><strong>Imaging specialist</strong></td>
<td>Jan</td>
<td>De Swart</td>
</tr>
<tr>
<td><strong>Technician</strong></td>
<td>Gaby</td>
<td>Doeswijk</td>
</tr>
<tr>
<td><strong>PhD</strong></td>
<td>Eline</td>
<td>Ruigrok</td>
</tr>
<tr>
<td><strong>PhD</strong></td>
<td>Sandra</td>
<td>Van Tiel</td>
</tr>
<tr>
<td><strong>PhD</strong></td>
<td>Ingrid</td>
<td>Bakker</td>
</tr>
<tr>
<td><strong>PhD</strong></td>
<td>Giulia</td>
<td>Tamborino</td>
</tr>
<tr>
<td><strong>PhD</strong></td>
<td>Stefan</td>
<td>Roobol</td>
</tr>
<tr>
<td><strong>PhD</strong></td>
<td>Sander</td>
<td>Bison</td>
</tr>
</tbody>
</table>

Additional supervision of 5 PhD students (on other topics, not related to this AC).

### Projects running

**Hitting the prostate cancer cell via PSMA-targeted radiotherapy: safer and better**

Improve radionuclide therapy using radiolabelled inhibitors PSMA inhibitors

Funded by Dutch Cancer Foundation | € 590K | 07-2017 – Running | M. de Jong
**U-SPECT 4**

Purchase of and applications on SPECT/PET/CT/Optical USPECT4.
Funded by Daniel den Hoed Stichting | € 670K | 05-2015 – Running | M. de Jong

**A novel method to improve the detection of cancer and metastases by peptide scanning under the protection of enzyme inhibitors: PepProtect.**

In vivo stabilization of radiopeptides targeting prostate cancer using an enzyme inhibitor.
Funded by Stichting Coolsingel | € 57K | 09-2015 – Running | R. Valkema, M. de Jong

**Novel GRPR-targeting theranostic peptides”. >100.000 euro/year. AAA research grant.**

Synthesis and preclinical evaluation of novel GRPR targeting compounds for imaging and therapy of prostate and breast cancer.
Funded by AAA | € 50K | 2014-2016 | M. de Jong

**Replacing animal experiments by direct measurement of DNA damage responses in human tumor slices ex vivo**

Studies on DNA damage and repair after radionuclide therapy of different cancers, including prostate cancer.
Funded by ZonMW | € 300K | 2014-2017 | D. van Gent, J. Hoeijmakers, M. de Jong

### Current collaborations within AC

<table>
<thead>
<tr>
<th><strong>Project Title</strong></th>
<th><strong>Partners</strong></th>
<th><strong>Funding agency</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Prostate-Specific Membrane Antigen Targeted Alpha-Radionuclide Therapy for Metastatic Castration-Resistant Prostate Cancer</td>
<td>Van Weerden, Nonnekens</td>
<td>KWF</td>
</tr>
<tr>
<td>A new and sensitive scan for early detection of prostate cancer and metastasis</td>
<td>Van Weerden, Busstra</td>
<td>St. Coolsingel</td>
</tr>
</tbody>
</table>

### Educational activities

<table>
<thead>
<tr>
<th><strong>School</strong></th>
<th><strong>Number of courses</strong></th>
<th><strong>Number of hours</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Molmed Postgraduate School, Course organizer</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>Technical Medicine Master, Block Molecular Imaging, Coordinator</td>
<td>1</td>
<td>5 weeks</td>
</tr>
<tr>
<td>Medical Technology BSc, Lecturer</td>
<td>1</td>
<td>1</td>
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</table>
Aim of the group
Prof van Schaik’s group has a focus on pharmacogenetics and on prostate cancer biomarkers. For pharmacogenetics, the aim is to investigate inherited and acquired molecular targets that may guide drug therapy. An example being the detection of AR-V7 transcripts, isolated from exosomes obtained from blood, as a new marker guiding treatment of castrate resistant prostate cancer. For treatment of prostate cancer with docetaxel, the Affymetrix DMET chip was used to identify a genetic marker panel that could predict neutropenia. Prof van Schaik is also involved in the ERSPC initiative as well as in the clinical use of the Prostate Health Index (phi) as a new tool to predict the outcome (and thus clinical benefit) of prostate biopsies. Currently, Prof van Schaik is working on the clinical implementation of phi. The group of Prof van Schaik will continue investigating the clinical implementation of new molecular targets to allow a better and more sensitive detection of prostate cancer in a clinical setting.

Important Memberships/honours
- President of the European Society for Pharmacogenomics and Personalized Therapy (ESPT)
- Chair of the European Clinical Pharmacogenetics Implementation Consortium (Eu-PIC)
- Chair of the International Federation for Clinical Chemistry (IFCC) Task force Pharmacogenetics
- Member of the European Federation for Clinical Chemistry (EFLM) Committee Molecular Biology
- Member of the US Clinical Pharmacogenetics Implementation Consortium (CPIC)
- Chair of the Committee Molecular Biology Diagnostics of the Dutch Clinical Chemistry Society (NVKC)
- Advisor of the European Medicine Agency (EMA) Pharmacogenetics Working Group
- Board member of the Royal Dutch Pharmacy working group Pharmacogenetics
- Board member of the Postgraduate School Molecular Medicine
Top 5 Scientific Publications (2017)


Current members of group

<table>
<thead>
<tr>
<th>Role</th>
<th>First name</th>
<th>Surname</th>
</tr>
</thead>
<tbody>
<tr>
<td>PI</td>
<td>Ron</td>
<td>Van Schaik</td>
</tr>
<tr>
<td>Secretarial support</td>
<td>Diane</td>
<td>Dingenouts-Lammens</td>
</tr>
<tr>
<td>PhD student</td>
<td>Maja</td>
<td>Matic</td>
</tr>
<tr>
<td>PhD student</td>
<td>Marzia</td>
<td>Del Re</td>
</tr>
<tr>
<td>Erasmus+ exchange student</td>
<td>Christina</td>
<td>Mitropoulou</td>
</tr>
<tr>
<td>Research assistant</td>
<td>Evert</td>
<td>De Jonge</td>
</tr>
<tr>
<td>Research assistant</td>
<td>Samira</td>
<td>Elbouazzaoui</td>
</tr>
</tbody>
</table>

Projects running

**AR-V7 in exosomes as prostate cancer marker**

Aim is to investigate the value of AR-V7 transcript detection in blood through exosomes as clinical tool for guiding castrate resistance prostate cancer therapy

Funded by SANOFI | € 254K | 2015 - 2019 | PI: Prof R. Danesi

**PHI**

Clinical implementation of the Prostate Health Index

Collaboration with Beckman Coulter | €40k | 2012 - 2020 | Monique Roobol
### Current collaborations within AC

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Partners</th>
<th>Funding agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>AR-V7</td>
<td>Guido Jenster</td>
<td>Sanofi</td>
</tr>
<tr>
<td>PHI</td>
<td>Monique Roobol</td>
<td>Beckman Coulter</td>
</tr>
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</table>

### Educational activities

<table>
<thead>
<tr>
<th>School</th>
<th>Number of courses</th>
<th>Number of hours</th>
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</thead>
<tbody>
<tr>
<td>Postgraduate: MolMed</td>
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<tr>
<td>Postgraduate: NIHES</td>
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<td>1</td>
</tr>
<tr>
<td>Postgraduate: COEUR</td>
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Additional supervision of 2 MSc. Students and 3 PhD students

### Hosting visiting scientists

<table>
<thead>
<tr>
<th>Name visiting scientist</th>
<th>Institute visiting scientist</th>
<th>Location Institute</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marzia Del Re</td>
<td>University Pisa</td>
<td>Italy</td>
</tr>
<tr>
<td>Christina Mitropoulou</td>
<td>University Patras</td>
<td>Greece</td>
</tr>
<tr>
<td>Simona Calistri</td>
<td>University Firenze</td>
<td>Italy</td>
</tr>
</tbody>
</table>
Dr. Dirk C. Gent, PhD – Molecular Genetics

✿

Department
Molecular Genetics

@
Profile
https://www.erasusmc.nl/moleculargenetics/researchandfaculty/faculty/vangentlab/

Email
d.vangent@erasusmc.nl

Phone
+31(0)10-7043932

Aim of the group
The main interest of the group is DNA damage responses. We study both mechanistic aspects and (clinical) consequences of DNA repair pathways and defects in these pathways. We are especially interested in DNA repair defects in tumors, including prostate and bladder cancer.

List of dissertations
6-4-2016 Inger Brandsma - Balancing pathways of DNA double strand break repair (Co-prom.)

Scientific Publications (2018)

Current members of group

<table>
<thead>
<tr>
<th>Role Member</th>
<th>First name</th>
<th>Surname</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research associate</td>
<td>Julie</td>
<td>Nonnekens</td>
</tr>
<tr>
<td>PhD student</td>
<td>Wenhao</td>
<td>Zhang</td>
</tr>
<tr>
<td>Postdoc</td>
<td>Maayke</td>
<td>Kuijten</td>
</tr>
<tr>
<td>Technician</td>
<td>Hanny</td>
<td>Odijk</td>
</tr>
<tr>
<td>Technician</td>
<td>Nicole</td>
<td>van Vliet</td>
</tr>
</tbody>
</table>
Projects running

**Ex vivo assays for selection of breast and ovarian cancer patients for PARP inhibitor treatment**
Validation and optimization of functional assays for selection of breast and ovarian cancer patients for PARP inhibitor treatment.
Funded by KWF/Alpe d’HuZes | € 1855K (for 4 partners) | 01-09-2015 - 31-08-2020 | D.C. van Gent

**Radiolabelled Nano-carriers for Customized Cancer Therapy**
Development and functional testing of polymer nanoparticles loaded with radionuclides. Erasmus MC will mainly investigate biological effects of this treatment.
Funded by STW | € 300K | 01-09-2015 - 31-08-2019 | A. Denkova (TU Delft)

**The Role of DNA Damage and Repair in Treatment and Prevention of Prostate cancer**
Development of functional assays for prostate cancer tissue slices in order to optimize treatment with DNA damaging agents.
Funded by CSC | Only PhD student salary | 01-09-2015 - 31-08-2019 | D. C. van Gent

**Hitting the prostate cancer cell via PSMA-targeted radiotherapy: safer and better**
Improving efficacy and safety of prostate cancer treatment with radiolabeled PSMA targeting compounds.
Funded by KWF | € 590K | 01-07-2017 - 31-06-2021 | M. de Jong/W. van Weerden/D. C. van Gent

**Dissecting the DNA damage response in three dimensional tumor tissue slice cultures**
Development of cancer-on-chip technology using patient derived tumor specimens.
Funded by NWO | € 527K | 01-09-2017 - 31-08-2020 | R. Kanaar/D. C. van Gent

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Current collaborations within AC

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Partners</th>
<th>Funding agency</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>The Role of DNA Damage and Repair in Treatment and Prevention of Prostate cancer</em></td>
<td>D.C. van Gent, W. van Weerden, M. de Jong</td>
<td>CSC, KWF</td>
</tr>
</tbody>
</table>

---

Educational activities

**School** | **Number of courses** | **Number of hours**
---|---|---
*Bachelor Geneeskunde* | 1 | ~10 (teaching) + ~100 (coordination)
*Bachelor Geneeskunde minor* | 1 | ~50 (teaching) + 30 (coordination)
*MSc Molecular Medicine* | 3 | ~10 (teaching) + ~100 (coordination)

Additional supervision of 2 post docs, 1 technician, 2 MSc and 3 PhD students.
Dr. Johannes Hofland, PhD – Internal Medicine

Aim of the group
Dr Hofland’s hypothesis-driven research interests focus on the frontier of steroid endocrinology and endocrine oncology, employing a translational and state-of-the-art approach to steroid metabolome analysis in hormone-dependent cancers.

Important Memberships/honours
- Marie-Curie IEF fellow 2013-2015
- Endocrine Task Group for Endocrine Cancers (ETEC), 2015-current
- Royal College of Physicians, associate fellow, 2013-now
- Batavian Society for Experimental Philosophy, 2013-now
- British Society for Endocrinology, 2013-now
- European Society of Endocrinology, 2011-now
- Dutch Internal Medicine Society (NIV), 2009-now
- Endocrine Society, 2009-now
- Dutch Endocrine Society, 2007-now

Top 5 Scientific Publications (2017)
Current members of group

<table>
<thead>
<tr>
<th>Role Member</th>
<th>First name</th>
<th>Surname</th>
</tr>
</thead>
<tbody>
<tr>
<td>PhD student</td>
<td>Gido</td>
<td>Snaterse</td>
</tr>
</tbody>
</table>

Projects running

**Pumped up on steroids: targeting nuclear receptor crosstalk in advanced prostate cancer**

The key objective is to identify steroid hormones and nuclear receptor signaling induced by second-line hormonal treatment that continue to stimulate AR-driven proliferation of (castration-resistant) prostate cancer.

Funded by Daniel den Hoed foundation | € 250K | 01-09-2016 - 01-09-2019 | J. Hofland

Current collaborations within AC

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Partners</th>
<th>Funding agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pumped up on steroids: targeting nuclear receptor crosstalk in advanced prostate cancer</td>
<td>W. van Weerden</td>
<td>Daniel den Hoed foundation</td>
</tr>
</tbody>
</table>

Educational activities

<table>
<thead>
<tr>
<th>School</th>
<th>Number of courses</th>
<th>Number of hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Molecular Medicine</td>
<td>2</td>
<td>4</td>
</tr>
</tbody>
</table>

Additional supervision of 1 PhD student.
Aim of the group
The Translational Bioinformatics Team develops bioinformatics methods and services to support biomarker discovery and validation in clinical research projects. Complex bioinformatics tools and services delivered for use by “end user” using the Galaxy platform. The team is the leading Galaxy development team in the Netherlands and ELIXIR-NL providing training on this platform as the core team worldwide. The team have develop tools (myFAIR analysis) to allow researchers to comply with EU requirements for FAIR Data storage and extended the output to make the analysis also FAIR. The current focus is implementing a Secure OMICS Analysis & Reporting platform to be used by Erasmus MC clinical researchers. New additions to our research portfolio are (1) extended to deliver machine and deep learning methodologies to translational and clinical research projects and (2) develop federated big data genome analysis technology as part of the CINECA H2020 consortia.

Top 5 Scientific Publications (2018)


Projects running

**CINECA (H2020 No 825775)**

To establish a Common Infrastructure for National Cohorts in Europe, Canada and Africa (CINECA) project will utilise GA4GH Data Use and Researcher Identity standards to allow registered researchers to analyse population-scale genomic and biomolecular data through a federated cloud-based network in a way that meets all ethical and security requirements for the international sharing of health data.

Funded by EU | 2019-2022 | Co-Applicant: Andrew Stubbs

In Consortia

**myFAIR CLOUD (ELIXIR Implementation Study)**

Our aim is to extend myFAIR Analysis into a cloud based service that can be executed using the advanced INDIGO PaaS services on-top of any ELIXIR Compute Platform cloud resource. This approach will enable the advanced features provided by INDIGO to be made accessible to the whole of ELIXIR by porting them on the standard ECP cloud resource. The utility of this myFAIR cloud will be demonstrated using existing validated test case scenarios (e.g. Mothur-SOP and/or EGA), and building towards providing myFAIR Analysis as a research service CLOUD (myFAIR CLOUD Analysis) supporting single/multi-user and single/multi-center for FAIR data management and analysis.

Funded by EU | 2018-2019 | Applicant: Andrew Stubbs

In Consortia

**iKnowIT (Eurostars)**

This project aim to develop a clinically validated Interfacing Platform called iMedFrame that enables personalized treatment and prognosis for pancreatic cancer. iMedFrame contains three modules that enable 1) Analysis of OMICS and Electronic Health Records, 2) Generic interfacing with hospital data management systems and 3) Personal treatment advice. iMedFrame and its modules are easy to use for clinicians and researchers. This approach empowers iMedFrame, ensuring smooth uptake by its end users.

Funded by EU | 2017-2019 | David Fernandez (NorayBio, Spain), Co-applicant: Andrew Stubbs

In Consortia

**CREPT! An identification and progression marker for melanoma?**

CREPT (cell-cycle related and expression-elevated protein in tumor) is upregulated in carcinoma and showed strong expression compared to healthy tissue and correlates with aggressiveness. The objective is to study the usefulness of CREPT for identification and determination of progression in melanoma patients.

Funded by MRACE | 2017-2019 | Timo ten Hagen (Surgery), Co-applicant: Andrew Stubbs

In Consortia

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<table>
<thead>
<tr>
<th>Current members of group</th>
<th>Role Member</th>
<th>First name</th>
<th>Surname</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Postdoc</td>
<td>Yunlei</td>
<td>Li</td>
</tr>
<tr>
<td></td>
<td>Postdoc</td>
<td>Youri</td>
<td>Hoogstrate</td>
</tr>
<tr>
<td></td>
<td>PhD</td>
<td>Saskia</td>
<td>Hiltemann</td>
</tr>
<tr>
<td></td>
<td>Bioinformatician</td>
<td>Rick</td>
<td>Jansen</td>
</tr>
<tr>
<td></td>
<td>Bioinformatician (joint appointment Molecular Diagnostics)</td>
<td>Niels</td>
<td>Krol</td>
</tr>
<tr>
<td></td>
<td>Programmer</td>
<td>David</td>
<td>Van Zessen</td>
</tr>
<tr>
<td></td>
<td>Programmer</td>
<td>Bas</td>
<td>Horsman</td>
</tr>
</tbody>
</table>
**DIAGORAS (H2020-PHC-2014)**
Chair/bedside diagnosis of oral and respiratory tract infections, and identification of antibiotic resistances for personalised monitoring and treatment The project aims at diagnosing oral and respiratory tract infections (RTIs) using a fully integrated, automated and user friendly platform.

Funded by EU | 2014-2019 | John Hays, Co-applicant: Andrew Stubbs
In Consortia

**Current collaborations within AC**

<table>
<thead>
<tr>
<th><strong>Project Title</strong></th>
<th><strong>Partners</strong></th>
<th><strong>Funding agency</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>The Urinome Project</td>
<td>Chris Bangma, Ellen Zwarthoff, Andrew Stubbs, Guido Jenster, Arno van Leenders</td>
<td>SUWO</td>
</tr>
<tr>
<td>ProtoCol</td>
<td>Guido Jenster</td>
<td>CTMM</td>
</tr>
</tbody>
</table>

**Educational activities**

<table>
<thead>
<tr>
<th><strong>School</strong></th>
<th><strong>Number of courses</strong></th>
<th><strong>Number of hours</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Molmed / MGC [Postgraduate]</td>
<td>2</td>
<td>20</td>
</tr>
</tbody>
</table>

Additional supervision of 2 MSc students and 1 BSc student in 2018.
Dr. ir. Harmen van de Werken, PhD – Urology/CCBC

Aim of the group
Dr. van de Werken manages The Erasmus MC Cancer Computational Biology Center (CCBC) that facilitates ICT and bioinformatics for research and the clinic. CCBC aims to innovate, and stimulate omics-based cancer research, including genomics, transcriptomics and proteomics. In addition, Dr. van de Werken research focuses on computational biology of gene expression, 3D genome organization and epigenetics in cancer. His group develops new computational algorithms, analysis methods and visualization tools that are carried out on large scale omics datasets and that lead to new insights on cancer onset and progression.

Important Memberships/honours
- Member of Opleiding Advies Commissie Bio-informatica (Faculteit Science & Technology Hogeschool Leiden)
- Member/Organizer of Dutch Techcentre for Life Sciences (DTL) Next Generation Sequencing Interest Group
- Advisor KWF project Beating chromosome 21: small chromosome, large consequences in acute lymphoblastic leukemia and MRace 2017 project: “Tumor-immune interactions in aggressive and indolent prostate cancer: immunogenomic and intervention studies in unique syngeneic model”

Top 5 Scientific Publications (2018)

Current members of group

<table>
<thead>
<tr>
<th>Role Member</th>
<th>First name</th>
<th>Surname</th>
</tr>
</thead>
<tbody>
<tr>
<td>Managing director CCBC</td>
<td>Harmen</td>
<td>van de Werken</td>
</tr>
<tr>
<td>Bioinformatician CCBC, PhD student</td>
<td>Heleen</td>
<td>Pruijn</td>
</tr>
<tr>
<td>Bioinformatician CCBC, PhD Student</td>
<td>Wesley</td>
<td>van de Geer</td>
</tr>
<tr>
<td>Bioinformatician CCBC, PhD student</td>
<td>Job</td>
<td>van Riet</td>
</tr>
<tr>
<td>Post-Doc Computational Biology</td>
<td>Alberto</td>
<td>Nakauma</td>
</tr>
</tbody>
</table>

Projects running

**IMMPROVE**
The aim of the project is to develop robust minimally invasive assays for the diagnosis and prognosis of prostate cancer. The assays will be based on our ability to measure the PCa-associated changes in extracellular vesicles (EVs) secreted by PCa cell into the urine. Assays that determine EV number (WP2) and protein (WP1) and RNA content (WP3) will be developed and validated (WP4).

Funded by KWF/Alpe d’Huzes Unieke Kansen | €200K | 2016 - 2020 | Guido Jenster
Consortia: Erasmus MC, VUMc, Radboud UMC, TU Delft

**CCBC**
This is a support grant to initiate a bioinformatics facility for all cancer research funded by the DDH Foundation and the Erasmus MC Cancer Institute.

Funded by DDHSt | € 341K | 2018-2021 | Guido Jenster
Consortia: Departments of Urology, Medical Oncology, Pathology, Erasmus MC:

**PROSCANEXO**
Exploitation of extracellular vesicles for precision diagnostics of prostate cancer.

Funded by Transcan-2 2016 KWF | € 341K | 2018-2021 | Guido Jenster
Consortia: : 

**TRANSCAN-2 ERA-NET**
Comprehensive genomic characterization of upper urinary tract urothelial carcinoma and paired bladder recurrences

Funded by Transcan-2 KWF | € 341K | 2018-2021 | Joost Boormans
Consortia: Department Urology, Institute Curie, Hospital Virgen de la Victoria University, University Clinic Erlangen.
**UTUC-UCB**
De klonale relatie van het urotheelcelcarcinoom van de hoge urinewegen en het urotheelcelcarcinoom van de blaas
Funded by DUOS | € 15K | 2018-2021 | Joost Boormans
Consortia: Department Urology, Pathology, Erasmus MC CCBC, NKI.

**WGS Metastatic Bladder Cancer**
Genoom data en analyse van uitgezaaide tumoren een cruciale stap voor gepersonaliseerde blaaskanker behandeling.
Funded by DUOS | € 10K | 2018-2019 | Harmen van de Werken
Consortia: Department Urology, Pathology, Medical Oncology, Erasmus MC CCBC, Radboud, NKI.

**Role of Pericytes in HSC generation in vivo**
Investigate the in vivo requirement of pericytes and mechanism to control hematopoietic stem cell generation
Funded by European Hematology Association (EHA) | £160K | Mihaela Crisan
Consortia: The University of Edinburgh, Erasmus MC CCBC

### Current collaborations within AC

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<tr>
<td>CCBC</td>
<td>Guido Jenster, Leendert Looijenga</td>
<td>DDHSt</td>
</tr>
<tr>
<td>IMMPROVE</td>
<td>Elena Martens, Martin van Roy en Guido Jenster</td>
<td>KWF</td>
</tr>
<tr>
<td>Proscanexo</td>
<td>Guido Jenster</td>
<td>KWF</td>
</tr>
<tr>
<td>ERA-net</td>
<td>Joost Boormans</td>
<td>KWF</td>
</tr>
<tr>
<td>UTUC-UCB</td>
<td>Joost Boormans, Arno van Leenders, Winand Dinjens</td>
<td>DUOS</td>
</tr>
<tr>
<td>WGS Bladder</td>
<td>Joost Boormans, Martijn Lolkema, Ellen Zwarthoff</td>
<td>DUOS</td>
</tr>
</tbody>
</table>

### Educational activities

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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>TU Delft/Erasmus MC Nanobiology</td>
<td>1</td>
<td>12</td>
</tr>
</tbody>
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