

# Specialisations and Profiles in the BMS programme

## Information for (future) BMS students

Version May 2022

### Background

Specialisations in the Master BMS provide structure and depth in the programme. Specifically, the course offering of the first three course periods (Sept – Nov) in the BMS programme have been subdivided into 7 specialisations which the students can choose from. The specialisations on offer are:

1. Immunology and host defence
2. Clinical human movement sciences
3. Epidemiology
4. Health Technology Assessment
5. Drug Safety and Toxicology
6. Molecular Medicine
7. Medical Neuroscience

Each specialisation consists of max. 6 core courses of 3 ECTS in the period September-December. A specialisation provides substantive structure and depth on a number of core topics. Coordinators of the courses, that are assembled within a specialisation, align their courses in terms of coordination, structure, content, examination and level. The entry level of the successive courses can therefore be higher on those core subjects. First year students are expected to take all core courses of one specialisation in the first months of the academic year\*. Following all courses of one specialisation is highly recommended, but not mandatory. In consultation with the specialisation coordinator, this may be deviated from for compelling reasons. The student remains responsible for ensuring that he/she meets the entrance level of courses he/she wants to take. A specialisation course might build upon knowledge from previous specialisation courses. As a consequence, a higher level of prior knowledge may be required. Information on required prior knowledge of each course is included in the course information in the prospectus (study guide).

Specialisation courses are scheduled in the first three course periods, followed by profile courses and other courses. The student determines the further course package him/herself based on their personal preference of professional development to specialise or broaden their Master. To ensure a coherent program, this will be discussed with during coaching sessions with the specialisation coordinators.

\* In the second year it is possible to follow courses from one or more other specialisations. Second year students should be able to determine from the course description in the prospectus (and possibly in consultation with the course coordinator or specialisation coordinator) whether their prior knowledge will be sufficient to follow a course

### Specialisation coordinators

Specialisation coordinators have been appointed to take responsibility for the content of the specialisation courses and coaching of students within each specialisation. The specialisation coordinators and the deputy specialisation coordinators represent and evaluate the specialisation and monitor/promote the coherence, depth and structure of the specialisation.

In this document the specialisation coordinators are introduced together with a description of the specialisation.

### Career profiles

In addition to a specialisation, a student will structure his/her master by choosing a one of the three career profiles: consultancy, communication or research. These career profiles consist of a number of courses that are chosen in addition to the specialisation courses and a specific profile internship. Students following the communication or consultancy profile should follow 4 courses belonging to the

respective profile. A student in the research profile should take at least 6 ECTS worth of research profile courses. For more information about the profiles and the related courses, see the prospectus and the EER of BMS.

Below the profile coordinators of the consultancy and communication profiles are introduced. The specialisation coordinator, which each student is guided by, is research oriented and therefore will substitute for a research profile coordinator as well. Students who choose the communication or consultancy profile are required to contact a specialisation coordinator (for their specialisation and the master in general) AND the profile coordinator (for the part of the master which is related to the profile).

## Continue reading

for an introduction into each specialisation/profile and the specialisation/profile coordinators:

### Specialisations:

<b>Medical Neuroscience</b> Specialisation Coordinator: Nils Kohn	Page 3
<b>Clinical Human Movement Sciences</b> Specialisation Coordinator: Esther Tanck	Page 5
<b>Drug Safety and Toxicology</b> Specialisation Coordinator: Jan Koenderink	Page 7
<b>Health Technology Assessment</b> Specialisation Coordinator: Wietske Kievit	Page 8
<b>Molecular Medicine</b> Specialisation Coordinator: Joost Hoenderop	Page 9
<b>Epidemiology</b> Specialisation Coordinator: Femmie de Vegt	Page 11
<b>Immunology and Host Defence</b> Specialisation Coordinators: Esmeralda Blaney-Davidson & Anniek van der Waart	Page 13

### Profiles:

<b>Research profile</b> Profile Coordinator: specialisations coordinators	Page 15
<b>Consultancy profile</b> Profile Coordinator: Rob Reuzel	Page 16
<b>Science Communication profile</b> Profile Coordinator: Gert Jan van der Wilt	Page 18

## Specialisation Medical Neuroscience

Who is organizing this? The Medical Neuroscience Specialisation in the BMS master is strongly embedded to the Donders Center for Medical Neuroscience (DCMN) and spans translational neuroscientific topics from fundamental to applied and clinical science. Experts from the DCMN have organized over 20 courses that span the medical neurosciences. Those can be associated to at least one of the fields within the specialization: Behavioural and Translational Neuroscience, Systems and Cognitive Neuroscience, and Molecular and Cellular Neuroscience.

What will you be able to study? The objective of the Medical Neuroscience specialization is to offer you in-depth training in the genetic, molecular, cellular, behavioral and systems-level neurosciences so you can have a significant impact on health care. Within the Radboud University, this specialization is positioned in between the more fundamentally oriented master specialisation Neurobiology in the Medical Biology master and the more cognition and neuroimaging oriented research master Cognitive Neuroscience. With its roots in the research themes and clinical practice of the Radboudumc and with its interdisciplinary translational approach to health care innovations, the Medical Neuroscience specialization of the Biomedical Science Master is ideally suited for those who wish to bridge the gap between the fundamental neurobiology and clinical neurosciences.

### Basic courses in the specialisation

Period	Code	Course
<b>W36A</b>	MED-BMS24	Medical Neuroscience: Conceptual basics and anatomy
<b>W36B</b>	MED-BMS32	Medical Neuroscience: molecular and cellular neuroscience
<b>W40A</b>	MED-BMS25	Medical Neuroscience: Functional imaging
<b>W40B</b>	MED-BMS30	Medical Neuroscience: Animal models for psychiatric and neurological disorders

These courses we see as the basic courses for students on the Medical Neuroscience track. We offer many advanced courses in the fields within Medical Neuroscience.

### **Specialisation Coordinator:**

My name is Nils Kohn. I am the specialisation coordinator for the Medical Neuroscience specialisation within the Biomedical Sciences Master (BMS).

I'm a faculty member at the department of Clinical Neuroscience of the Radboud University Medical Centre and the Donders Institute for Brain, Cognition and Behaviour. I am a psychologist by training and I conduct research in cognitive neuroimaging. My major focus in research is related to questions on how our emotions are consciously or unconsciously regulated, which motivational factors have an influence and whether regulatory principles transfer to other domains of human functioning, such as memory and executive functioning. To investigate these constructs, I mainly use neuroimaging and psychophysiological measures in my research. Currently, important topics of interest to me are how emotion and self-control are implemented in the large-scale network structure of the brain and how this relates to nutrition, glucose metabolism, aggression and stress. These current research foci are applied or planned to be applied in psychiatric, public health and educational contexts.



I coordinate courses and teach in the Biomedical Sciences Master and Bachelor and the Cognitive Neuroscience Master in Nijmegen. The courses mainly cover methodological basis of neuroimaging techniques, but I also teach some more conceptual classes. I have an extensive network of clinical and

scientific collaborators all across the world. Additionally, I have many contacts to former colleagues or friends in the biotech industry, policy making, data science and consultancy. I am happy to use these contacts to help each BMS master student to find the ideal topic and internship.

I am happy to guide you as a mentor through the Medical Neuroscience Specialisation.

Contact: email: [n.kohn@donders.ru.nl](mailto:n.kohn@donders.ru.nl); Tel: 024-3610866

**Deputy Specialisation Coordinator:**

I am dr. Joanes Grandjean, deputy specialisation coordinator for the Medical Neuroscience specialisation. I am an assistant professor at the Cognitive Neuroscience and Medical Imaging departments of the Radboud University Medical Centre and the Donders Institute for Brain, Cognition and Behaviour. I trained in neuroscience and biomedical engineering at the ETH Zurich, Switzerland. I use functional imaging in rodents to investigate the mechanisms for distributed neuronal network function in experimental models of psychopathologies. Using a trans-species modality, I examine connectivity dysfunction in human and animals models for mental health disorders and establish neuronal mechanisms using genetic neuromodulators such as optogenetics in mice.



I intervene in several MSC and BSC classes, chiefly to give lectures about molecular imaging and animal models in neuroscience.

Contact: email: [joanes.grandjean@radboudumc.nl](mailto:joanes.grandjean@radboudumc.nl)

## Specialisation Clinical Human Movement Sciences

The field of Clinical Human Movement Sciences (CHMS) has a strong multi-disciplinary character with topics like (exercise) physiology, (functional) anatomy, biomechanics, orthopaedics, neurosciences and rehabilitation; these form the basis of the specialisation. The specialisation CHMS is characterised by a strong patient-centred approach. Physical activity is important to stay healthy and is the best medicine for most patients. Hence, it is very important to keep patients active as good and as long as possible. Human movement has many facets that evoke questions about musculoskeletal functioning, effects of physical (in)activity, the neural control of movement, movement coordination, rehabilitation and tools and equipment to support movement. As such, CHMS is strongly involved in healthcare, but also in sports and aging, and is therefore intrinsically connected with important societal issues.

Together with course coordinators, six courses were chosen as basis for the specialisation CHMS. However, more courses are related to this specialisation and as specialisation coordinators we would be happy to discuss these with you when you start creating your study programme.

### Courses in the specialisation

Period	Code	Course
W36A	BMS53	Orthopaedic Biomechanics in Motion
W36B	BMS54	Applied exercise physiology
W40A	BMS55	From vascular function to vascular failure
W40B	BMS50	Neural control of movement
W44A	BMS49	Movement science in rehabilitation
W44B	BMS52	Disorders of movement

### Specialisation coordinator

Prof. dr. Esther Tanck  
Orthopaedic Research Laboratory  
Dept. of Orthopedics  
Route nr 620  
[Esther.tanck@radboudumc.nl](mailto:Esther.tanck@radboudumc.nl)



With my background as Biomedical Scientist with a major in movement sciences and as an active athlete I have always been interested in human movement. Since 2016, I have been a mentor (of the RIHS) for master students. Before that, I was study leader 'Clinical Human Movement Sciences' for a period of five years in which a coaching task was combined with specialization-related tasks. I fulfilled both functions with great pleasure and am pleased to be the specialisation coordinator of Clinical Human Movement Sciences.

As a professor in Clinical Movement Sciences Education I have a large local and national network in the field of movement sciences. I coordinate the research minor 'Moving questions' and the master course 'Orthopaedic Biomechanics in Motion' (BMS53). Furthermore, I am chairwoman of the national committee regarding Movement Sciences Programs together with the Universities of Maastricht (MU), Groningen (UMCG) and Amsterdam (VU). As a researcher my goal is to improve the

prediction of fracture risk in patients with bone metastases by developing patient specific computer models.

**Deputy specialisation coordinator**

Dr. Florieke Eggermont  
Orthopaedic Research Laboratory  
Dept. of Orthopedics  
Route nr 620  
[Florieke.Eggermont@radboudumc.nl](mailto:Florieke.Eggermont@radboudumc.nl)



In 2013, I finished my master Biomedical Sciences with a major in Clinical Human Movement Sciences. After that, I started working as a researcher at the Orthopaedics department. In 2019, I obtained my PhD in biomechanical sciences with research focussed on finite element computer models for fracture risk prediction of patients with bone metastases. Currently, we are working on clinical implementation of the computer model. Next to research, I am involved in education. I am coordinator of the master course 'Matlab for Signal Analysis' (BMS82) and have been Esther's right hand for several years. I help her with the coordination of courses, but also with coaching students during their Biomedical Sciences master, which I very much enjoy.

## Specialisation Drug Safety and Toxicology

The World Health Organisation (WHO) has ranked environmental exposures to chemicals among the most important risk factors for chronic disease mortality. Prescription of drugs also pose a major health risk, ranking 4th (with stroke) as a leading cause of death. The European Commission estimates that adverse reactions from prescription drugs cause 200,000 deaths every year.

For appropriate chemical risk management there is a great demand for trained toxicologists. In the past 15 years the Radboudumc has delivered more than 75 toxicologists that acquired important positions in university (45%), (pharmaceutical) industry (25%) and regulatory agencies (30%). Our graduates are highly appreciated for their in-depth drug safety and toxicological knowledge and broad skills in applied and fundamental biomedical research methods. The Radboudumc drug safety and toxicology specialisation is unique, because it is embedded in a medical faculty in the Netherlands, which gives us the opportunity to set up a series of courses that will be the standard in the human toxicology field. There are ample opportunities for our master's students to do internships at influential institutions in the Netherlands (e.g. NVIC, RIVM, TNO) and abroad. After their master's three quarters of our students that specialised in drug safety and toxicology have obtained a PhD. The Radboudumc is a key player in the education of toxicologists and this specialisation will merely strengthen this position.

At the Radboudumc we teach 6 Master courses that together form a firm basis for becoming a registered toxicologist. More information can be obtained at <http://www.pharmtox.nl/education/>

### Courses in the specialisation

Period	Code	Course
W36A	MED-BMS64	Molecular and cellular toxicology
W36B	MED-BMS67	Chemical mutagenesis and carcinogenesis
W40A	MED-BMS63	Biodynamic and toxicokinetic modeling
W40B	MED-BMS66	Reproductive Epidemiology and Toxicology
W44A	MED-BMS65	Clinical toxicology
W44B	MED-BMS60	Human risk assessment

### Specialisation coordinator

Dr. Jan Koenderink  
Radboud Institute for Molecular Life Sciences (RIMLS)  
Dept. Pharmacology and Toxicology 137  
Room: M850-7.069 - route 286  
[Jan.Koenderink@radboudumc.nl](mailto:Jan.Koenderink@radboudumc.nl)  
[T +31 6 5016 9688](tel:+31650169688)



As researcher and teacher of the department of Pharmacology and Toxicology I focus on molecular / biochemical toxicology and transport processes of drug molecules. As a coordinator of the specialization I have a much broader view on drug safety and toxicology. Coaching of students I enjoy very much and therefore I coordinate and participate different teaching activities, but also supervise many research projects. As a specialisation coordinator I like to guide and help students to get prepared for their next step.

## Specialisation Health Technology Assessment

HTA involves **scientific research** to assess the consequences of employing **health care interventions**. It features a **broad approach**, including effectiveness research, economic analysis, patient outcome measurement, assessment of organizational consequences, and ethics. As such, it requires **interdisciplinary teamwork**. The ambition of HTA is to provide decision-makers at a macro-, meso-, and micro-level with information they need to improve health care. It is tightly interwoven with **clinical practice and health care policy**.

Therefore, it is **action oriented**, focusing not only on knowledge, but also on change. It has a strong client focus. Besides, HTA helps to understand the working mechanisms behind health care interventions and diseases. HTA entails a young and **dynamic** field of work, which leaves ample room for the most ambitious students, who wish to pay a **visible contribution to health care**.

They are found in a great variety of organizations worldwide: academic hospitals, pharmaceutical companies, advisory bodies to the government, research institutes, and consultants. Does that sound like **you**?

### Courses in the specialisation

Period	Code	Course
<b>W36A</b>	MED-BMS86	Introduction to Health Technology Assessment
<b>W36B</b>	MED-BMS58	Cost-effectiveness analysis in health care
<b>W40A</b>	MED-BMS62	Advanced modelling in economic evaluation
<b>W44A</b>	MED-BMS48	Clinical trials
<b>W44B</b>	MED-BMS56	Health outcome measurement
<b>W48A</b>	MED-BMS08	Qualitative research

### Specialisation coordinator

Dr. Wietske Kievit  
Radboud Institute for Health Sciences (RIHS)  
Dept. for Health Evidence  
Route nr 148  
Wietske.kievit@radboudumc.nl



As a former student Biomedical Sciences with a major in Human Movement Sciences, I was seeking for a field of research where my research results would have a direct implication for decisions that are being made in health care. I found this in a second major 'Health Technology Assessment'. After graduation I worked on the utilization of expensive medicines in the field of rheumatology for my PhD degree.

Since 2013 I have been coaching students that choose a career in the field of HTA and helping them finding internships, choosing interesting and relevant courses, and setting a career path. For me personally, it is very satisfying to see students finding their own path and getting the best out of themselves during their Master.



## Specialisation Molecular Medicine

Molecular medicine is a broad and important field, where biological, bioinformatics, chemical, and medical techniques are used to describe molecular structures and mechanisms, identify (fundamental) molecular and genetic errors of diseases, and to develop molecular interventions to correct these pathological conditions. The field develops ways to diagnose and treat disease by understanding the way genes, proteins, and other cellular molecules work. Molecular medicine is based on research that shows how certain genes, molecules, and cellular functions may become abnormal in diseases such as diabetes or cancer. The field aims to elucidate disease pathogenesis at the molecular level, which may lead to the design of specific tools for disease diagnosis, treatment, and also prevention.

Discoveries made today in the laboratory are translated at a rapid pace into new diagnostics and therapeutics. Therefore Molecular medicine is rapidly expanding and will have an increasing role in the future.

Molecular medicine provides contemporary insights into how the genetic and molecular revolution is influencing medical thinking and practice on a broad front including research approaches in medicine, innovative therapies but also many others as for instance forensic medicine.

### Courses in the specialisation

Period	Code	Course
W36A	MED-BMS75	Advanced tools in molecular biology
W36B	MED-BMS40	Nanomedicine
W40A	MED-BMS43	From target to therapy
W40B	MED-BMS42	Targeting cellular processes to treat disease
W44A	MED-BMS39	Understanding proteins in 3D
W44B	MED-BMS37 <i>or</i> MED-BMS76	Cell death in life and disease  Cell movements

### Specialisation coordinator

Prof. Dr. Joost Hoenderop  
Radboud Institute for Molecular Life Sciences  
Dept. of Physiology  
Route nr 286  
[Joost.Hoenderop@radboudumc.nl](mailto:Joost.Hoenderop@radboudumc.nl)



My name is Joost Hoenderop and I obtained my PhD in the year 2000. The focus of my PhD research was the molecular understanding of renal calcium handling. I have very good memories of my study and PhD project where we succeeded to elucidate new molecular mechanisms in patients with a disturbed mineral homeostasis. After gaining some international experience as a post.doc in Switzerland, these new insights fuelled my interest to establish an own research group at the Radboudumc. Nowadays, my group is based on a dynamic international team of 20 researchers consisting of Assistant professors, Post-docs, PhD students, technicians and students.

Over the last years, I have coached and supervised many Biomedical students. Based on my experiences I noticed that BMW students develop excellent skills, are ambitious, interested and prepared to continue their research activities in the form of a high-end biomedical profession. As a principal investigator and teacher I am enthusiastic and feel responsible to support the MSc BMW students in their development as a professional.

As the Specialisation mentor Molecular Medicine I can connect you with a large network of researchers who are all fascinated by molecular research. I am housed in the Radboud Institute for Molecular Life Sciences, a modern building where most of the molecular research is embedded. It will be my pleasure to support you during your personalized BMW MSc programme.

## Specialisation Epidemiology

*'Epidemiology is essential to the fight against any disease. The study of how diseases spread, and why, has loomed large in the struggle to understand, contain and respond to COVID-19. Analyses of data on infections and deaths, and projections from studies that model the virus's spread, have driven policy decisions all over the world.'* (Nature 589, 491-492 (2021))

Epidemiology is the study of the distribution (frequency, patterns) and determinants (causes, risk factors) of health and disease conditions in human populations. Epidemiology is the cornerstone of public health and applied medical research.

In this COVID-19 pandemic, you can see the contribution of epidemiology to human health. Although the name epidemiology is associated with epidemics of infectious diseases, all domains of medicine and public health rely on epidemiology. So epidemiologists also study diseases like cancer, dementia, and diabetes and health-related conditions such as high blood pressure and obesity.

Comparing groups is the core of the scientific methods needed to solve research questions concerning health and disease. By comparing groups epidemiologists investigate causal relations and assess the efficacy of medical procedures for prevention, diagnosis and treatment.

Within the specialization of epidemiology, you will learn how to perform population-based research, from study design, data collection and statistical analyses to interpretation and dissemination of results. The specialization includes six core courses. You can extend this with an epidemiological internship and elective courses to obtain a formal Epidemiologist-A registration by the Dutch Epidemiology Society (VvE – [www.epidemiologie.nl](http://www.epidemiologie.nl))

### Courses in the specialisation epidemiology

Period	Code	Course
W36-A	BMS77	Design of applied medical research
W36-B	BMS78	Modern methods of data collection
W40-A	BMS47	Biomarkers in population based research
W40-B	BMS61	Statistical modelling in medical research
W44-A	BMS81	Applied medical research and society
W44-B	BMS59	Prediction models and machine learning

#### Specialisation coordinator

Dr. Femmie de Vegt  
Dept. for Health Evidence  
Radboud Institute for Health Sciences (RIHS)  
[Femmie.deVegt@radboudumc.nl](mailto:Femmie.deVegt@radboudumc.nl)



#### deputy Specialisation coordinator

Dr. Iris van Rooij  
Dept. for Health Evidence  
Radboud Institute for Health Sciences (RIHS)  
[Iris.vanRooij@radboudumc.nl](mailto:Iris.vanRooij@radboudumc.nl)



Femie is associate professor in epidemiology education. Her background is a master in human nutrition and health (Wageningen University) and a PhD in clinical epidemiology (VU Amsterdam). Her research focus areas are epidemiology, applied clinical research and public health research. She has a great interest in lifestyle (*nutrition, physical activity*) and prevention of diseases (*obesity, cancer, coronary heart disease and diabetes*).

Iris is assistant professor in epidemiology. She studied Biomedical Sciences and performed a PhD project about environmental, nutritional, and genetic risk factors in association with orofacial clefts (Radboudumc). Her current research involves all kinds of birth defects and besides etiologic projects she focuses on prognostic research and personalized healthcare and prevention.

Femie and Iris have been teaching and coaching students for several years now. As they have a large (inter)national network in epidemiology, they can help finding internships and help students to organize their master Biomedical Sciences focusing on epidemiology.

## Specialisation Immunology and Host Defence

The courses of this specialisation focus on how our bodies defense system works, how it protects us and what happens if it fails or overreacts. The ultimate result of a failing or overreactive defense system is disease.

In the course “Advanced immunology” we explore the current state of art in the immunological field, where immune cells, molecular and cellular interactions, and new concepts are discussed. You will experience that the immune system is not a black and white network, as was most likely thought in your Bachelor program, but that it contains more cell subsets than you knew so far, and that context can determine the diversity and plasticity of the immune cells and their interactions.

In the course “Inflammatory Diseases” we start with deepening our knowledge on basic immunology and exploring the use of that knowledge for research. For this purpose we are defining common pathways and essential molecules in immunology, and investigating how we can use cell culture and animal models to study inflammatory diseases. Also, which biomarkers are useful and reliable, and how do you design a clinical trial?

In the courses “Targeting cellular processes to treat disease” and “Target to therapy” we take things a step further and dive into the drug development pipeline. In “Targeting cellular processes to treat disease” we will do this from a cellular perspective, focusing on classical small molecules, the newer biologics and the most recent cell-based therapeutics. In “Target to therapy” we zoom out and go through the preclinical steps of the drug development pipeline focusing on a genetic target and a immunological target. This will cover several model systems for target identification and validation, and understanding the development of key assays to test and optimize a drug candidate. In addition, we will meet people from industry sharing their perspective on drug development.

In the course “Cancer development and immune defense” we will discuss the development of malignancies, with a focus on mutational evolution and epigenetic gene expression in acute myeloid leukemia. Next, we will focus on how the immune system can recognize and attack these malignant cells, and how this can be applied as different therapeutic strategies.

As final course you can choose between “Cell death in life and disease” or “Cell movements”\*. Without cell death, life of multicellular organisms is impossible. Induced cell death is even crucial for embryonic development and immunity. Therefore in “Cell death in life and disease” we will focus on the mechanisms of cell death and how they relate to life and disease. In this course, we will gain a better understanding of the molecular and cellular biology principles involved in cell death and how these can be used to treat diseases, with a special attention to cancer.

In the course “Cell movements” we focus on cellular motions, in particular cell migration, which are fundamental processes required in virtually every process shaping and maintaining the multicellular organism. They are crucial during embryonic development but also for tissue homeostasis, immunity and wound repair in the adult. Cell motility controls the shape of cells itself and of tissues and organs, and it enables regeneration and immune effector function. Deregulated cell motility forms the basis of many hereditary and acquired diseases and is feared for its deadly contribution to cancer invasion and metastasis.

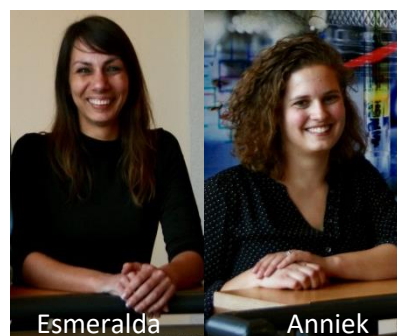
*\*You can decide on your interest which course you prefer, both courses contribute to the specialisation in an equal but different way (see the prospectus of both courses for details). If you are interested in both, you can decide to follow one in your first year and the other in your second year.*

## Courses in the specialisation

Period	Code	Course
W36A	MED-BMS88	Advanced immunology
W36B	MED-BMS74	Inflammatory diseases
W40A	MED-BMS43	From target to therapy
W40B	MED-BMS42	Targeting cellular processes to treat disease
W44A	MED-BMS72	Cancer development and immune defense
W44B	MED-BMS37 <i>or</i> MED-BMS76	Cell death in life and disease  Cell movements

## Specialisation coordinators

Dr. Esmeralda Blaney Davidson  
Radboud Institute for Molecular Life Sciences (RIMLS)  
Dept. Rheumatology  
Route nr 272 (RIMLS 2<sup>nd</sup> floor)  
Esmeralda.BlaneyDavidson@radboudumc.nl



Dr. Annik van der Waart  
Radboud Institute for Molecular Life Sciences (RIMLS)  
Dept. of Laboratory Medicine – Laboratory of Hematology  
Route nr 475  
Annik.vanderWaart@Radboudumc.nl

If you choose this specialization you can choose to be coached by either Esmeralda Blaney Davidson or Annik van der Waart. Esmeralda has been a student mentor in BMS since 2014. She also has coached students during their bachelor 'Biomedische Wetenschappen', and mentors students in the master program Molecular Mechanisms of Disease (MMD). She teams up with Annik who, like Esmeralda, also has been a mentor throughout the current BMS curriculum as well, but also mentors students in the MMD and Medical Biology (Faculty of Science). Together they guide students to find their path in the BMS program and sometimes coach them in personal issues.

Esmeralda started her career from a pathobiology perspective in rheumatic diseases, but due to the immune systems intricate interaction with all other systems in the body, she gravitated more and more towards immunology. She is fascinated on the interplay between the central nervous system and the immune system and how this can affect pain. Annik has a keen interest in immunology and cancer. The strength of the immune system to attack malignant cells motivates here to research new immune therapies against cancer. Together Esmeralda and Annik are an enthusiastic team that is looking forward to coach you in your BMS career.

## PROFILES

### Research profile

All students of Biomedical Sciences become researchers, but those with a research profile become even more experienced in research than others, primarily by completing at least two research internships. Moreover, a student in the research profile should take **at least** 6 EC worth of research profile courses. Thus, they prepare themselves for a career as a researcher, often (but not always) starting with pursuing a PhD.

The research profile has a wider selection of courses from which students can choose (see table below). There is no separate profile coordinator for the research profile. The specialisation coordinator, which each student is guided by, is research oriented and does therefore also represent the research profile.

After following the research profile, the MSc

- has state-of-the-art knowledge on advanced experimental and methodological approaches in the field of specialisation, providing the basis for developing and executing innovative research ideas;
- achieves a profound professional level of the scientific competences by conducting at least two research projects (internships). Has learned how to use past research experiences to further improve his/her own research skills.
- is proficient to move into an international PhD programme or to participate in research projects at healthcare institutions or e.g. pharmaceutical companies.

#### Courses of the research profile

Period	Code	Course	EC
<b>W02A</b>	MED-BMS09	Science presentation and visualisation	3
<b>W02B</b>	MED-BMS10	Laboratory animal science	3
<b>W36+40 W44+48</b>	MED-BMS11	BROK (2 course editions of 8 weeks each)	1.5
<b>W40C</b>	MED-BMS12	Research with ionizing radiation	1.5
<b>W48A</b>	MED-BMS13	Introduction to linear algebra and data analysis in MATLAB/PYTHON	3
<b>W48B</b>	MED-BMS14	Design and analysis of experiments	3
<b>W44A</b>	MED-BMS48	Clinical trials	3
<b>W02B</b>	MED-BMS82	Applied Matlab for Biomedical Problems	3
<b>W06A</b>	MED-BMS84	Longitudinal and multilevel data analyses	3
<b>W48A</b>	MED-BMS85	Big data in biomedical sciences	3
<b>W44B</b>	MED-BMS89	Moving Science - using film in science communication	3

## Consultancy profile

Scientific and technological developments cannot be kept in a test tube. They are connected to healthcare problems that deeply permeate the social context in which they exist. A context of persons who are worried, or foster high expectations. Who have stakes, different views, and disagreements. How would you account for that, if you were to advise on the solution of healthcare problems? How would you manage the COVID-19 crisis, to mention just one example?

The consultancy profile is targeted at preparing top-class students for a role as a scientific consultant. The vision underlying the consultancy profile is this. You are a biomedical expert, who is able to conceive of scientifically sound advice as to problems we encounter in healthcare. The point, however, is that, in practice, scientific arguments are rarely enough to convince persons involved to act upon your advice. Roughly, there might be two reasons for that: either your advice does not resonate with their views on the problem and/or their stakes and values, or the context in which they work does not allow them to conform to your advice. Therefore, a consultant not only needs to be smart and creative enough to conceive of solutions, but he or she also needs to be able to develop support for these solutions. In view of this, you will need to:

- understand how healthcare organisations and systems work
- be able to involve stakeholders in the process of developing solutions
- be able to write a advisory report that conforms to the expectations, information needs, and views of these stakeholders
- develop the communicative skills required in consulting, teamwork, negotiating, and managing resistance

We have developed four courses that will enable you to learn exactly this! This means that you will have begun to develop skills required to give useful advice regarding issues that you are acquainted with as a scientific expert. Scientific consultants combine ample knowledge of their scientific discipline with insight into healthcare organisation and management. Additionally, they keep a keen eye on the views and stakes of persons involved, and have the analytical and communicative skills to handle these. They have learned to view counselling as both a matter of science and a matter of managing human interaction. They have acquainted themselves with the following items: healthcare organisation; argumentative policy analysis; the interaction between science, technology, and society; and project management. Besides, they receive training in: teamwork; interviewing and conversational techniques; managing conflicts; and win-win negotiation.

### Courses in the consultancy profile

Period	Code	Course
<b>W02A</b>	MED-BMS02 * or MED-BMS57	Management skills for a consultant * of Health care improvement science
<b>W02B</b>	MED-BMS03	Policy research
<b>W06B</b>	MED-BMS04	Policy making, health systems and public management in health care
<b>W48B</b>	MED-BMS05	Participatory approaches to innovation

\* MED-BMS02 has another course edition in W10A (March)



## **Profile coordinator**

Dr. ir. Rob Reuzel  
Dept. for Health Evidence  
Route nr 133  
[Rob.Reuzel@radboudumc.nl](mailto:Rob.Reuzel@radboudumc.nl)



The consultancy profile is co-ordinated by R.P.B. (Rob) Reuzel PhD. Please call 024-3619630 and expect the phone to be answered by Mrs. Simone van Wezel, or Mrs. Anneke Verbaten. If you would like to have a private word with me, they will be happy to make an appointment. Please note that my flawed e-mail maintenance renders calling on the secretarial office the only effective way to make an appointment with me!

Rob holds an MSc in Philosophy of science, technology and society with a basis in applied physics (University of Twente, 1995). In 1996, he started working on his PhD at the Radboudumc, which he obtained cum laude with a thesis entitled Health technology assessment and interactive evaluation: different perspectives. His research interests entail evaluation at the boundaries of HTA, ethics, and policy sciences. Some large projects involved paediatric cochlear implantation and palliative sedation. Rob now is an associate professor and a principal lecturer at the Radboudumc. Since 2003, he is responsible for the 'consultancy profile', which he developed in close cooperation with Driessen Consultancy & Coaching. Rob considers himself a personal coach, rather than a teacher, finding it most rewarding to help students identify and develop their talents and on this basis fulfill their ambitions.

## Science communication profile

Science and technology are playing an increasingly pervasive role in the daily lives of people around the globe. In parallel, the need for inclusive debates on how science and technology are developing, how this changes our understanding of reality and affects our capacity to alter the course of events is increasingly acknowledged. This is the terrain of science communication. It is concerned with questions ranging from ‘How can citizens best be informed about the risks associated with specific behaviours?’ to ‘How do developments in Artificial Intelligence enhance the potential for the early detection of disease?’ In this profile, you learn to take the perspective of the audience. And the audience may vary, as may the subject and the goal of the conversation, necessitating adoption of different strategies. You will practice with communicating on different scientific subjects and improve your skills in presentation, popular writing and visualisation, in order to communicate effectively with a variety of audiences. Internships are typically conducted at Municipal Health Services (GGD), public health authorities such as RIVM or Health Council (Gezondheidsraad), patients’ organizations, science magazines, science information departments, science museums, etc.

### Courses in the communication profile

Period	Code	Course
W02B	MED-BMS06	Science popularisation
W48B	MED-BMS07	Science communication and society
W48A	MED-BMS08	Qualitative research
W02A or W10A	MED-BMS09	Science presentation and visualisation

### Profile coordinator

Prof. Dr. Gert Jan van der Wilt  
Donders Institute for Brain, Cognition and Behaviour  
Dept. for Health Evidence  
gertjan.vanderwilt@radboudumc.nl



### Deputy profile coordinator

Drs. ing. B. Bloemen  
Donders Institute for Brain, Cognition and Behaviour  
Dept. for Health Evidence  
bart.bloemen1@radboudumc.nl

I am professor of Health Technology Assessment at Radboudumc. This means that, quite often, you act as sort of ‘interface’ between clinicians and researchers on the one hand, and policy makers and other stakeholders (such as patients) on the other hand. In this way, I have learned how important, but also how challenging communication on science issues may be. This also holds for the work that I have done as member of advisory committees at the National Health Care Institute and the Health Council. Being a qualified researcher is one thing; being able to effectively communicate about science is yet another thing.