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CARIM – A unique Dutch academic institution in cardiovascular research

In 2013 CARIM celebrated its 25th anniversary with a special, festive edition of the traditional yearly scientific CARIM symposium focussing on its local, national and international context, with recognized Dutch and international speakers and, of course, the traditional Rob Reneman lecture.



CARIM Day 2015: Stéphane Hatem, Paris, receives the Rob Reneman Lecture Award. From left: Thomas Unger, Rob Reneman, Stéphane Hatem

CARIM (the acronym means “Cardiovascular Research Institute of Maastricht”) was founded in 1988 by Professor Rob Reneman, a renowned Maastricht physiologist and pioneer in vascular research. In those days, a “School for Cardiovascular Diseases” at any university was by no means a common institution. Not only that it should assemble and coordinate those researchers following cardiovascular themes but also that it might cross the borders of research specialties in physiology and pharmacology, biochemistry and pathology, cardiology, cardiac and vascular surgery, hypertension and other disciplines in an interdisciplinary fashion beyond the departmental units. That this idea can be considered today’s commonplace is one of the merits of CARIM which has not only survived the storms and floods of almost three decades but developed continuously and is

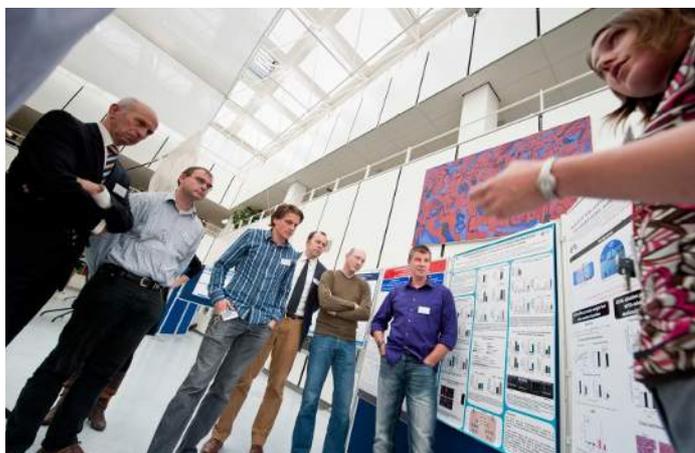
now one of the leading European institutions of its kind with a high international reputation. CARIM belongs to the Faculty of Health, Medicine and Life Sciences (FHML) of Maastricht University as one of the six thematically distinct “research schools” and is embedded within the Maastricht University Medical Center+ (MUMC+). With more than 250 researchers and staff in 22 PI groups (including about 120 PhD students) and an annual budget of over €21 Mill, CARIM is one of the largest cardiovascular research institutes in Europe, producing more than 500 scientific articles and around 40 PhD dissertations per year.



University of Maastricht; CARIM combines basic and clinical research under one roof.

Scientifically, CARIM deals with three major themes: Thrombosis & Hemostasis, Arrhythmias & Heart Failure, and Vascular Medicine. In each of these topics CARIM has contributed to historical landmarks in cardiovascular research, connected with names like Coen Hemker in thrombosis research, Maurits Allessie, Frits Prinzen and Harry Crijns in cardiac arrhythmia, basic vascular research with Rob Reneman, the experimental and clinical hypertension team with Harry Struijker Boudier and Peter de Leeuw, and the unique Maastricht Study with Coen Stehouwer. A group of younger PIs and senior postdocs, highly ambitious and motivated, is currently rushing to

the front to replace the “old” PIs and to carry the flag of CARIM into the future.



CARIM rhythmologist Frits Prinzen (left) in a Poster session at one of the numerous scientific events held by CARIM

During the almost thirty years of its existence CARIM has been “governed” by only four fully-endowed scientific directors: Rob Reneman was followed by Harry Struijker Boudier (Pharmacologist), Mat Daemen (Pathologist) and myself (Pharmacologist). Since April 2017 this position has been held by Tilman Hackeng, an internationally respected biochemist.

My own experience as CARIM’s scientific director for five years was extremely positive. When I came to Maastricht in 2012, I was given a warm welcome and treated with respect and great friendliness in an atmosphere of comradeship that I had not experienced in the years before. In this system of research schools, CARIM’s scientific director is more or less a *primus inter pares*, helped by a “Daily Board” of scientific theme leaders and a CARIM office team led by the financial director, but in the end, he is responsible for the welfare of the institution. The principal investigators (PIs), mostly department leaders or clinic directors, personally report to the scientific director once a year in so-called “planning & control” talks, the scientific director reports twice a year to the Dean of the faculty, who in turn reports to the president (and to the rector) of the university. In between, almost daily contact between all players completes a tight, complex system of mutual control and observation, which may sometimes stress the freedom-loving researcher but, on the other hand, guarantees a high degree of transparency and constant high-quality scientific output.

Through its scientific directors, theme leaders and its financial director, CARIM has always been well adapted to the challenges of the time. To improve academic education and the opportunities for students, a training programme for MD’s, Master and PhD students has been introduced, and – among many others - in 2016 a

Marie Curie Innovative Training Networks (ITN) programme “INTRICARE” on “Vascular Calcification” coordinated by CARIM has recently been granted within the EU program “Horizon 2020” between Maastricht, Aachen, Stockholm and London, aimed at joined doctorates between the institutions. Another CARIM-led ITN initiative on “Hypertension” with researchers from Dublin, Glasgow, Madrid, Maastricht, Padua and Paris is currently in preparation.

The newly established tenure track program of CARIM, as well as the *toptalent* program of the university, allows advanced young scientists to permanently enter academic rank and files, although the criteria of quality in research and teaching to obtain a professorship and/or permanent position are extremely challenging and not met by all candidates.



Joyful CARIM researchers at their best

To further improve scientific quality, collaborations and exchange professorships between Maastricht and numerous other national and international academic institutions are tradition. They have recently been intensified or newly established, especially with some German neighbour universities like the RWTH Aachen or the universities of Mainz and Münster.

Particular progress has been made in the field of cardiogenetics/-genomics and thrombosis/hemostasis by establishing joint professorships for mutual programs. A firm asset is the “Maastricht Study” mainly organized and run by CARIM scientists since 2009, a longitudinal observation trial, aimed at comparing 5000 diabetic versus 5000 non-diabetic patients from the region in an extensive investigative protocol. Clinicians and basic researchers can both exploit a host of relevant data including, of course, those on hypertension in a unique interdisciplinary, translational approach.

The implementation of the Maastricht Cardiovascular Center (CVC) with outstanding patient care and hospital organization together with the scientific background provided by CARIM, will give Maastricht University Medical Center (MUMC+) a unique chance to excel in translational medicine, a buzzword of our days. One of

CARIM's principal investigators has recently entitled an interview "You have to get out of your comfort zone". While this is certainly correct and necessary to meet the challenges of today's international biomedical science, CARIM does offer some comfort, too. The quality and enthusiasm of its researchers, the firm embedding in the scaffold-providing academic scene, a flat hierarchy and the help of the Dean's office and the administrators that one can enjoy here in Maastricht, compensate to a certain degree for the many mishaps and frustrations that accompany a scientific career as much as the moments of success and celebration.

- Thomas Unger

The Lancet Commission on Hypertension: Update



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The Lancet Commission on Hypertension (LCH) report: "A call to action and a life-course strategy to address the global burden of raised blood pressure on current and future generations" (1) was well received at the launch in Seoul, South Korea, September 2016. In the report itself, and at the launch, a campaign including two technical packages for prevention and treatment was promised (please see below).

- **Prevention-related technical package**
 - Improved public understanding of unhealthy and healthy lifestyles as well as elevated BP and its consequences
 - Policy and environmental strategies to promote health and support healthy behaviors
 - Improved access to effective health care delivery systems
- **Treatment-related technical package**
 - Standard protocols for investigation, treatment and monitoring
 - Team-based care, task sharing and workforce development
 - Access to affordable medications, technology and health care
 - Surveillance, patient registries and information systems

It is obvious that many of the key actions listed above call for a multi-sectorial strategy involving LCH group, health organizations, professional societies, governments and industries, as illustrated in the figure shown below.

