

## Overview ongoing research 'Diabetes and Metabolism' Research Program ACS – October 2018

PI	UMC	Dept	Mission	Expertise
Marc Vervloet*	VUmc	Nephrology	Prevent and treat cardiovascular consequences of chronic kidney failure	<ul style="list-style-type: none"> <li>• Interrelationship between mineral metabolism and arterial medial and endothelial disease</li> <li>• The role of FGF23, PTH and Klotho on CV complications (Heart &amp; Vessels)</li> <li>• Animal models of vascular calcification</li> <li>• Clinical (interventional) research (investigator initiated)</li> <li>• Large multinational pharma trials</li> </ul>
Max Nieuwdorp*/Evgeni Levin	AMC	Experimental Vascular Medicine	Gutmicrobiota as novel diagnostic and therapeutic targets in cardiometabolism	
Ed Eringa*/Erik Serne	VUmc	Physiology	To elucidate the origins of perfusion defects in obesity and type 2 diabetes to prevent organ failure	<ul style="list-style-type: none"> <li>• Physiology of obesity, type 2 diabetes</li> <li>• Adipose tissue phenotyping (mice, humans)</li> <li>• Glucose metabolism (mice, humans)</li> <li>• Phenotyping of microcirculation (mice, humans) - contrast ultrasonography</li> <li>• Microvascular dysfunction specific to obesity, type 2 diabetes</li> <li>• Mouse modeling of chronic kidney failure</li> <li>• Blood pressure measurement by radio telemetry (mice)</li> </ul>
Noam Zelcer	AMC	Medical Biochemistry	Explore the molecular regulation of lipid metabolism at the cellular and organismal level as a means to understand its contribution to development of CVD.	<ul style="list-style-type: none"> <li>• Ubiquitin biology in lipid metabolism</li> <li>• CRISPR-based genome editing</li> <li>• Genome wide functional genetics screens (haploid- or CRISPR-based)</li> <li>• Mouse metabolic models</li> </ul>
Onno Holleboom	AMC	Vascular Medicine	<ul style="list-style-type: none"> <li>• First clinic for non-alcoholic fatty liver disease (NAFLD) @ internal medicine in NL</li> <li>• ANCHOR – Amsterdam NAFLD-NASH cohort</li> <li>• Genetic defects of lipophagy</li> </ul>	<ul style="list-style-type: none"> <li>• Endocrinology, lipidology, genetics, metabolic diseases</li> <li>• Hepatology</li> <li>• Intracellular lipid metabolism</li> <li>• CRISPR editing</li> <li>• iHeps</li> </ul>
Joline Beulens	VUmc	Epidemiology & Biostatistics	To prevent diabetes and its vascular complications by advancing and disseminating knowledge on:	<ul style="list-style-type: none"> <li>• Knowledge on health behaviours and its determinants</li> <li>• Statistical modelling of determinants and prediction of diabetes and its complications in large observational cohorts</li> <li>• Intervention studies on health behaviours</li> </ul>

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			<ul style="list-style-type: none"> <li>The aetiology of diabetes and its complications, in particular the role of lifestyle factors</li> <li>Early detection and prediction</li> <li>Developing and testing interventions</li> </ul>	<ul style="list-style-type: none"> <li>Deep phenotyping (glucose metabolism, IMT, echo, CT)</li> <li>General methodological expertise</li> <li>Infrastructure of several large cohort studies (general population, diabetes patients); <a href="http://www.hoornstudies.com">www.hoornstudies.com</a></li> </ul>
Petra Elders	VUmc	General Practice and Elderly Care	<p>To improve primary care of diabetes and other chronic diseases by improving and disseminating knowledge on:</p> <ul style="list-style-type: none"> <li>Epidemiology and pathophysiology of type 2 diabetes</li> <li>Prevention of type 2 diabetes</li> <li>Diabetes care and diabetes care models</li> <li>osteoporosis and other chronic care models</li> <li>Extra focus on low social economic status and low health literacy</li> <li>Development and testing alternative interventions to improve primary care for Diabetes and chronic diseases</li> <li>and to translate this knowledge to clinical practice</li> </ul>	<ul style="list-style-type: none"> <li>Epidemiology and pathophysiology of diabetes and osteoporosis</li> <li>Chronic care models</li> <li>Observational and intervention studies in primary care (mixed methods and effects studies)</li> <li>Health behaviour and its determinants</li> <li>Research with regular care data</li> <li>Infrastructure of several large cohort studies (hoorn studies, diabetes care system, String of Pearls Diabetes, Salt osteoporose cohort)</li> </ul>
Richard IJzerman	VUmc	Internal Medicine		
Femke Rutters	VUmc	Epidemiology & Biostatistics	<p>Gain knowledge on the role of psychosocial factors and adherent medication in the development and progression of obesity and diabetes, using epidemiological studies and intervention studies in humans.</p>	<ul style="list-style-type: none"> <li>Epidemiology- Interventions</li> <li>Sleep, stress and social jetlag</li> <li>Obesity- Type 2 Diabetes</li> <li>Human</li> <li>Infrastructure of several large cohort studies (general population, diabetes patients); <a href="http://www.hoornstudies.com">www.hoornstudies.com</a></li> </ul>
Frans van Ittersum	VUmc	Nephrology	<ul style="list-style-type: none"> <li>Finding and evaluating clinical outcomes relevant to patients</li> </ul>	<ul style="list-style-type: none"> <li>Nephrology – Dialysis – Transplantation</li> </ul>

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			<ul style="list-style-type: none"> <li>Promoting selfcare</li> </ul>	<ul style="list-style-type: none"> <li>Epidemiology, including PROMs, complex statistical analytic methods</li> <li>Cerebral perfusion tests</li> </ul>
Reinier Schlingemann/ Ingeborg Klaassen	AMC	Ophthalmology	To understand molecular mechanisms of ocular angiogenesis, vascular leakage and wound healing, and to translate these insights to the clinical management of eye disease	<u>In vitro models:</u> <ul style="list-style-type: none"> <li>Model for blood-retinal and blood-brain Barrier: <i>Permeability, TEER</i></li> <li>Endothelial tip cells: <i>FACS, IF-staining, lentiviral transfection</i></li> <li>Spheroid based angiogenesis model: <i>Sprouting, live-cell imaging</i></li> </ul> <u>In vivo models:</u> <ul style="list-style-type: none"> <li>Oxygen induced retinopathy model: <i>Angiogenesis, vascular permeability, siRNA</i></li> <li>Developing mouse retina: <i>Whole mount staining</i></li> </ul> <u>Other:</u> <ul style="list-style-type: none"> <li>High-throughput analysis of proteins: <i>Antibody arrays, ELISA</i></li> </ul>
Coert Zuurbier	AMC	Anesthesiologie	Understanding how diabetes increases CardioVascular Disease: Unraveling the mechanism along which SGLT2 inhibitors work, the first effective diabetic drugs showing reduced CVD events.	<ul style="list-style-type: none"> <li>Empa/Dapa/Canagliflozin lowers <math>\text{Na}^+/\text{Ca}^{2+}</math> in cardiomyocytes; increase mitochondrial <math>\text{Ca}^{2+}</math>; impair NHE (<i>Baartscheer; Uthman Diabetolog. '17 (top cited paper); '18</i>)</li> <li>Empa delays ischemic contracture in isolated heart (<i>Uthman et al Cardiovasc Res, in revision</i>)</li> <li>Empa has minor effects on endothelial cells (HUVEC/CAEC)</li> </ul>
Muriel Grooteman	VUmc	Nephrology	Optimizing hemodialysis techniques	<ul style="list-style-type: none"> <li>Prospective clinical research</li> <li></li> </ul>

\* Research Program leaders