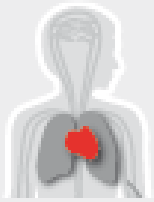
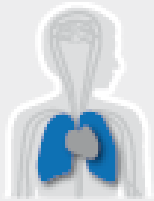
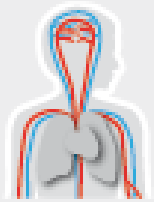


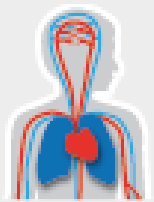
Heart Failure & Arrhythmias



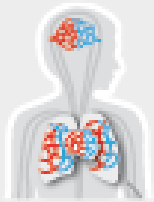
Pulmonary Hypertension & Thrombosis



Atherosclerosis & Ischemic Syndromes



Diabetes & Metabolism



Microcirculation

Focus of research group (I)

Name PI: Vincent Christoffels
Department, UMC: Medical Biology, AMC
Size of research group: 3 senior researchers, 2 postdocs, 6 PhD students, 3 technicians

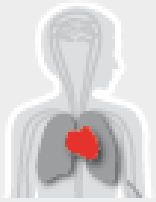
Current mission, vision and aims

Mission: To explore the transcriptional regulation of heart development, rhythm and regeneration.

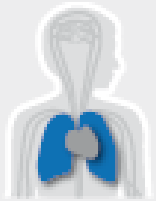
Vision: One day we will understand the relation between genotype and cardiac phenotype (congenital heart defects, arrhythmia, etc.). Research is fueled by curiosity.

Aims:

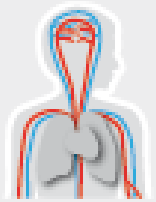
- To understand the development of heart cells and components, including pacemaker and conduction system.
- To understand relation between gene regulation and function.
- To understand the relation between genomic variation, gene regulation and disease predisposition.



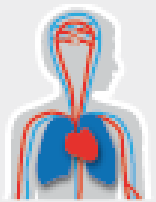
Heart Failure & Arrhythmias



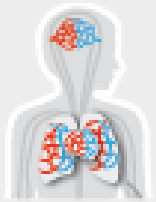
Pulmonary Hypertension & Thrombosis



Atherosclerosis & Ischemic Syndromes



Diabetes & Metabolism



Microcirculation

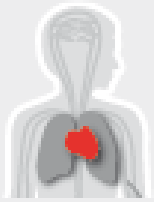
Focus of research group (II)

Current expertise

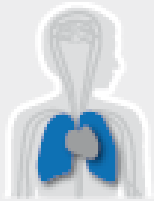
- (Heart) Development
- Transgenesis / CRISPR-based genome editing in vivo
- Transcriptional regulation
- Epigenomics (RNA-seq, ChIP-seq, ATAC-seq, 4C-seq)

Current funding

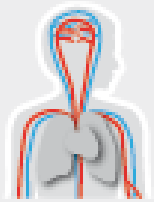
- Leducq
- NHS
- CVON
- ZonMW TOP
- Charles River grant



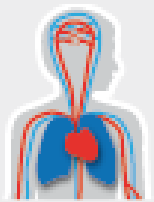
Heart Failure & Arrhythmias



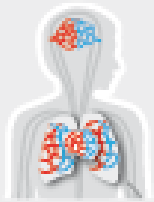
Pulmonary Hypertension & Thrombosis



Atherosclerosis & Ischemic Syndromes



Diabetes & Metabolism



Microcirculation

Future plans

Short term (1-2 year) plan

Plan:

Study role of Tbx3 in SAN and AV conduction system regulation.

Clarify the mechanistic link between Tbx5 gain of function and AF predisposition.

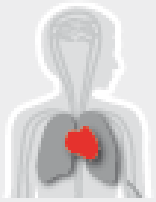
Explore the in vivo function of non-coding variant regulatory sequences associated with AF and conduction.

Optimize CRISPR mediated genome editing (KI) in mouse in vivo.

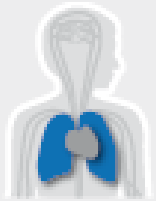
Identify and characterize regulatory DNA elements driving MI/injury response, atrial- and conduction system-specific expression.

Necessary infrastructure:

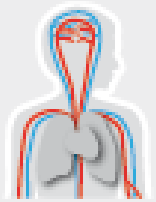
Mouse transgenesis facility, experimental animal facility, state of art electrophysiology analysis set up, genomics facility



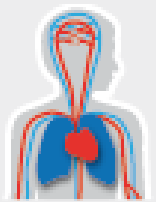
Heart Failure & Arrhythmias



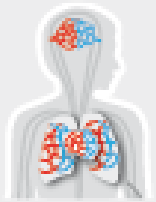
Pulmonary Hypertension & Thrombosis



Atherosclerosis & Ischemic Syndromes



Diabetes & Metabolism



Microcirculation

Future plans

Long term (>2 year) plan

Plan:

Explore the precise genomic mechanisms underlying function of genetic variation associated with cardiac defects and disease in vivo.

Move towards human cell models

Explore new transcriptional and epigenetic regulatory mechanisms for development and homeostasis

Necessary infrastructure:

Human stem cell / genetic modification unit

Genomics facility (sc seq etc.)

Bioinformatics

Genome editing

Functional imaging / microscopy

Electrophysiology

Collaboration in ACS

Exp. Cardiol. AMC; Klin. Genetics.