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**Department of Cardiology, Bereich Humanmedizin, Georg-August-University Göttingen, Germany (Partner 1a)**

Expertise

- Adenovirus mediated gene transfer (Tim Seidler)
- Isolated muscle physiology (Karl Toischer)
- Interventions: LAD-ligation, MTAB, Swimming

Facility

- Mouse echocardiography
- Calcium-, sodium, ph measurements
- Confocal microscopy
- Yeast two hybrid analysis

<http://www.med.uni-goettingen.de/content/5995.html>

**Department of Endocrinology, Bereich Humanmedizin, Georg-August-Universität Göttingen, Germany (Partner 1b)**

Expertise

- Endocrinological research in animal model for genomic and non genomic action of steroids
- Real time PCR, RIA, ELISA

Facility

- Quantitative PCR
- RIA
- ELISA
- Immunohistochemistry
- qCT scan

<http://www.endo.med.uni-goettingen.de>

**Pole of Pharmacology and Therapeutics, Institut de Recherche Expérimentale et Clinique (IREC), Université Catholique de Louvain (Brussels, Belgium) (Partner 2)**

Expertise

- Hemodynamic measurements of systolic blood pressure and heart rate variability by implantable telemetry in conscious mice.
- Evaluation of the angiogenic or anti-angiogenic potential of substances in validated *in vitro*, *ex vivo* and *in vivo* models (including through intravital microscopy).
- Identification of serological and seric biomarkers through proteomic analysis (2D-DIGE).

- Evaluation of the anti-tumor and anti-metastatic efficacy of drugs in animal models (in particular, via bioluminescence measurements).
- Evaluation of adjuvant strategies to chemo-, radio- and immunotherapy.
- Evaluation of the effects of drugs on tumor blood flow, oxygenation and vascular permeability.
- Evaluation of the effects of drugs on the contractile and endothelial functions of the microcirculation.
- EPR and spin-trapping for quantitation of NO *in vivo* and *ex vivo*, amperometric measurement of NO in biological fluids and measurement of NO synthase activity by anion exchange chromatography.
- Evaluation of the effects of NO synthase photoactivable modulators on tumoral vascularization

### Facility

- Molecular biology equipment including adeno-, retro- and lentivirus technology
- Real-time PCR (Biorad IQ5)
- Microplate Reader (Victor 5)
- Telemetry equipment
- Hypoxia workstation (Ruskinn In Vivo500)
- Cell culture (including hypoxic chamber) and isolation (MACS)
- Biochemistry: Immunoblotting (Miniprotean III) and ELISA
- Ultracentrifuges
- Histology and immunohistochemistry (Zeiss Axio-Imager); access to laser-capture microscopy
- Pseudo-confocal microscopy (Zeiss Apotome); access to on-site Dual-Photon microscopy
- Transcriptomics: Access to Affymetrix and Eppendorf platforms
- Proteomics: 2D-gel platform (IpgPhor III et un ETTAN dalt)
- Intravital microscopy (Zeiss Axioskop + Hamamatsu EBCD camera)
- In vivo bioluminescence (IVIS50, Xenogen)
- Laser Doppler imaging (Moor)
- Pressure and wire myographs and cardiac myocyte contractility (incl. fluorimetry) setup (Ionoptix)
- Local animal facilities (maintenance and breeding)
- Access to on-site FACS, DNA sequencer, EPR and NMR facilities

[http://rch.adre.ucl.ac.be/search\\_unit.php?cid=2&eid=3&unit=FATH](http://rch.adre.ucl.ac.be/search_unit.php?cid=2&eid=3&unit=FATH)

## **Fondazione Parco Biomedico San Raffaele (Rome, Italy) (Partner 3)**

### Expertise

- miRNA related molecular analyses, imaging, and transgenic animals
- Analysis of cardiac signal transduction
- Genetics of monogenic and complex cardiovascular diseases and stem cell disease
- Inotropism analysis
  
- Microscopic technique on isolated neonatal and adult cardiomyocytes (Michael Latronico)

- Cell culture
- Phenotypic characterization of stem cells

### Facility

- 454 Roche for deep sequencing
- Tissue culture facility
- Fluorescence microscopy, confocal microscope, optical microscope and time-lapse microscope
- Protein analysis: LC, HPLC, ultracentrifuges, spectrophotometry, electrophoresis, electrofocusing
- Radioactive service for cell and macromolecules labeling
- FACS
- SPF animal facility
- Echocardiographic analysis
- Invasive murine hemodynamic analysis
- Field stimulation instrumentation
- High speed multilength for calcium transient analysis

<http://www.scienceparkrome.eu/>

## ***Maastricht University (the Netherlands)(Partner 4a)***

### Expertise

- Generation of recombinant viral vectors
- Genetically modified mice using regular and conditional transgenesis and ES cell technology
- Si based gene silencing (using synthetic siRNA or H1 driven siRNA plasmid constructs)
- Assay of calcineurin activation in cultured cell lines
- Transcriptomic analysis in cultured cell lines

### Facility

- Confocal and fluorescence microscope
- Robotized DNA sequencer
- Cell electrophysiology
- Molecular genetic techniques
- In house microarray scanner
- ES cell core facility
- Transgenic core facility

<http://www.dewindtlab.com/>

## ***Cardiac Development and Genetics group, Hubrecht Institute (Utrecht, the Netherlands) (Partner 4b)***

### Expertise

- Dynamics of cardiomyocyte differentiation in the embryo

- Forward and reverse genetic techniques
- Cardiac development

### Facility

- Single and multi-photon confocal microscopes
- Fluorescent activated cell sorter (FACS)
- Agilent micro-array platform
- High throughput parallel sequencing technology (by SOLiD)
- Zebrafish facility

<http://www.hubrecht.eu/research/bakkers/index.html>

## ***Experimental Cardiology laboratory, University Medical Center Utrecht, the Netherlands (Partner 5)***

### Expertise

- Genetics of cardiomyopathy
- SNP analysis
- Haplotyping in CV disease
- Somatic stem cell research
- Genetic epidemiology (extra link to Julius center and RIVM)
- Linkage mutation detection (Mark Entius, PhD.)
- Apoptosis assays (Jack Cleutjens, PhD)
- High throughput SNP analysis (Henk Ruven)

### Facility

- Facility for gene expression analysis and SNP analysis
- Facility to generate fish and mouse models
- Patients data, cohort study and DNA samples, phenotypes are available

<http://www.umcutrecht.nl/subsite/experimentalcardiology/>

## ***Institute of Experimental and Clinical Pharmacology and Toxicology, University Medical Centre Hamburg-Eppendorf, Hamburg, Germany (Partner 6)***

### Expertise

- Engineered heart tissues
- Beta-adrenergic signalling, Phosphatase Inhibitor-1

### Facility

- Contraction measurements in isolated heart preparations and engineered heart tissue
- Isolated myocyte cell shortening and calcium imaging
- High resolution ultrasound
- Adeno- and lentivirus work

<http://www.uke.de/>

**1) Research lab: Université Paris Diderot and Inserm UMRS 698, Groupe Hospitalier Bichat - Claude Bernard, 75018 Paris, France (Partner 7a)**

**2) CEFI: at Institut Claude Bernard - ifr2, Université Paris Diderot, UFR de Médecine Site Bichat, 16 rue Henri Huchard, 75890 Paris Cedex 18, France (Partner 7a)**

#### Expertise

- Cardiovascular remodeling in response to chronic biomechanical stress

#### Facility

- Facility for animal surgery and phenotyping
1. Research lab: <http://www.u698.fr/>
  2. Core facility for mouse surgery and CV phenotyping (CEFI): [http://www.bichat.inserm.fr/ibisa/plateforme\\_ibisa.htm](http://www.bichat.inserm.fr/ibisa/plateforme_ibisa.htm)

**INSERM 769, Faculté de Pharmacie, Université Paris-Sud 11, France (Partner 7b)**

#### Expertise

- Energetic signalling and cardiac and muscular pathophysiology
- Neuroendocrine regulation of heart function
- Cyclic nucleotide signalling
- Cardiac electrophysiology (single-cell ionic currents measurements)
- Cellular energetics and metabolic control of cardiac function
- Mitochondrial biogenesis assessment

#### Facility

- FRET-based fluorescence imaging of single cells
- Patch-clamp technique
- Single-cell shortening
- Intracellular Ca fluorescence

<http://inserm-u769.cep.u-psud.fr/en/index.html>

**Cordelier Research Center; INSERM U872, Paris, France (Partner 7c)**

#### Expertise

- Functional genomic analyses
- Ex vivo/in vivo validation of potential targets

- Molecular biology and cardiovascular pathophysiology in genetically modified animals (Frederic Jaisser)
- Mechanism of aldosterone action (Nicolette Farman)

### Facility

- Echocardiography
- Vascular function
- Metabolic exploration (metabolic cages, energy metabolism)
- Transcriptomic platform

1. CRC web site <http://www.crcjussieu.fr/crc/>
2. Research Lab  
[http://www.crcjussieu.fr/crc/index.php?lang=en&cible=projet\\_equipe&id=1&spgmGal=equipes%2F01](http://www.crcjussieu.fr/crc/index.php?lang=en&cible=projet_equipe&id=1&spgmGal=equipes%2F01)

## ***Division of Cardiac Electrophysiology & Pharmacology, University of Szeged (Hungary) (Partner 8)***

### Expertise

- Large animal (dog and pig) model for heart failure study (Áhnas Végh)
- Cellular electrophysiological method (e.g. patch-clamp)(András Varró)
- In viral transfection mRNA silencing (Zsolt Bodrogkői)

### Facility

- Un-diseased human heart sample
- Surgical theatre
- Haemodynamic and cellular lab

<http://www.u-szeged.hu/english/>

## ***Institute of Gender in Medicine (GiM)/Center for Cardiovascular Research, Charité-Universitätsmedizin Berlin (Germany) (Partner 9)***

### Expertise:

- Molecular bases of sex differences, mechanisms of sex hormone actions in cell cultures, sex differences and sex hormone receptors in animal models, gender research in clinical studies.
- Molecular investigations focus on regulation, localisation and function of estrogen receptors in the human heart, clinical studies look at the multiple factors that determine gender specificities in the outcome after cardiac surgery, including heart transplantation.

### Facility

- animal handling including a whole body MRT, echocardiography and unit for hemodynamic measurements as well as all facilities for cardiovascular and brain surgery
- radio core immunology lab

- core facilities for proteomics with Maldi and MR-spectroscopy
- confocal laser microscopy and small animal magnetic imaging

<http://www.ccr.charite.de/site/html/de/home.html>

<http://gender.charite.de/en/>

## ***Kings College London British Heart Foundation Centre of Excellence, Kings College London, UK (Partner 10)***

### Expertise

- The role of NADPH oxidase and reactive oxygen species in cardiovascular disease
- Autocrine/paracrine signalling in cardiac hypertrophy and heart failure
- In vivo and in vitro murine physiology including high-res echo, MRI, PV loops, telemetry
- In vivo and non invasive haemodynamic assessment of humans
- Murine disease models (TAC, MI, hypertension, etc)
- Transcriptional regulation (promoter studies, EMSA, ChiP, etc)
- nNOS in human disease
- ROS assays and signalling
- Cardiovascular proteomics (Dr Manuel Mayr)

### Facility

- Transgenic facility
- Proteomics suite
- Operating theatre
- Dissecting microscope
- MRI unit
- Murine echocardiography
- 2-photon confocal, time-lapse, standard fluorescence microscope
- Flow cytometry, FACS sorter
- Molecular biology core
- Ultracentrifugation facilities
- Microinjection equipment

<http://www.kcl.ac.uk/schools/medicine/research/cardio/>

## ***Department of Experimentele Cardiologie, Katholieke Universiteit Leuven, Belgium (Partner 11)***

### Expertise

- Mouse adult cardiac myocytes isolation for cell physiology assays
- EC coupling analysis in global parameters
- Detailed Ca transport analysis (Ca channels, RyR, SERCA, NCX,..) using patch clamp techniques, fluorescent probes and confocal imaging
- Echocardiography and tissue Doppler studies in mice (Cardiac imaging, J. D'hooge)
- Single cell studies on excitation-contraction coupling and ion transport

- Using confocal microscopy to analyse spatially resolved calcium signalling

### Facility

- Lab for hemodynamics, catheterization and angiography, in vivo electrophysiology, and MRI in large animals
- Cell culture facility approved for viral transfection studies
- Unit for cell isolation
- A setup for photometric fluorescence microscopy combined with electrophysiology
- Confocal microscopy combined with electrophysiology
- Facility for protein analysis

<http://www.kuleuven.be>

## ***University of Torino, Molecular Biotechnology Center (Italy) (Partner 12a)***

### Expertise

- Generation and purification of recombinant fusion proteins
- Generation and characterization of poly and monoclonal antibodies

### Facility

- Real time PCR
- Gene cloning
- Immunoprecipitation, pulldown, yeast two hybrid, surface plasmon resonance
- Tissue histological analysis
- Light, fluorescent and confocal microscopy with time lapse and image processing
- Generation of knockout, knockin, and transgenic mice
- Adeno Associated Virus vectors
- Measurement of cardiovascular function
- Optical Imaging IVIS 2000
- High resolution Echography VEVO 2100
- Magnetic Resonance Imaging (7 Tesla Brucker)

<http://www.unito.it/>

## ***University of Torino (Italy) (Partner 12b)***

### Expertise

- Production and phenotypic analysis of genetically modified mice
- Functionality of a GPCR activated protein and lipid kinase, PI3Kg
- Molecular analysis of cardiac phenotype (Ornella Azzolino)
  
- Biochemistry characteristics of PI3Kg-dependent and –independent function in the heart (Laura Barberis)
- Cardiac phenotype analysis (Stefano Marengo)

### Facility

- Real time PCR
- DNA sequencing
- Gene cloning
- SDS-page
- Western blotting
- Production of genetically modified animals
- Tissue histological analysis
- Light, fluorescent and confocal microscopy with digital image acquisition and processing
- Animal house
- Micro-injection microscope
- Equipment for histology, cell and molecular biology
- Measurement of cardiovascular function

<http://www.personalweb.unito.it/emilio.hirsch>

## ***Cardiovascular Research Institute Maastricht, the Netherlands (Partner 13)***

### Expertise

- Cardiac energy metabolism in hypertrophy (M. van Bilsen)
- Cardiac physiology and phenotyping (B.J.A. Janssen, M. van Bilsen)
- Analysis of signal transduction and transcription regulation (M. van Bilsen, F.A. van Nieuwenhoven)
- Fibroblast function/fibrosis (F.A. van Nieuwenhoven)
- Mitochondrial genome (H.J. Smeets)
- Clinical genetics (H.J. Smeets)
- Cardiac mechanics (F.P. Prinzen)

### Facility

- Ex vivo-perfused heart preparation
- mouse cardiovascular physiology
- Primary cardiac cell systems
- Metabolic analysis
- Microarray
- Quantitative PCR
- Proteomics
- Western blotting
- Transfection
- SiRNA
- Adenoviral infection

<http://www.carim.unimaas.nl/>

**Department of Physiology and Pharmacology, Karolinska Institutet, Sweden (Partner 15)**

Expertise

- Biochemistry in isolates
- Functional genomics
- Metabolism disorders
- RNAi silence in primary human tissue
- Dissecting signalling pathways
- *In vitro* techniques to access glucose metabolism in isolated skeletal muscle (human and rodent)

Ion and nutrient transporters biology

Facility

Not specified

<http://ki.se/ki/jsp/polopoly.jsp?d=4487&l=en>

**Department of Cardiovascular Medicine, University of Oxford, UK (Partner 16)**

Expertise

- Human molecular genetics

Facility

- Genotyping core
- Bioinformatics (John Peden)
- Statistical genetics (Martin Farrall)

<http://www.cardiov.ox.ac.uk/>

**Laboratory of Molecular Biophysics, Laboratory of Electrophysiology, Laboratory of Cell Morphology, Institute of Molecular Physiology and Genetics, Slovak Academy of Sciences, Bratislava, Slovakia (Partner 17)**

Expertise

- Planar lipid bilayers - properties and modulation of single RyR channels (Alexandra Zahradnikova)
- Patch clamp - properties and modulation of L-type calcium currents (Ivan Zahradnik)
- Confocal microscopy - measurement of intracellular Ca transients, calcium release fluxes from dyads of cardiac myocytes; properties and modulation of calcium sparks in intact and permeabilized cardiac myocytes (Alexandra Zahradnikova, Ivan Zahradnik)

- Mathematical modelling and simulation - development and testing of models of channel gating and kinetics of ionic currents (Alexandra Zahradnikova, Ivan Zahradnik)
- Electron microscopy - morphological analysis of cardiac and skeletal muscle cytoarchitecture (Marta Novotova)
- Calcium measurement - ion sensitive electrodes

### Facility

- Electrophysiological and confocal experiments (patch clamp set-up with accessory equipment, confocal microscope, software for patch clamp data acquisition and analysis, for confocal data acquisition and image analysis)
- Cardiac myocyte isolation
- Planar lipid bilayers (patch clamp set-up with accessory equipment, software for patch clamp data acquisition and analysis)
- Electron-microscopic facility (electron microscope, microtome, accessory equipment, camera, software for data analysis)

<http://www.umfg.sav.sk/>

## ***Greenpharma S.A. (Orléans, France) (Partner 19)***

### Expertise

See company web site

### Facility

See company web site

<http://www.greenpharma.com/>

## ***Apeiron Biologics (Wien, Austria) (Partner 20)***

### Expertise

See company web site

### Facility

See company web site

<http://www.apeiron-biologics.com/>

## ***Institute of Molecular Biotechnology of the Austrian Academy of Sciences (Wien, Austria) (Partner 21)***

### Expertise

- using genetic manipulation in mice to establish basic principles of physiology and basic mechanisms of disease pathogenesis

### Facility

- Mouse house (can accommodate 20,000 mice)
- Fly house
- Proteomics
- Cell sorting
- Microscopes
- Bioinformatics
- Histology

<http://www.imba.oeaw.ac.at/>

## ***Genoway (Lyon, France) (Partner 22)***

### Expertise

See company web site

### Facility

See company web site

<http://www.genoway.com/>

## ***Endotherm (Saarbrücken, Germany) (Partner 23)***

### Expertise

See company web site

### Facility

See company web site

[http://endotherm-lsm.com/en\\_index.php](http://endotherm-lsm.com/en_index.php)