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Department of Health | Institute of Health | European Commission
Coordination Action 017642

<http://www.europhysiome.org>

Project Coordinator: Prof G J Clapworthy, University of Luton, UK

Scientific Coordinator: Dr Marco Viceconti, Istituti Ortopedici Rizzoli, Italy

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STEP is a Coordination Action that is seeking to coordinate European activity relating to the physiome – a description of human physiology that will span multiple levels from the whole body down through the organs to the cells and beneath – in an integrated manner.

The **STEP** Consortium

- LUT - University of Luton (UK)
 - **Project Coordinator, Gordon Clapworthy**
- IOR - Istituti Ortopedici Rizzoli (I)
 - **Scientific Coordinator, Marco Viceconti**
- ULB - Université Libre de Bruxelles (B)
- USFD - University of Sheffield (UK)
- AAS - Aalborg Sygehus (DK)
- UOXF - University of Oxford (UK)
- NOT - University of Nottingham (UK)
- CNRS – CNRS/LaMI (F)
- UCL - University College London (UK)

Virtual Physiological Human

- the physiome is the quantitative and integrated description of the functional behaviour of the physiological state of an individual or species
- the term **Virtual Physiological Human** (VPH) indicates a shared resource formed by a federation of disparate, but integrated, computer models of the mechanical, physical, and biochemical functions of living human body in both physiological and pathological conditions.
- VPH models are both descriptive and predictive:
 - **large collections of anatomical, physiological and pathological data, stored in digital format**
 - **predictive simulations developed from these collections**
 - **services aimed at supporting the researchers in the creation and maintenance of these models**
 - **services aimed at empowering clinical, industrial and societal users in the use of the VPH resource**

The EuroPhysiome Initiative

- **STEP** aims to coordinate European efforts in developing the **VPH**
- this will materialise into a **VPH roadmap document**, written by a running consensus process involving all European stakeholders
- **STEP** objectives:
 - bring together all current Physiome-related activity in Europe
 - create a roadmap that will ensure that future European work will be coherent, integrated and internationally competitive
 - provide an opportunity for all relevant work in Europe to participate in the above process
- European effort is currently at “grass roots” level
- “EuroPhysiome” was coined to reflect a more integrated approach to work related to the physiome in Europe
 - avoid redundancy/overlap
 - seek to develop common European approaches/ standards/ software tools/ database structures ...
 - increase momentum to make Europe the world leader
 - consistent with world-wide efforts, wherever possible

Scope of the Roadmap

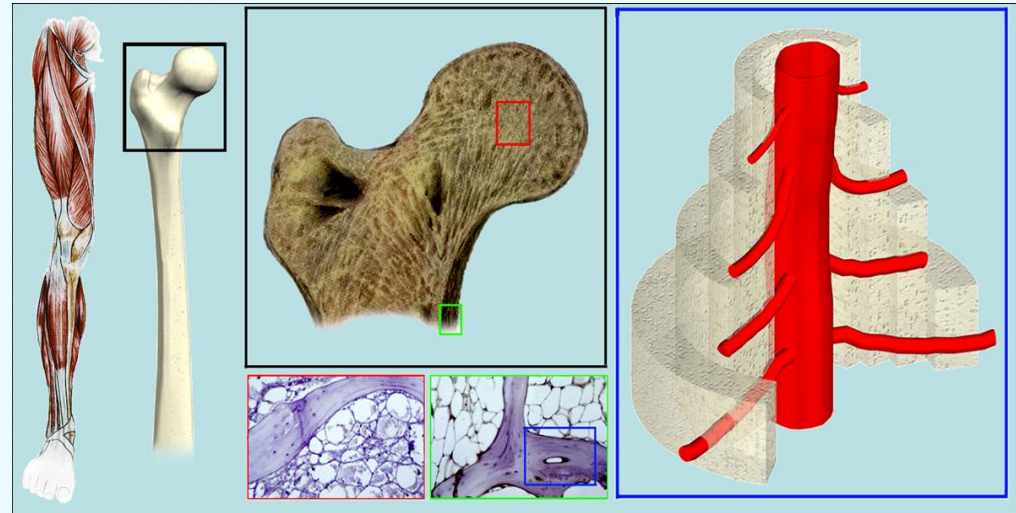
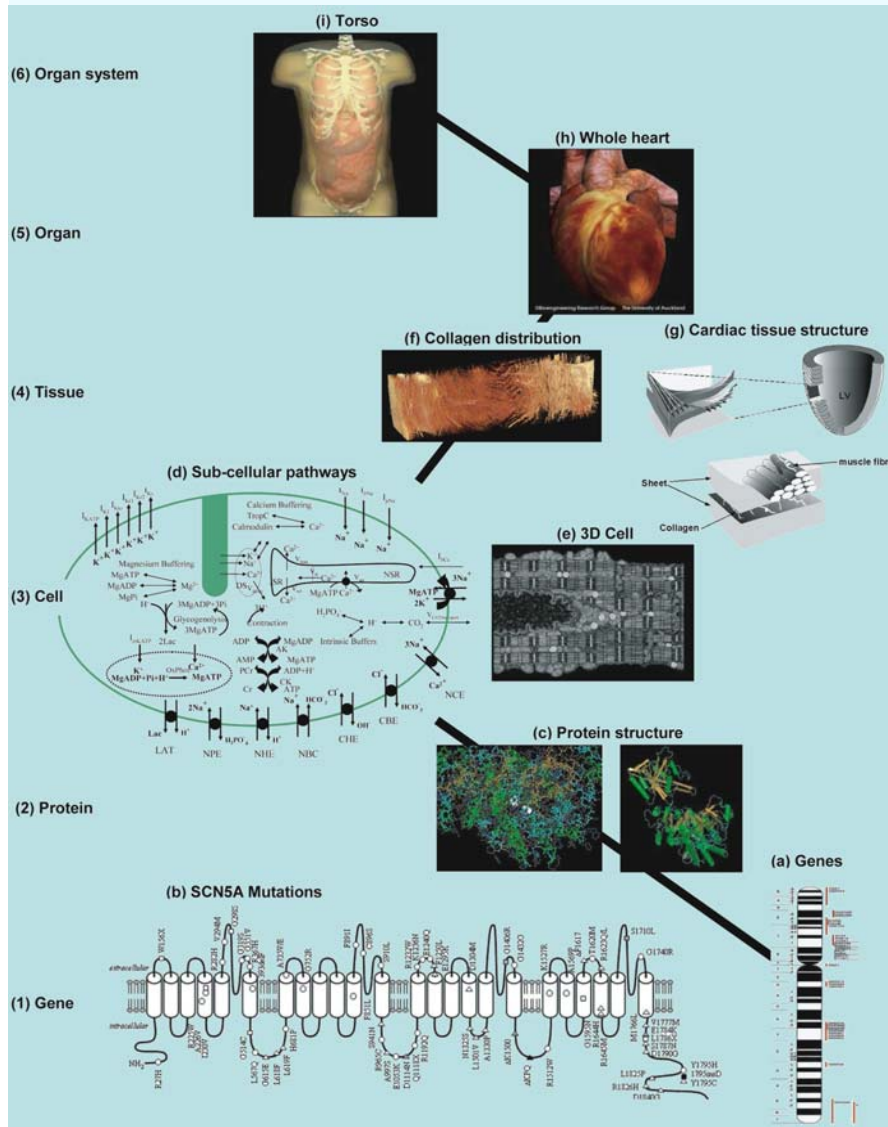
- identify the **Grand Challenges** that we must overcome to achieve the VPH objective
- provide to the European Commission, and other grant agencies, a research roadmap for the VPH, to be used for strategic planning of research funding
- evangelise research, clinical and industrial stakeholders on the concepts of Physiome, VPH and VPH Technology
- inform the citizens of Europe of the potential impact that VPH research may have on their daily lives
- note: there will not be a “EuroPhysiome Project”:
 - **rather, EuroPhysiome will provide an umbrella under which loosely coupled actions can maintain coherence**
 - **in particular, work should build outward from existing projects and attempt to bring them into a unified structure**

Current EuroPhysiome Projects

- Cardiome
 - **heart structure & function, based at Oxford**
- Epitheliome
 - **epithelial tissue, based at Sheffield**
- Giome
 - **gastroenterology, based in Aalborg**
- Living Human
 - **musculo-skeletal, based at IOR**
- ULB virtual human
 - **musculo-skeletal, based at ULB**
- Renal Physiome
 - **kidney, based at CNRS-LaMI in Evry**
- Physiological Flow Network
 - **physiological flows, based at Nottingham**



Multiscale Modelling



multiscale modelling in the musculo-skeletal system

multiscale modelling in the cardio-vascular system

Main **STEP** activities

- two conferences: May 2006 & November 2006
 - **second conference will define the final roadmap**
 - **we welcome participation by all in Conference 2**
- opinion canvassed from 100+ international experts, who are formed into advisory panels
- Internet-based discussions July 2006 – March 2007
 - **open for all to participate**

STEP Conference 2

Towards the EuroPhysiome

Brussels, 5-7 November 2006

To attend, contact: prajay.kamat@luton.ac.uk