

1.1. PREFACE, VISION AND STRATEGY

Preface

Institute for Experimental Medical Research is host to several research groups and a regional core facility for preclinical MRI. With a strong focus on cardiac research the institute is now a department of the Clinic for Cardiovascular and Pulmonary Diseases at Oslo University Hospital and a department of Institute for Clinical Medicine at the University of Oslo. The institute has been successful in establishing Center for Heart Failure Research comprising 13 partners. Several groups were partners in a consortium that became a runner-up for a Center of Excellence, and groups are now members of the new Jebsen Cardiac Research Center and a new Center for Research-based Innovation (based at Rikshospitalet). By using a variety of cardiac disease models and techniques spanning from molecular biology to clinical trials, the scientific output is of the highest quality and several PhD students finish their PhD theses every year.

Vision

Institute for Experimental Medical Research (IEMR) will foster excellence in medical science and education.

The institute was established in 1951 with the aim of providing sound evidence for clinical practice. Today the institute has 60 employees and is engaged in basic and clinically oriented research to understand mechanisms of disease. Recruitment and education of PhD students is prioritized, and clinical physiology is taught to medical students through lectures and problem based learning (PBL).

Strategies

- ***Develop and adhere to focussed research programmes***
By establishing only a few research areas the research groups will benefit from exchange of competence, common methodologies and a joint scientific environment
- ***Secure frontier research through strong national and international links***
The institute will actively develop collaboration and networks domestically and abroad, seeking partners that have complementary technology and competence
- ***Exploit technological development and experimental models to drive research***
Advances in biotechnology and instrumentation are rapidly opening up new research arenas. Gene modification and various disease models in rodents and larger animals are important experimental tools.
- ***Secure basic funding and compete to obtain external grants***
A secure long-term funding of core personnel and basic activities is essential to compete successfully for grants.
- ***Recruit the best students and researchers***
Science is fundamentally dependent on the individual intellectual input, competence and technological skills.
- ***Maintain instruments, laboratories and competence to serve scientists at the hospital and in the health region***
Investment in infrastructure and personnel is required for world-class research and will also provide facilities for researchers outside of the institute
- ***Offer training facilities for surgical and interventional procedures***
Modern surgery and interventions are highly skills-dependent and require extensive training.
- ***Maintain high quality educational programmes at graduate and postgraduate levels***
Science and education are tightly linked.

Goals and implementation

Research programmes

Develop and sustain a longstanding research focus in two main areas:

- ***Disease mechanisms of heart failure***
- ***Best clinical practice for heart and lung resuscitation***

Heart failure is a major health problem. Insight into the fundamental biology of cardiac structure and function is basic to understanding mechanisms of disease. Abnormal growth of the heart, weak contractions due to inefficient intracellular calcium handling and sudden death due to fatal arrhythmias are three manifestations of the disease that will be examined on molecular, cellular and organ level in a translational research effort. Experimental and clinical resuscitation research must be conducted in a both-ways translational mode including innovative pedagogic research on resuscitation training and quality procedures.

National and international collaboration

Collaboration in science is based on individual relationships, but also on access to required technology and competence. First of all, the institute has established and will continue extensive collaboration with the clinical departments of Oslo University Hospital. The institute has been instrumental in establishing Center for Heart Failure Research (<http://www.heartfailure.no>) which is a network of collaborating groups in the South Eastern Norway Health Authority Region. Collaboration will continue and be expanded especially with NCMM (Center for Molecular Medicine Norway) at UoO and UNIKARD which is a National Program for Cardiovascular Research. The institute is involved in a new Center for Research-based Innovation called Center for Cardiological Innovation (CCI) and a newly established Jepsen Cardiac Research Center (JCRC) which has a strong focus on excellence in translational research. International collaboration will be strengthened especially within medical imaging and electron microscopy. The institute will be involved in a large scale EU FP7 project called The Metabolic Road to Diastolic Heart Failure (MEDIA).

Investment in technology and experimental models.

The institute has invested heavily in imaging technology (MRI, echocardiography, laserscan microscopy) and new laboratories for molecular medicine. New operating theatres for large animals were opened in 2010. Translational research will be strengthened through development of new animal models, especially to study diastolic heart failure and dyssynchrony of contraction in the ventricle. Disease models in pigs will be prioritized and the institute will acquire new x-ray technology to do percutaneous coronary interventions. Systems biology is a rapidly growing field and groups at the institute have collaborated successfully with SIMULA and research groups in Oxford. This approach will be strengthened.

Funding

Basic funding is at some risk due to the budget situation for Oslo University Hospital. Also the University has postponed advertising a professorship at the institute for budget reasons. It is an important aim for 2011 to avoid a decrease of the basic budget and to hire a new professor with a specific responsibility to develop experimental approaches involving large animals. Groups at the institute will be responsible for coordinating an application for a Center of Excellence in Cardiac Research. Otherwise important funding will be sought from the Research Council of Norway and South Eastern Norway Health Authority Region.

Recruitment of students and researchers

Students from the Medical Research Curriculum have contributed importantly to several projects at the institute and many of them continue as PhD students after graduation. The institute will continue to recruit medical students and MDs for PhD projects and for postdoc positions. Also, projects at the institute are heavily dependent on other professions, especially molecular biologists, physiologists, statisticians, mathematicians and biophysicists, and the institute will ensure that the scientific staff has the required competence. An aim is to engage similar numbers of PhD students and postdocs.

It is important for the plans of using large animal models to fill the vacant professorship in 2011. This is an important strategy to promote translation research.

High quality laboratories and service to the hospital and the health region

Molecular biology has developed into a large research field and an indispensable tool for scientists. Specifically protein-protein interactions, analysis of the phosphoproteome and structural biology will be important areas of investigation. The institute is also host to animal phenotyping facilities including preclinical MRI and echocardiography. A highly skilled technical staff is essential for providing top quality laboratory and phenotyping service for the institute and for scientists from other departments and hospitals of the region.

Training facilities

The animal phenotyping facilities especially the operating theatres for large animals are ideally suited for surgical training especially using mini-invasive techniques. The institute will serve as host to training courses and demonstrations of equipment.

Education

The institute is actively engaged in the PhD School of Heart Research organized by Center for Heart Failure Research. The institute will continue to build a strong PhD program and teach medical students and master students.



INSTITUTE FOR EXPERIMENTAL MEDICAL RESEARCH

