Vedlegg 1. Curriculum vitae Arild Christian Rustan **01-2016**

Date of Birth: 9. March 1957
Degrees: MSc Pharm, D Phil (PhD)

University Education:

1981	Master of Science (Pharmacy), University of Oslo
1988	Doctor of Philosophy (Pharmacology), The Faculty of Mathematics and Natural Sciences, University of Oslo

Posts held:

1982-1988	Research Assistant, Dept. of Pharmacology, School of Pharmacy, University of Oslo
1989-1991	Post-doctoral Research Assistant, Institute for Nutrition Research, University of Oslo
1991-1995	Associate Professor, Dept. of Pharmacology, School of Pharmacy, University of Oslo
1995-	Professor (Pharmacology), Dept. of Pharmacology (now Pharmaceutical Biosciences), School of Pharmacy, University of Oslo

Scientific profile: My research has mainly been in the field of lipid and glucose metabolism in various cell culture systems. Together with professor GH Thoresen, we have established a competitive group in the field of skeletal muscle insulin resistance and are involved in several international collaborations and consortia. I have been committee member for Norwegian Research Council (FRIBIO) and served on several international evaluation panels. I am regular referee for Diabetologia, Diabetes, J. Lipid Res., PLoS One etc.

Research group: The muscle metabolism research group at Department of Pharmaceutical Biosciences, School of Pharmacy, UiO is managed by AC Rustan and GH Thoresen. The group has long term experience with the study of insulin resistance and fuel metabolism in cultured human skeletal muscle cells (myotubes). We have established a novel high throughput system for measuring fuel-handling processes in cells. This is a non-invasive method for quantifying uptake and oxidation of labelled nutrients like fatty acids and monosaccharides (Wensaas et al., J. Lipid Res 2007). Combined with real-time qPCR and genome wide screening, using microarray technology, and specific protein measurements (immunoblotting, enzyme activity assays) this allows us to study functional aspects of gene regulation.
Persons involved are professor V Aas, University College of Oslo and Akershus, ET Kase (lecturer), J Lund, YZ Feng (research fellows), laboratory personnel and master students.

In 2008 the research group **MURES** (Muscle research at MN, http://www.mures.uio.no), leaded by us, have been selected as an Emerging Research Initiative by the Faculty of Mathematics and Natural Sciences (MN), UiO. MURES is a collaboration between the Rustan/Thoresen group and three other research groups at MN. One PhD-student (N Nikolic) has been granted to the Rustan/Thoresen group through this initiative (also see below).

LXR antagonists innovation project: "Anti obesity" (NFR-FORNY program 2007-2009; Birkeland Innovation, UiO and Norwegian Research Council (NRC), managed by researcher ET Kase): *"New drugs for treatment of disorders associated with insulin resistance, such as type 2 diabetes and obesity".* Focus is on the LXR antagonist 22-S-hydroxycholesterol (22-S-HC) and derivatives. Stage 2 "New drugs for treatment of obesity" of this project with focus of low molecular weight derivatives (funded by NRC, 2010-2011). We have got Helse Sør-Øst Innovasjonsmidler (2012-2013) to further development of the project.

Research abroad: At Dept. of Biomedical Science, University of Wollongong, NSW 2522, Australia (1999-2000) working with human skeletal muscle cells (in the group of L Storlien). This research stay has initiated collaboration with AstraZeneca, Mølndal, Sweden.

August-November 2008 and June-July 2009: SR Smith, C Moro and S Bajpeyi, Pennington Biomedical Research Center (PBRC), Baton Rouge, LA, USA. Collaboration has been established on human skeletal muscle cells related to regulation of storage and oxidation of intracellular lipids and their relation to insulin resistance.
August 2015-2016:

International network and collaboration: I have been MC member for Norway in COST-actions B5 og B17: *"Molecular Mechanisms in the Etiology of Non-Insulin Dependent Diabetes Mellitus", "Insulin resistance, obesity and diabetes mellitus in the elderly"* (NRC). The purpose with COST B5-B17 was to increase our knowledge, by collaboration and exchange of ideas, methodology and scientist between many different research groups in different European countries, about the molecular mechanisms behind development of type 2 diabetes and insulin resistance. **Lipgene and Nutrigenomics (NuGo):** LipGene (http://www.lipgene.tcd.ie) is an EU 6th FP IP (2004-2009) entitled *"Diet, genomics and the metabolic syndrome: an integrated nutrition, agro-food, social and economic analysis"*. We are involved in workpackage *"Mechanistic studies, human adipocytes and skeletal muscle cells, and animal studies".*
"Nutrigenomics, a Network of Excellence on Nutrition and Genomics" (http://www.nugo.org) is a network integrating nutritional genomics in Europe through EU 6th FP. Participating in focus team *"Skeletal muscle insulin resistance".*
I have been MC member of **MITOFOOD** (COST-action FA0602; http://www.mitofood.eu) (2007-2011), which was a research community for nutritional optimization of mitochondrial function for health promotion and disease resistance.
Research project within **Polish-Norwegian Research Fund** (OPI-EAA) (2008-2011): *"The protective mechanisms against neurodegeneration: prosurvival activity of endogenous peptides, L-arginine and fatty acids as potential modulators of mitochondrial function in the stressed brain".* Collaboration with Jagiellonian University, Krakow and R Blomhoff and RK Berge in Norway. I have been the Norwegian coordinator.

Currently we participate in a new EU project **NutriTech** in collaboration with Department of Nutrition, UiO:*"Application of new technologies and methods in nutrition research – the example of phenotypic flexibility".* (EU 7 large scale integrating project, 2012-2015), workpackage: Muscle and adipose phenotypic flexibility (http://www.nugo.org/nutritech).

Most important current international collaborations: C. Moro, Institut de Médecine Moléculaire, INSERM U858, Toulouse, France. M Gaster, Odense University hospital, Denmark. Sander Kersten, Wageningen University, The Netherlands, E. Ravussin, Pennington Biomedical Research Center, Baton Rouge, LA, USA. S. Bajpeyi , University of Texas at El Paso, El Paso, TX, USA.

Industrial link: We have established collaboration with AstraZeneca (Mølndal, Sweden) regarding cell models and development of new high-throughput methods for measurement of energy metabolism in cells.

National collaborations (past and present):

Within Faculty: The focus of the MURES group will be to study skeletal muscle molecular mechanisms related to insulin resistance and type 2 diabetes mellitus (T2D). Skeletal muscle is of particular interest in metabolic diseases and disease prevention since it is the major/only strongly regulated energy consumer in the human body, and recent molecular biology discoveries in the field of muscle fiber transformations now make it a fertile field for drug discovery related to T2D. The idea is to integrate pathological human biological material and knowledge from controlled animal experiments and *in vitro* muscle cell models, with drug design as a final goal.

Department of Nutrition, School of Medicine, University of Oslo: Fatty acid-induced insulin resistance (LipGene project); muscle metabolic flexibility (NutriTech). Regulation of liver X receptors (LXR) and other nuclear receptors involved in lipid and glucose metabolism.
University College of Oslo: Molecular and cellular mechanisms for skeletal muscle insulin resistance.
The Norwegian School of Sport Sciences: Molecular and cellular mechanisms for skeletal muscle insulin resistance: effects of muscle contraction.
Dept. of Endocrinology, Oslo University Hospital: Skeletal muscles, myokines and glucose metabolism.
Institute for Experimental Medical Research, Ullevaal University Hospital, Oslo: Effects of leukaemia inhibitory factor (LIF) on energy metabolism.
Dept. Biomedicine, University of Bergen: Fatty acid-induced insulin resistance (cells and animal studies).
Medicinal Pharmacology and Toxicology, Department of Medical Biology, Faculty of Health Sciences, University of Tromsø: Drug development and moleuclar modeling.