Renewed

The UCSD/UCLA/Salk/Cedars-Sinai DRC Scored a PERFECT 10 on the 2013-2018 renewal!

We are very pleased that the UCSD/UCLA Diabetes Research Center was funded for a five-year period as of 5/1/13. This Newsletter outlines some of the new developments and alignments of the year 11 renewal of our Center grant. The new Center grant retains the previous Core services and adds a new Core featured later in this newsletter.

New Name of the NIDDK Centers program is:

Diabetes Research Centers (DRC)

Grant number remains: P30 DK063491

The Components of the Renewal include:

A. Transgenic and Knock-out Mouse Core
   Pamela L. Mellon

B. Mouse Metabolic and Molecular Physiology Core
   Andrea Hevener, Karen Reue, & Edward Dennis

C. Epigenetics and Genomics Core
   Chris Glass, Bing Ren, Gary Hardiman, and Nicholas Webster

D. Human Genetics Core
   Jerome Rotter & Leslie Raffel

E. Novel Target Discovery and Assay Development Core
   Julian Whitelegge
   NEW, SEE PAGE 4

F. Pilot and Feasibility Program
   Kuk-Wha Lee & Peter Tontonoz

G. Enrichment Program
   Maike Sander & Mark Goodarzi

H. Administrative Component
   Jerrold M. Olefsky, Pamela Mellon & Peter Tontonoz

The new website address is: http://DRC.ucsd.edu

The new listserv address is: DRC-L@UCSD.EDU
Our Biomedical Research Cores have undergone substantial growth and change in the renewal process. For example, our Inflammation Core (previous Core E) was incorporated into the **Metabolic and Molecular Physiology Core** (Core B) and an entirely new core entitled "**Novel Target Discovery and Assay Development Core**" was created as new Core E. This new core focuses on proteomic analysis of plasma and tissue samples and provides unique services in the generation of novel immunoassays for biologically relevant proteins of interest. The Transcriptional Genomics Core (previous Core C) now incorporates a variety of epigenetic technologies, which provide a major new strength for our DRC faculty. Our Mouse Phenotyping Core (previous Core B) has also undergone significant evolution and growth and has become the "**Metabolic and Molecular Physiology Core**" (new Core B) to reflect these changes. For example, a **Lipidomics sub-core** has been added to this program, headed up by Dr. Edward Dennis. Dr. Dennis is the Director of the LIPID MAPS Consortium at UCSD and his laboratory has developed many new methodologies for analyzing over 700 lipid species in blood as well as tissue samples from humans and mice. He is among the world’s leaders in this area, and the addition of these relevant proteins of interest.

The **Transgenic and Knock-out Mouse Core** (Core A) has also added new advanced technologies including conditional Tet-inducible and tamoxifen-inducible transgenes, tissue-specific knock-outs using Cre-loxP and Flp recombinases and Recombination-mediated Cassette Exchange (RMCE), BAC transgenics, BAC-Trap, RiboTag, and other specialized technologies, facilitating the advances of our DRC investigators in genetically modified mice. The **Human Genetics Core** (Core D) has expanded its genotyping capabilities, adding specialized chips including the Cardio-Metabochip, the Immunochip, the Exome chip, and the HumanMethylation450 DNA Analysis BeadChip. Exome and targeted DNA sequencing, and induced pluripotent stem cells (iPSC) have been added. All of these changes and new services will be presented throughout this year in upcoming newsletter features.
2013 DERC P&F Grants AWARDED

Pilot and Feasibility Projects in Endocrinology & Diabetes
Pilot & Feasibility Program, Director: Peter Tontonoz

On behalf of the UCSD/UCLA Diabetes Research Center Pilot and Feasibility Grant Committee, the UCSD/UCLA DRC Center is delighted to announce that we have awarded 7 outstanding projects for seed funding in 2013 out of 22 superb applications. The number and quality of the applications is clear evidence for the remarkable scientific environment that exists in our universities for supporting diabetes research especially among promising young scientists. The UCSD/UCLA DRC funds four grantees per year at approximately $40,000-$50,000.

THE UCSD/UCLA DERC is Proud to Announce the 2013 P&F AWARDEES:

2013 Junior Faculty Developmental Award winner:
• Jun Sok Lee, PhD, UCSD, for the proposal "Fractalkine in Type II Diabetes".

P&F awardees:
• Ruchi Mathur, MD, Cedars-Sinai, for the proposal "Small Intestinal M. smithii Colonization and Cardiometabolic Genes in the Pathophysiology of Diabetes" partnered with Cedars-Sinai DRC Clinical Scholars award
• Sangeeta Dhawan, PhD, UCLA, for the proposal "Identification and targeting of small molecules for promoting beta cell regeneration" partnered with UCLA DRC CTSI award
• Christian Metallo, PhD, UCSD, for the proposal "Targeting the mitochondrial pyruvate carrier to reprogram central carbon metabolism"
• Da Young Oh, PhD, UCSD, for the proposal "Characterization of distinct subpopulations of hepatic macrophages in the context of diet induced obesity and insulin resistance" partnered with UCSD DRC Dean’s award
• Satchinananda Panda, PhD, The Salk Institute, for the proposal "Time-restricted feeding as a viable lifestyle intervention to reduce body weight and improve metabolism"
• Neal K. Davaraj, PhD, UCSD, for the proposal "Amplifying PET Imaging Signals for In Vivo Detection of Pancreatic Beta-cells" partnered with UCSD DRC CTRI award

Please join us all in congratulating these promising young investigators and we all look forward to seeing the fruits of their research in the literature and future DRC meetings. See a full history of our P&F awardees at: http://drc.ucsd.edu/pf/award-history.shtml

Final report and presentation at the annual retreat
A report on each pilot and feasibility study conducted will be provided at the end of the study period and an update will be provided yearly for four years after the completion of the award. These brief reports will contain professional career status at the time of the award and at the time of the report; an overview of the project including its significance and salient results; a list of resulting publications; and peer-reviewed subsequent funding in the same or related areas. Funded P&F investigators will attend the annual DERC retreat as well as a meeting of Regional P&F awardees, and present the results of their work in the year immediately following their award. Travel to these meetings will be charged to the individual P&F awards.
**NEW CORE Opens 5/1/2013**

**Novel Target Discovery and Assay Development Core**

Julian Whitelegge

The Novel Target Discovery and Assay Development Core (NTDAC) will provide investigators at UCLA, UCSD, the Salk Institute and Cedars-Sinai with consultancy and a suite of state-of-the-art molecular measurements not available from other national resources. The new NTDAC core assembles a comprehensive and highly specialized core with expertise in biological mass spectrometry and proteomics (Julian Whitelegge Ph.D., Director), as well as ELISA assay development (Peter Tontonoz M.D. Ph.D., co-director). Strengths of this biomedical core include the extensive expertise of the core leadership in diabetes research, wide experience in protein and peptide analysis, access to bioinformatics resources, and the collegial outreach of NTDAC leadership to DRC investigators to assist in the strategic planning and execution of studies relevant to the DRC mission.

The objectives of the new core can be summarized in five aims.

**A) Novel target discovery and assay development core user interface.**
Responsive consultation to streamline direct analysis of proteins and peptides.

**B) Discovery mass spectrometry services and bioinformatics.**
Experimental approaches to discover new diabetes-related proteins and peptides.

**C) Biomarker qualification, immunocapture and top-down mass spectrometry.**
Qualification of lead proteins and peptides with respect to biological function.

**D) Assay construction for novel peptides and proteins.**
Development and optimization of reliable protein and peptide assays for advancement toward the clinic.

**E) ELISA services for novel assays.**
Provision of unique, newly developed translational assays for use in diabetes care.

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**Novel Target Discovery and Assay Development Core**

*From molecular discovery to translational research*

- Cloning
- Proteomics
- ELISA

Timely, efficient, top-quality and cost-effective proteomic Mass-Spec discovery and subsequent assay development services.

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<th>Bioinformatics and proteomic database development</th>
<th>Mass spectrometry services</th>
<th>Assay construction for novel peptides and proteins</th>
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<tr>
<td>Discovery mass spectrometry</td>
<td>Protein and peptide discovery. Protein and peptide validation.</td>
<td>Peptide and antibody assembly and assay construction and validation</td>
<td>ELISA implementation for Novel clinical/ translational assays in rodents &amp; humans</td>
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The overarching function of the Novel Target Discovery and Assay Development Core (NTDAC) is to enable DRC members to investigate a clinically relevant research question in an open ‘discovery’ mode, from mouse to cell to patient in an efficient, cost-effective and expedited fashion. Discovery proteomics and peptidomics mass spectrometry experiments will reveal potential new biomarkers that will be qualified and validated before development of robust clinical ELISA assays for improving patient outcomes.