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The Core Fall 2008

Emory University School of Medicine Corelab Publication

Welcome to the Fall 2008 Core Newsletter. This fall the cores at Emory have undergone several exciting changes. The School of Medicine and the University combined their respective Electron Microscopy Cores to form the Robert P. Apkarian EM Core (read more about this in this issue of the

newsletter). On the last page of this newsletter we have begun compiling a list of all the cores across Emory. If you have a Core you would like to add please email us at corelabs@emory.edu Visit our website at <http://corelabs.emory.edu>

New pricing for the School of Medicine facilities are being formulated and will go into effect on January 1, 2009. Further announcements will be forthcoming.

Robert P. Apkarian Integrated Electron Microscopy Dedication, Open House, and Welcome

A warm thank you to all of the members of the Emory community who joined us on September 19, 2008 for the dedication of the Robert P. Apkarian Integrated Electron Microscopy Core. We had several special guest speakers including, Dean Bobby Paul, Professor Lanny Liebeskind, and Professor Juliette Apkarian. Their remarks about Rob, Emory, and the newly consolidated facility provided us with an exciting starting point from which to continue Rob's legacy and develop new areas of electron microscopy at Emory. My staff and I welcome you to visit our facility to discuss projects involving all aspects of electron microscopy.

I am looking forward to continuing the development of state-of-the-art electron microscopy at Emory. We have a wonderful foundation, from which to begin, which includes: the facility that Rob designed; the current equipment as well as the EM techniques employed; a great staff consisting of our

technical director, Hong Yi, and EM technologist, Jeannette Taylor. I am currently upgrading the facility with instrumentation for cryo-transmission electron microscopy (cryo-TEM); this includes the addition of a new CCD camera and cryo-ultramicrotome. We are truly an integrated electron microscopy facility in that we are able to provide both conventional SEM/TEM and well as cryo-HRSEM and cryo-TEM technologies for the community.

Briefly, our principle mission is to provide Emory researchers with the best imaging resources available to explore, at the micro- and nano-scale, the ultrastructural details of complex biological and chemical systems. We accomplish this by continuing to develop and improve the capabilities of our facility through upgrading the equipment, advancing novel methods for specimen preparation, and adding methods for computational analysis.

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New Cores Program Offers Value To Emory Neuroscientists

The Emory Neuroscience NINDS Core Facilities grant (P30 NS055077, Allan Levey, MD, PhD, PI) is pleased to offer valuable scientific services for Emory University neuroscientists, with generous subsidies available to NINDS funded investigators and others in the Emory Neuroscientist community. The cores and core directors participating in the program are



The Mission of the EBSC: *The overarching goal of the EBSC is to link Human Genetics to health and disease by providing a "center of excellence for experimental studies in genetic and genomic biomarkers"*

Proteomics (Junmin Peng, PhD, core director)

Microscopy (Gary Bassell, PhD, core director)

Neuropathology/Histochemistry (Marla Gearing, PhD, core director)

Viral Vector (Kerry Ressler, MD, PhD, core director)

Genetics (Mark Bouzyk, PhD, core director)

We are nearing the end stages of development of an innovative web based tool which will provide comprehensive information on each core and will manage and track all core-related requests. In the meantime, if you are interested in using any of these services, please contact either the relevant core director or the grant administrator Stacy Heilman, PhD, stacy.heilman@emory.edu or 404.727.4927 to inquire about placing orders and requesting the subsidy.

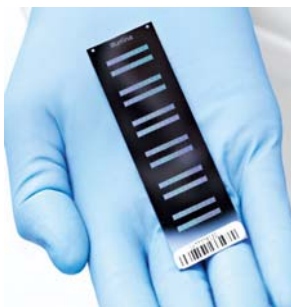
The New Emory Biomarker Service Center (EBSC):

Background: Following the recent and successful relocation to Clinic B 1365B Clifton Road, the Center for Medical Genomics, WCI Microarray Core and Yerkes Microarray Core have now **merged and consolidated** into **one entity** and have *expanded* to create a new facility called the **Emory Biomarker Service Center (EBSC)**. This new entity can now take advantage of:

- * Economies of scale
- * An enhanced service for **the entire Emory community**
- * A **'critical mass'** of expertise in many areas of genomics and microarray technologies supported by eight staff
- * All work carried out in a Clinical Laboratory Improvement Amendments (**CLIA**) certified environment

More details can be found at www.corelabs.emory.edu/biomarker

CLIA certification provides a unique opportunity; the ability to conduct research and develop genetic tests in a clinical setting. This allows delivery of



beneficial translational medicines by moving cutting edge research discoveries into diagnostic tests and disease management tools sooner rather than later.

Key Services offered at the EBSC include:

Nucleic acid preparation and quality control

- **DNA isolation** from fresh, frozen and fixed tissues (including saliva, whole blood, buffy coat)
- **RNA isolation** from formalin-fixed tissues
- DNA/RNA QC

Cycle sequencing on ABI capillary systems
Microsatellite genotyping

Whole genome and custom **SNP genotyping**

Whole genome and custom **methylation profiling**

Whole genome expression microarrays

- **Illumina** Whole Genome Arrays
- **Affymetrix** GeneChips & Exon arrays

Whole Genome DASL expression analysis of **FFPE tissues**

MicroRNA profiling (TaqMan Low Density Arrays and Illumina Platform)

AB **TaqMan Real-time PCR** Validation (AB7900)

Downstream **Data Analysis**

Protein microarrays



The EBSC will be co-directed by Dr. Mark Bouzyk and Dr. Carlos Moreno.

www.corelabs.emory.edu/biomarker

In the meantime, please direct any questions to Dr. Carlos Moreno,
Email:

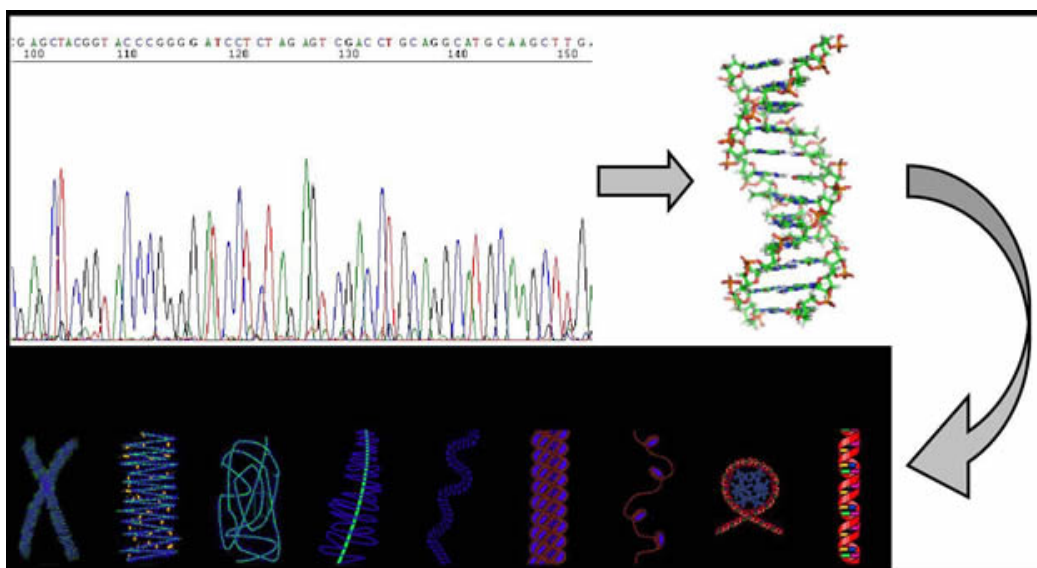
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The new Emory Biomarker Service Center (EBSC):



The Mission of the EBSC: The overarching goal of the EBSC is to link Human Genetics to health and disease by providing a “center of excellence for experimental studies in genetic and genomic biomarkers”-

from disease susceptibility genetic association studies to diagnostic development in order to ‘help clinical and research investigators do genetics and genomics’. It supports basic and translational research that utilizes high-throughput platforms for analysis at the RNA and DNA level. The Service Center supports all Emory investigators, is non-profit and is mandated to operate nationally and globally. It has close interactions with the Human pathology tissue, cell and microscopy imaging, and biostatistics cores.

A few Important Goals include:

To place low, medium and high throughput genomic technologies within the reach of the investigator – from genetic sample management and Nucleic Acid extraction to sequencing and genotyping, methylation, miRNA and whole genome expression profiling

To help clinical and non-clinical investigators in all therapeutic and disease areas benefit in their own studies from the new opportunities arising from the Human Genome Project – by providing **consultation**

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ER+PR-HER2+
ER+PR-HER2-
ER-PR-HER2+



To realize opportunities in **predictive medicine** by utilizing novel approaches in **Pharmacogenomics** (the use of genetic analysis to predict drug response, efficacy and safety based on heritable traits) and support all clinical trials

To use **Epigenetics** to understand dynamic aspects of the genome in a more holistic manner including interactions between variations in the genome and other downstream targets such as chromatin, DNA methylation and gene expression

The EBSC will be co-directed by Dr. Mark Bouzyk and Dr. Carlos Moreno.

Our website is under development and our temporary web address is <http://www.corelabs.emory.edu/biomarker> . A new link will be available shortly. In the meantime, please direct any questions to

Dr. Carlos Moreno, Email: cmoreno@emory.edu, Tel: 404 712 2809 or

Dr. Mark Bouzyk, Email: mbouzyk@emory.edu, Tel: 404 778 8558

Fall Updates from the SOM Flow Cytometry Core

In April 2008, the SOM Flow Cytometry Core Facility added a new member to its staff. Ms. Sommer Durham comes to us from Macon, Ga., where she was employed as a Laboratory Research Assistant in the Department of Basic Sciences at Mercer University School of Medicine. Ms. Durham completed her B.A., Biochemistry and Molecular Biology, University of Georgia, Athens, GA and M.S., Biology, Georgia College and State University, Milledgeville, GA., and brings a wealth of talent and experience to our facility. Since her hire date, Ms. Durham has been trained in the operation of the sorter cytometer and continues to hone her skills in the sorter lab, having mastered the FACS-Vantage cell sorter as well as the FACSAria cell sorter.

In May 2008, the SOM Flow Cytometry Core Facility added a new sorter to its inventory, the FACSAria II, Becton Dickinson. This model sorter has capabilities that include 3-lasers (407 violet, 488nm blue, 633 red) and 11-color detection. In addition, it is capable of single-cell deposition onto cell-culture plates/slides, 4-population sorting and high-throughput sorting. The FACSAria II has passed its "testing phases" and is now in "production-mode" and is available to our clients.

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BIMCORE News

GeneSpring GX 10.0

We are pleased to announce the availability of Agilent's GeneSpring GX 10.0 software. This new version provides powerful statistical tools for fast visualization and analysis of expression data. The package provides an interactive desktop, which enables rapid and reliable identification of targets that are statistically and biologically meaningful. Please see www.bimcore.emory.edu/Services/GeneSpring for details on how to acquire the package. You may also contact Steve Pittard at wsp@emory.edu for more information. Important features and capabilities include:

- **New Applications** - Detect significant differences in alternative splicing events, identify differentially expressed microRNAs and use TargetScan information to identify their gene targets, analyze realtime PCR data and build relevant biological interaction networks.
- **Guided work flows** – For new users, the workflows guide you through typical analysis with limited decision points while advanced workflows allow expert users to access all GeneSpring tools and define parameters and cut-offs for each analysis. Workflows exist for finding differentially expressed genes for a variety of arrays including Affymetrix (Expression, Exon), Agilent (one and two color), as well as Illumina Beadchips Expression Array.
- **Classification Algorithms** – Use GeneSpring's classification tools on training set samples to identify entities whose patterns of expression correlate with disease phenotypes or other qualitative class labels and use them to classify unknown samples.
- **Pattern analysis** – Uncover interesting trends and patterns in your data using a variety of cluster analysis tools and rapidly visualize your data using a rich set of graphics tools.
- **Biological Context** – Place statistically significant results into a biological context using GO analysis, Gene Set Enrichment Analysis (GSEA), Gene Set Analysis (GSA), and pathway analysis.
- **Jython Application Programming Interface (API)** – Use JYTHON to fully integrate with the R programming language to extend GeneSpring GX functionality.

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