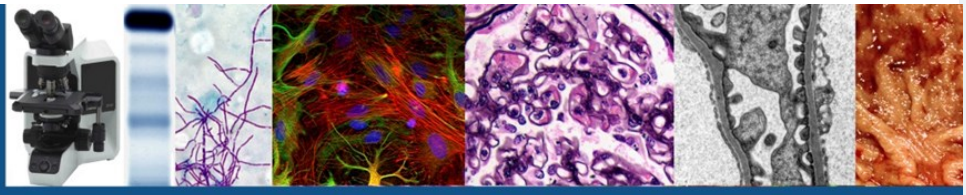
THE PATH WAY

September 2013 **Volume 4, Issue 3**

MUSC
MEDICAL UNIVERSITY of SOUTH CAROLINA



DEPARTMENT of PATHOLOGY & LABORATORY MEDICINE

Mary S. Richardson, M.D.

Inside this issue:

Cancer Genomics: A Perspective from the University of Pennsylvania

By Julie Woolworth Hirschhorn

On August 20th, 2013 Dr. Robert Daber presented a seminar entitled "Clinical Oncology Next Generation Sequencing, from Conception through Launch". Dr. Daber is the Technical Director of Clinical Genomics at the Center for Personalized Diagnostics at the Hospital of University of Pennsylvania. He was hired to build a CAP/CLIA compliant genomics laboratory equipped with massively parallel sequencing (MPS) and microarray capabilities to assist in the clinical utility of molecular genomic diagnostics for personalized medicine. This process, including obtaining the regulatory approval, developing the business plan, hiring personnel, working out billing and reimbursement, building the informatics pipeline for the genomic information, and development and validation of the clinically offered MPS sequencing tests took approximately two years from inception. On Valentine's Day of this year, the Clinical Genomics laboratory began offering cancer panel targeted sequencing on the Illumina MiSeq platform for acute myelogenous leukemia (AML), glioma, lung cancer, and melanoma patients.

The use of the MPS technology in clinical laboratories is a growing industry. For the last few years, the paradigm has been to test one or two genes associated with targeted therapy for a number of tumor types. However, the growth of the targeted therapy industry has promoted the rise in tumor-associated gene testing in a larger variety of tumor types. One example is the BRAF inhibitor, vemurafenib. This drug specifically targets activated BRAF and, when given to patients harboring a mutation in the 600 codon of the BRAF gene, the drug was shown to improve survival, reduce tumor burden, and control disease compared to standard chemotherapy. Many clinical laboratories across the United States, including MUSC, are still using single gene algorithmic testing to analyze tumors. At MUSC, with most solid tumors that are currently being tested for tumor-associated gene mutations, the laboratory assesses a minimum of two different genes using two different real-time PCR assays. The field of cancer genomics has grown significantly the past few years due to the discovery of mutations and development of new therapies, many of which are currently in various phases of clinical trials. It is inevitable that the number of genes relevant to therapy selection will increase in the next few years. Using the current algorithmic methodology of testing, the addition of new gene mutation tests will increase turn-around-time waiting for one test to finish before beginning another, and significantly increase the cost of reagents and time when performing multiple analyses on multiple genes.

This newsletter is made possible by the collaborative contributions of information of MUSC's Pathology and Laboratory Medicine Faculty and Staff. The success of this publication is dependent upon this support. Thank you for your interest, time and information. For inquiries, suggestions or submission information please contact Lori Roten (roten@musc.edu).

Cover Story Cont'd The use of a high-throughput, massively multiplexed assay that can look at all of the potential genes of interest at a single time will make economic sense and provide better patient care.

There are many benefits to using MPS technology to assess the genomic status of a patient's tumor, but as mentioned in Dr. Daber's talk, there is much to consider when making the decision to change to such a vastly different technology and to change the paradigm from the current testing algorithms. First one needs to have a bioinformatics pipeline in place that is thoroughly verified and reliable. There are many ways to achieve a bioinformatics pipeline. One laboratory may build a pipeline from scratch, as in the case of Dr. Daber. But as he mentioned, there are also very good commercial software and freeware available for institutional purchase that can be used to achieve the same goal. It is important to know the laboratory's volumes and how to maximize each run of the assay. It is possible to generate multiple panels for multiple conditions that can run at the same time. With this type of planning, it is possible to ensure that each run is at full capacity and most cost effective. There also needs to be education for the technologists, pathologists, and clinicians regarding the results and interpretation of the testing. With this type of testing there are a variety of results that can be associated with a patient's assay including variants of known clinical significance (like the BRAF results), normal or only benign changes, and variants of unknown clinical significance. Another consideration when beginning this testing is to decide what to report, how to report it, and what to place in the electronic medical record. It was evident from Dr. Daber's talk that each of these considerations is worth the effort. This type of technology in the clinical laboratory has the potential to alter the scope of personalized medicine offered at MUSC, just as it has done at the University of Pennsylvania.

SERVICE AWARDS

The Annual Service Awards Ceremony for the Medical University of South Carolina was held on Tuesday, September 10, 2013 at 2:30 pm in the Drug Discovery Auditorium. Employees who have achieved a milestone of 10, 20, 30, 40, or 50 years of service between July 1, 2013 and June 30, 2013 were recognized at the ceremony.

EMPLOYEE NAME	POSITION	YRS / SERVICE
EISENHART, TONY	INFORMATION RESOURCE CONSULTANT I	10
HANTON, CAROL A.	SECRETARY	10
HOPE, DOLLY	FISCAL TECHNICIAN	10
MENDOZA, ANA IBETH	HISTOLOGY TECHNOLOGIST	10
NASSE, CHERYL LYNN	MEDICAL TECHNOLOGIST ADVANCED	10
PACH, DANIEL E	MEDICAL TECHNOLOGIST ADVANCED	10
PUTMAN, NANCY R	PHLEBOTOMY TECHNICIAN II	10
RIDDLE, MARY DOROTHY	MEDICAL TECHNOLOGIST ADVANCED	10
ROSS, PHYLLIS DENEEN	ADMINISTRATIVE SERVICES COORDINATOR	10
SHEALY, SARA LOUANN	MEDICAL LAB CLERK ADVANCE	10
SLAY, BRIAN R.	MEDICAL TECHNOLOGIST ADVANCED	10
WON, JE-SEONG	RESEARCH ASSISTANT PROFESSOR	10
FIELDING II, JULIUS P.	PROGRAM COORDINATOR I	20
GAILLIARD, EDNA P.	MEDICAL TECHNOLOGIST	20
HORNE, BEVERLY DAVIS	LABORATORY MANAGER	20
OSWALD, MELANIE W	MEDICAL TECHNOLOGIST COOR/LINE SUPERVISOR	20
RICHARDSON, MARY	PROFESSOR & INTERIM CHAIR	20
STOREN, SALLIE S.	MEDICAL TECHNOLOGIST	20
WASHINGTON MIKELL, RONDA R.	MEDICAL TRANSCRIPTIONIST	20
BAUTISTA JR., FRANCISCO P.	MEDICAL TECHNOLOGIST	30
CONSTANTIN, MARY ANN	MEDICAL TECHNOLOGIST ADVANCED	30
SILLIVANT JR., RICHARD E.	MEDICAL TECHNOLOGIST SPECIALIST	40

CONGRATULATIONS!

Dr. Guest joined Pathology and Laboratory Medicine on 7/1/12 as a Post Doc in Dr. Ethier's Lab transferring from The Karmanos Cancer Institute at Wayne University in Detroit, Michigan. He was promoted on 7/1/13.

Research Assistant Professor 7/1/13

STEPHEN GUEST, PH.D.

WELCOME!

Dr. Duong joined to Pathology and Laboratory Medicine on 9/1/13 from the LSU Health Sciences Center, School of Medicine, Department of Pathology in New Orleans, Louisiana.

Assistant Professor 9/1/13

ANGIE DUONG, M.D.

WELCOME! Pathologist Assistant

I grew up in Merritt Island, Florida (space shuttle area) and went to The University of Florida for undergrad (Go Gators!). I moved to Baltimore for PA school at the University of Maryland and then returned to Florida to work at Shands at UF before joining MUSC this September. My fiance matched here for Anesthesia and here I am.

Rachel Mariotti

Congratulations!

To our

HLA Laboratory

on a successful unannounced **American Society for Histocompatibility and Immunogenetics (ASHI) inspection.** The ASHI inspectors did not find any deficiencies and were very complimentary of the department and staff for maintaining ASHI's extremely high standards for laboratory performance and patient service. Of note, the inspectors found the staff to be open, friendly, and helpful. The inspectors shared during summation that it is evident the HLA laboratory staff truly care about the patients and provide quality services to transplant.

CONGRATULATIONS DR. STEPHEN GUEST!

Luke Robert Guest

June 30, 2013

8 lbs. 8 ozs.

CONGRATULATIONS DR. TONY CHEUNG!

Jayden W. Cheung

August 5, 2013

7 lbs. 6 ozs.

CONGRATULATIONS DR. HEIDI HAMILTON!

Charles "Charlie" Michael Hamilton

August 8, 2013

9 lbs 3 ozs.

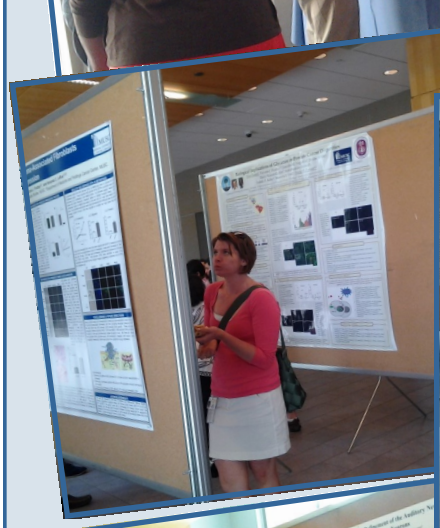
DATES TO REMEMBER:

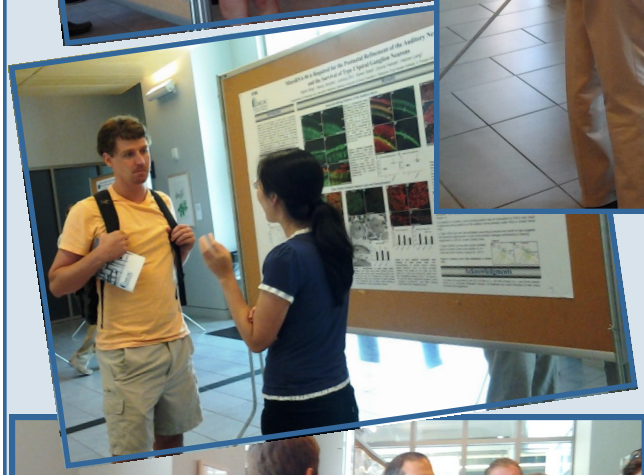
- RESIDENT'S RETREAT OCTOBER 19TH - DR. SELF'S BEACH HOUSE
- ALL HAND'S MEETING NOVEMBER 20TH IN HCC ROOM 120

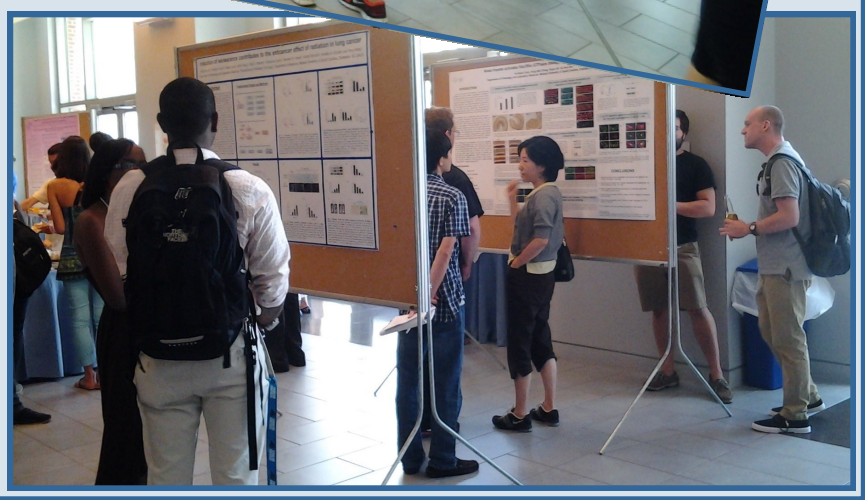
HOLIDAY PARTY
December 13th at Founders Hall in Charlestowne Landing

RESIDENT YEAR END PARTY
May 4, 2014 at Founders Hall in Charlestowne Landing

8TH ANNUAL RESEARCH DAY 2013







RESEARCH DIVISION UPDATE

Statistics for the Division of Research from July through September.
Twelve grant proposals were submitted requesting $830,304 in total first year costs.
Also, during this period seven grants were awarded totaling $1,048,959.

Congratulations and many thanks to everyone involved in obtaining these awards.

Bradley Schulte, Ph.D., Vice Chair of Research

SUBMITTED 7/1/2013 – 9/15/2013:

Tiffany Baker, Ph.D.
Title: Heat Shock Protein-Induced Protection Against Cisplatin-Induced Hair Cell Death $46,466 - Proposed Start Date 9/28/13

Hui Wing Cheung, Ph.D.
Title: Functional Genomics Approaches to Identify Ovarian Cancer Genes $149,999 - Proposed Start Date 2/1/14

Hainan Lang, Ph.D.
Title: The Role of MicroRNAs in the Stial Atrophy of Metabolic Presbyacusis $45,000 - Proposed Start Date 2/1/14

Hainan Lang, Ph.D.
Title: Preventing Hearing Loss in a Mouse Model of Human Deafness $55,000 - Proposed Start Date 4/1/14

Amanda LaRue, Ph.D. & Ryan Kelly
Title: Enhancement of Fracture Repair by Hematopoietic Stem Cells $96,600 - Proposed Start Date 10/1/13

Suhua Sha, M.D.
Title: A Rapid Assay for RNA Targeted Drugs $64,285 - Proposed Start Date 8/1/13

Bart Smits, Ph.D.
Title: A Novel Genetic Rat Model to Study Non-Protein Coding Mechanisms Underlying Racial Disparities in Breast Cancer $50,000 - Proposed Start Date 9/1/13

Bart Smits, Ph.D.
Title: Translating non-protein coding breast cancer susceptibility loci into mechanisms and novel targets for prevention and early intervention strategies $100,000 - Proposed Start Date 10/1/13

Demetri Spyropoulos, Ph.D.
Title: Development Transcription Factors in Prostate Cancer $24,866 - Proposed Start Date 3/1/14

Demetri Spyropoulos, Ph.D.
Title: Cryopreservation of Cell Viability and Architecture in Various Tissues $138,154 - Proposed Start Date 4/1/14

Yong Wang, M.D., Ph.D.
Title: Targeting Twist1 for Breast Cancer Treatment $50,000 - Proposed Start Date 9/1/13

Dennis Watson, Ph.D.
Title: REU Site: Next-Generation Bioinformatics for Genomics -enabled Research in the Life Sciences $9,934 - Proposed Start Date 4/1/14

AWARDED 7/1/2013 – 9/15/2013:

Tiffany Baker, Ph.D.
Title: Heat Shock Protein-Induced Protection Against Cisplatin-Induced Hair Cell Death $35,531 - Start Date 9/28/13

Victoria Findlay, Ph.D.
Title: MicroRNA mediated negative regulation of Caveolin 1 as a biological mechanism driving breast cancer disparities $60,000 - Start Date 9/6/13

Amanda LaRue, Ph.D.
Title: Targeting HSC-Derived Circulating Fibroblast Presursors in Pulmonary Fibrosis $490,000 - Start Date 7/1/13

Amanda LaRue, Ph.D.
Title: Hematopoietic Stem Cell-Derived Carcinoma Associated Fibroblasts in Tumor $128,110 - Start Date 7/9/13

Amanda LaRue, Ph.D. & Ryan Kelly
Title: Kelly IPA: Enhancement of Fracture Repair by Hematopoietic Stem Cells $96,600 - Start Date 10/1/13

Bart Smits, Ph.D.
Title: A Novel Genetic Rat Model to Study Non-Protein Coding Mechanisms Underlying Racial Disparities in Breast Cancer $50,000 - Start Date 9/1/13

Demetri Spyropoulos, Ph.D.
Title: A Human iPSC-Derived Adipogenesis Assay Plate for High Throughput Screening of Obseogens $89,985 - Start Date 9/18/13

David Turner, Ph.D.
Title: Glycation as a Mechanism Promoting Cancer Disparity $48,733 - Start Date 7/3/13

Yong Wang, M.D., Ph.D.
Title: Targeting Twist1 for Breast Cancer Treatment $50,000 - Start Date 9/1/13

ARRIVALS / DEPARTURES

ARRIVALS:

Angie Duong, M.D., joined as a Faculty Member in Clinical Pathology on September 1, 2013

London Penlan, joined Dr. Cheung's Lab as a Research Specialist I on September 2, 2013.

Xian-ren Wang, joined Dr. Sha's Lab as a Visiting Scholar/Student on September 12, 2013.

DEPARTURES:

Tihana Rumboldt, faculty member, left Anatomic Pathology on August 23, 2013.

Ludmila Kochutin, left as a Bone Pathology Assistant for Dr. Carrick at Oconee Medical Center on August 31, 2013.

Carol Moskos, Research Specialist

Nomination:

Carol is always performing at the top of her game and represents excellence at all she does. She is an asset to MUSC and our patients!

Other Nominees: Tony Eisenhart, Kevin Hildreth, Rhonda Mikell, Trudie Shingledecker, and Nancy Smythe.

UPCOMING MEETINGS

PATHOLOGY SPRING SYMPOSIA

APRIL 28, 2014 - MAY 3, 2014

AT KIAWAH ISLAND GOLF RESORT

ASCP 2013

BEYOND THE LAB

SEPTEMBER 18,-21, 2013

CAP'13

October 13-16, 2013

THE PATHOLOGISTS MEETING
GAYLORD PALMS ORLANDO

MUSC Department *of* Pathology & Laboratory Medicine Mission Statement:

To serve patients, health care providers, research scientists, scholars, and society by providing excellence and innovation in diagnostic services and educational resources in a respectful, professional and culturally diverse atmosphere.

Vision:
To become a preeminent leader in academic anatomic and clinical pathology while translating basic science discovery to improved clinical care.

www.musc.edu/pathology