



**COLLEGE OF MEDICINE**

*Advancing health and wellness through education, research and patient care.*



**THE UNIVERSITY OF ARIZONA  
HEALTH NETWORK**

# Department of Pathology Presentation to Dr. Garcia

UAHN Clinical Laboratories  
September 8, 2014

Presented by: Maria Proytcheva, MD  
Medical Director, UAHN Laboratories





## UAHN Clinical Laboratories

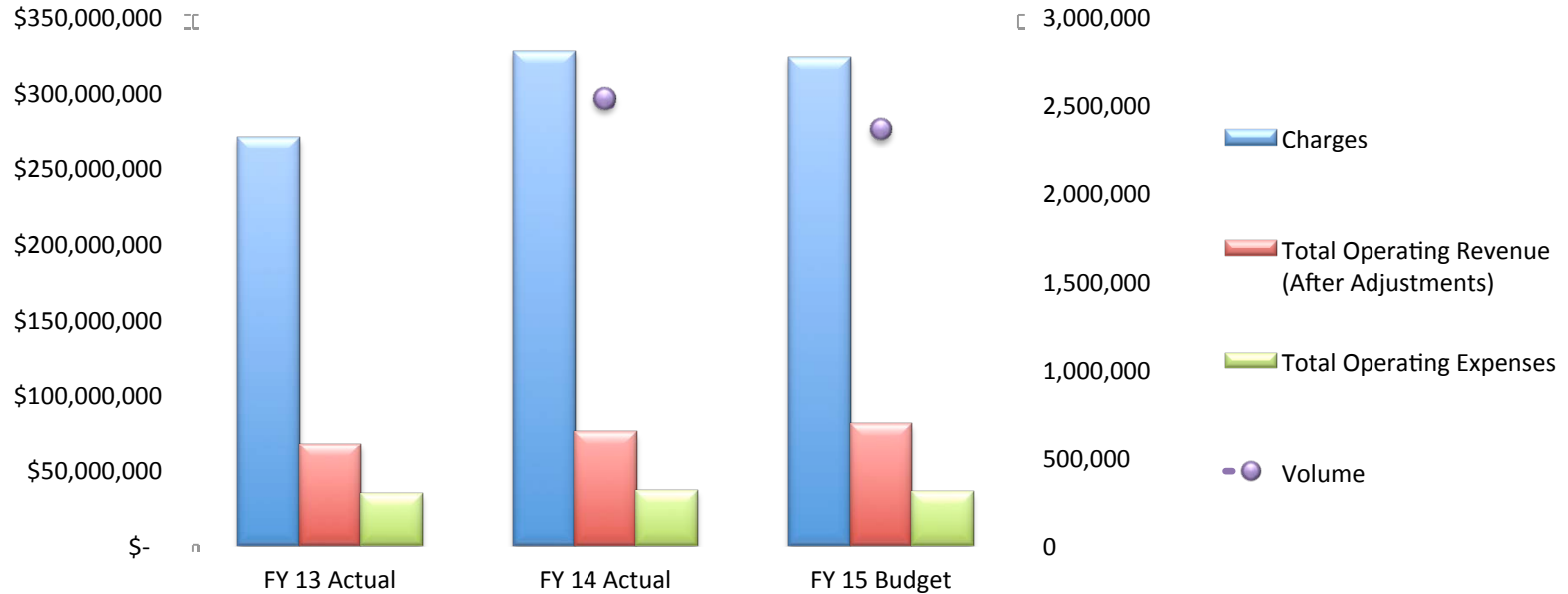


**Meghan Shapiro, MHA**  
**Sr. Administrator**

- **Provide essential Laboratory Medicine support to the clinical, education, and research missions of the COM and UAHN:**
  - **UAMC, University, South and North Campuses & Orange Grove**
  - **One laboratory information system (Sun Quest)**
    - **Allows sharing of information, utilization of laboratory resources, and opportunities to reduce costs**
- **Lab services for outside healthcare clients: Kindred Hospital, TMC, St. Mary's Hospital, and Payson Regional Medical Center**
- **Focus on efficiency of lab operations and assuring high quality of testing at low cost**



## UAHN Clinical Laboratories



- **Clinical Staff FTEs – 219.20**
- **Accreditations – CAP, AABB, FACT, CLIA, ASHI, FDA**



## Challenges

- **We are under the pressure of reduced reimbursement at the federal and payer level, coupled with an increased emphasis on quality**
  - **Implement new technologies that improve quality and LEAN processes that increase efficiency and lower costs**
  - **Focus on test turn-around time impact on quality of patient care**
  - **Optimize test utilization: Eliminate unnecessary testing to improve patient care and reduce cost**



## Laboratory Medicine Service Lines

- **Provide wide variety of laboratory tests**
- **Interpretation of test results and clinical consultations**
- **Participate in institutional initiatives focused on improving quality of patient care and reducing costs**
- **Support research programs by advising on appropriate testing, providing lab testing at discounted prices, and supporting scientists in send-out testing**
- **Anatomic and clinical pathology training for residents, fellows, and medical students**



## Lab Services Unique to Our Region

- **Special chemistry and toxicology**
- **Virology and molecular microbiology**
- **Hematopathology consultation**
- **Leukemia & Lymphoma flow cytometry with detection of minimal residual disease**
- **Constitutional and neoplastic cytogenetics and FISH for leukemia and lymphoma**
- **Histocompatibility testing**



## UAHN Clinical Laboratories Emphases

- **Strong Clinical and Anatomic Pathology services are indispensable to the success of any academic medical center**
- **Optimize laboratory testing to improve patient care as well as for understanding of disease processes at molecular, individual and population levels**
- **Provide personalized medicine as well as support for molecular pathology research**
- **Population health and population outcome studies: The clinical lab is the nexus of diagnostic data, clinical correlation and models of disease pathogenesis**
- **Provide excellent environment for training of pathology residents and physician scientists of the future**
- **To accomplish these aims, we have a highly competent team of anatomic and clinical pathologists & laboratory scientists, who are leaders in their fields**





## Clinical Chemistry and Toxicology



- **Barun De, PhD, Division Chief**
- Implement new technology - gas chromatography/mass spectrometry for confirmation of all drugs of abuse tests following an initial screening assay
- Provide clinical consultation for ordering and interpretation of test results
- New tests implementation to reduce TAT, improve patient care and reduce send out cost, i. e. Vitamin D & 4<sup>th</sup> generation HIV testing algorithm
- Clinical/translational interest:



- Variation in glycated hemoglobin (A1c) in different populations – Hispanics & Native Americans
- Pharmacogenomics of Clopidogrel: expression of P450 2C19 [CYP2C19] \*2 or \*3 allele





## Clinical and Molecular Microbiology



- **Natalie Whitfield, PhD, Division Chief**
- Microbiology, virology, serology, and molecular microbiology services
- Automated microbial identification system that uses an innovative MS technology - MALDI-TOF – for rapid identification of microorganisms to impact treatment decisions
- Key role in the Antimicrobial Stewardship Program, so each UAHN patient on antibiotic gets optimal therapy
- Outcome study: Early detection of *Candida spp.* & *Enterococcus* by PNA-FISH led to reduced bloodstream infection and mortality with UAMC recovered costs > \$2.6 million/year and saved 26 lives



## Transfusion Medicine and Blood Bank



- **Deborah Novak, MD, Division Chief**
- **Transfusion support for the UAHN Level 1 Trauma Center, Hem/Onc and outpatient infusion clinics, the HSCT and Solid Organ transplants programs, Diamond Children's Hospital (including Neonatal and Pediatric Critical Care), High-Risk Obstetrics, and ECMO service**
- **National studies participant:**
  - **Pragmatic, Randomized Optimal Platelets and Plasma Ratios (PROPPR) study**
  - **ABC-PICU study of the age of RBC units used in the care of pediatric patients**



## Special Coagulation and Point of Care Testing



- **Deborah Fuchs, Section Chief & POCT Medical Director**
- **Panels for special coagulation testing**
- **Mutational analysis for factor V Leiden and prothrombin mutation**
- **Provide patient specific narrative interpretation of coagulation lab results**
- **Point of Care Testing (POCT)**
  - **Support all inpatient and outpatient clinics of the UAHN**



## Hematology & Histocompatibility (HLA) & Immunogenetics



**C. Spier, MD**

- **HLA Lab Section Chief**
- The only hospital-based ASHI certified HLA laboratory in Arizona
- Provide essential support for solid organ and stem cell transplants
- In process of validating a stem cell engraftment assay
  
- **Medical Director of the UAHN, University & North Campuses and Orange Grove Labs**
  - Support inpatients and various outpatient clinics and UACC
  - Implement CellaVision, digital microscopy which will allow us to provide hematology expertise remotely



**Catherine Spier, MD**  
Chief

## Division of Hematopathology

- Essential support to adult and pediatric Hematology Oncology services at UAHN
- Examples of clinical application of precision medicine:
  - Accurate diagnosis of leukemia, myeloid and lymphoid neoplasms, benign hematologic disorders and bone marrow failure syndromes
  - Flow Cytometry Laboratory, Arizona leader
    - Essential to the rapid diagnosis of leukemia and lymphoma and monitoring the response to therapy, minimal residual disease (MRD)
    - Currently seeking Children's Oncology Group recognition in detection of MRD for pediatric acute leukemia
  - Cytogenetic studies
- National and international recognition in the field of lymphomagenesis and pediatric hematopathology



**Lisa Rimsza, MD**



**Deborah Fuchs, MD**



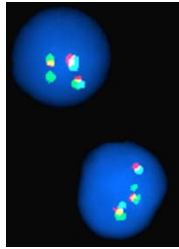
**Maria Proytcheva, MD**



## Cytogenetics



- **Arthur Brothman, PhD, Section Chief**
- **Restructured cytogenetics operation to be case (not technologist) specific**
- **Upgraded equipment and technology: FISH for multiple myeloma, CLL, and acute leukemia, IGH, MYC**
  - **Improve turnaround time and reduced cost of 588K/year**
  - **Established Pathology Resident and Fellow training program**
  - **Initial integration of the AZ Cancer Center/coordination with Fellows and Tumor Board**
- **Future goals: obtain COG/SWOG accreditation**
  - **Further integration with the AZ Cancer Center, molecular diagnostics and sequencing laboratory**
  - **Increased automation (through improved equipment) to maximize output while keeping staffing to a minimum**







## Collaboration with the University of Arizona Genetic Core Clinical Lab



**Michael Hammer, PhD**  
**Scientific Director**



**Maria Proytcheva, MD**  
**Medical Director**

- Whole exome/whole genome sequencing
- Successful CAP accreditation and CLIA certification, May 2014
- Essential contribution in obtaining CLIA certification:
  - The fantastic team of Dr. Michael Hammer
  - Department of Pathology faculty
    - Arthur Brothman, PhD
    - Lisa Rimsza, MD
    - Jennifer Thorn, MD
- Next step in establishing successful clinical operations
  - Need to establish billing and compliance structure
  - Hiring of a permanent medical director certified in Molecular Pathology or FACMG





## UAHN Clinical Laboratories' Future

- **Optimize laboratory testing to improve patient care and decrease cost**
- **Personalized medicine and precision health**
- **Population health and outcome studies**
- **Excellent teaching environment**