Department of Pathology
Presentation to Dr. Garcia

UAHN Clinical Laboratories
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UAHN Clinical Laboratories

- 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
- **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 & 4th 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

Leslie Boyer, MD
Toxicology Section Chief
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 - MALTI-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

- **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
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
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

- 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