Research at the Washington State PHL: Past, Current, and Future

William A. Glover II Ph.D., D(ABMM), MT(ASCP)

William.glover@doh.wa.gov
Disclosures

• NONE
WA State PHL Mission

Provide a wide range of diagnostic and analytical functions for the assessment and surveillance of infectious/communicable diseases, genetic conditions, as well as environmental contamination.
Basic vs. Applied Research

- **Basic**
  - Performed for knowledge enhancement
    - Example: Understanding how gliding motility works

- **Applied**
  - Performed to solve a practical problem of the modern world, rather than to acquire knowledge for knowledge sake
    - Example: Assay development for the detection of a pathogen or disease
Newborn Screening Research

**Past Research**
- Type 1 Diabetes
- Pertussis: Effectiveness of maternal vaccination during pregnancy
- Vitamin D and childhood brain tumors
- High throughput methods to measure childhood exposure to tobacco smoke

**Current Research**
- Lysosomal Storage Diseases detection

**Future Research**
- Use of DNA sequencing in newborn screening

Source: Dr. Gustavo Maegawa, Johns Hopkins Medicine

Source: http://www.abstruze.com/category/dna
Environmental Sciences Research

Past Research
- Isotopic Uranium, Plutonium, Americium, Thorium detection in water
- Diarrhetic Shellfish Poison (DSP) detection
- Speciated Arsenic in urine
- Metabolic Toxins Panel for urine

Current Research
- Saxitoxins (PSP) Detection
- Inorganic Arsenic in Shellfish

Future Research
- Mercury and Manganese in urine
- Cesium in seawater
Public Health Microbiology Research

**Past Research**
- Improved PFGE method development
- *Bordetella pertussis* PCR Assay
- Molecular detection of *Vibrio parahaemolyticus*
- Drug Resistance Screening by Sequencing (DRSS) for *Mycobacterium tuberculosis*

**Current Research**
- *Vibrio parahaemolyticus* virulence profiling
- Whole Genome Sequencing (WGS) of foodborne pathogens
- Carbapenem-resistant enterobacteriaceae (CRE) surveillance methods

**Future Research**
- Whole genome sequencing methods for drug resistance & bacterial typing
- Sensititre microbroth AST *Mycobacterium tuberculosis*
Research Challenges

Funding
- Shrinking grant awards
- Maintaining funding levels

IRB Approval
- Ethical debate
  - Metadata
  - Anonymous testing

Personnel
- Workload
- Expertise

Information Technology
- Software approval
- Infrastructure for future
Research Funding/Resources

Private Foundation Grants
- Genzyme
- Pacific Northwest Diabetes Research Institute
- A Sanofi Company

Federal Grants Funding
- FDA
- USDA
- CDC
- HRSA

Collaborative NIH Grants
- University of Washington
- Fred Hutchinson Cancer Research Center
- A Life of Science

Company Product Evaluations
- Hardy Diagnostics

APHL/CDC Contract Projects
- APHL

Laboratory Budget
- Washington State Department of Health

Development Contract Grants
Research Staffing

Committee on Postdoctoral Educational Programs (CPEP) Fellows in Clinical and Public Health Microbiology Directorship

Emerging Infectious Disease Fellows

Undergraduate and Graduate Students Interns

Oak Ridge Institute For Science and Education (ORISE) Fellows

Cultural Vistas International Fellows

WA PHL Research Scientists and Staff
Acknowledgements

- APHL
- Deborah Kim
- Lorelei Kurumski
  - WA State PHL
  - Dr. Romesh Gautom
  - Brian Hiatt
  - Santosh Shaunak
  - Blain Rhodes
  - Pam Gomes
Stay Tuned for Panel Q&A
PUBLIC HEALTH
ALWAYS WORKING FOR A SAFER AND HEALTHIER WASHINGTON