10 YEAR CELEBRATION
June 29, 2006

UCLA HIGH SPEED, HIGH VOLUME LABORATORY NETWORK FOR INFECTIOUS DISEASES

Scott P. Layne, MD
UCLA School Public Health
Highly Pathologic Avian Influenza

130+ Deaths  
228+ Cases  
50%+ Fatality

A Global Lab Against Influenza

During any given year, influenza epidemics kill 500,000 to 1 million people worldwide, and an apocalyptic pandemic could kill millions more. Yet such outcomes do not reflect influenza's full impact: millions of hospitalizations, secondary bacterial pneumonias, and mildly out-of-season infections in infants and young children. The World Health Organization (WHO) Influenza Program was established in 1998 to deal with these public health threats. Today, 111 national centers in 83 countries collect and screen about 750,000 samples each year from an estimated 600 to 1,200 million cases of influenza worldwide, and these WHO collaborating centers receive about 6,000 samples for further immunological and genetic characterizations. To better understand this network, we visited it in January and February in 2005. We also met with officials at the WHO headquarters in Geneva, Switzerland, and visited the Influenza Vaccine Development Laboratory at the University of Texas Medical Branch in Galveston, Texas.

The WHO Influenza Program has three main objectives: to improve the laboratory diagnosis of influenza, to better understand the epidemiology of influenza, and to develop and evaluate new vaccines. The program is based in Geneva, Switzerland, and is coordinated by a team of experts from the WHO and other international organizations. The program has developed a network of collaborating centers in countries around the world, and it provides support and assistance to these centers to help them improve their laboratory diagnostic capabilities and to better understand the epidemiology of influenza.

The program has also developed a number of new vaccines, and it is working to improve the effectiveness of existing vaccines. It is also working to improve the laboratory diagnosis of influenza, which is critical for the successful control of outbreaks. The program has developed a number of new diagnostic tests, and it is working to improve the sensitivity and specificity of these tests.

The WHO Influenza Program is an important resource for countries around the world, and it is helping to improve the laboratory diagnosis of influenza and to better understand the epidemiology of this important disease. It is also working to develop and evaluate new vaccines, and it is working to improve the effectiveness of existing vaccines. The program is an important resource for countries around the world, and it is helping to protect them from the threat of influenza.
REAL-TIME SURVEILLANCE

Samples → Actions
Surveillance
Today’s Dipsticks
Non-OTC

<table>
<thead>
<tr>
<th>Company</th>
<th>Time</th>
<th>CLIA Waved</th>
</tr>
</thead>
<tbody>
<tr>
<td>BD</td>
<td>15 min</td>
<td>No</td>
</tr>
<tr>
<td>Biostar</td>
<td>15 min</td>
<td>No</td>
</tr>
<tr>
<td>Zyme Tx</td>
<td>30 min</td>
<td>Yes</td>
</tr>
<tr>
<td>Quidel</td>
<td>10 min</td>
<td>Yes</td>
</tr>
</tbody>
</table>
## Tomorrow’s Dipsticks

**MULTIPLEXED**

**ISOTHERMAL AMPLIFICATION**

**TANGENTIAL FLOW**

<table>
<thead>
<tr>
<th>SAMPLE</th>
<th>RT</th>
<th>PCR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Detection + / –
Type A vs B
H Subtype H1 – H16
N Subtype N1 – N9

**Los Alamos National Laboratory**

---

**Virtual Warehousing**
Testing
Actionable Analysis
Speed ~ 20 TeraOps

XML Relational Database

- EPITYPE
- SAMPLE
  - GENOTYPE
  - PHENOTYPE
  - QA / QC
Impacts

• Health Care
• Agriculture
• Economic
• Psychology
• Government
• Corporate

FY06 $6,000,000 Congressional Appropriation
QIAGEN’s Role

Applications
- Animal & Veterinary Research
- Automated Applications
- Biosecurity & Biodefense

Products & Services
- RNA Stabilization & Purification
- RNA Cleanup & Concentration
- RT, PCR & Assays

New Methods, Materials & Supplies
- Emerging Infectious Diseases