Influenza Vaccine Summit

FluMist® (Influenza Virus Vaccine Live, Intranasal) Manufacturing Update

May 12, 2008
Atlanta, GA
MedImmune Prepared to Support Implementation of Recommendation for School-Aged Children

Number of Vaccinated Children 2-18 Yrs (Expected)

- Yellow bars represent total production capacity for fill/finish
- 20 M Doses Planned

- Vaccinated Children 2-18 (Expected)
- If Vax Rates = 50%

12M Doses Planned
2008-09 Season

- **Planned supply:** 12 million doses

- **August shipping is planned**
  - Vaccine availability in August would allow healthcare providers to reach an additional 10.7M children when these children are already in the doctor’s office*
  - Pediatricians begin to vaccinate when vaccine becomes available*
  - Early vaccination provides protection throughout entire season*

- **Distribution**
  - McKesson Medical-Surgical
  - Besse/ASD

- **Three new strains in vaccine**
  - Production is going well
  - All strains produced using reverse genetics

*Studies presented at Pediatric Academic Societies Meeting, May 2008
Reverse genetics is a method by which viruses such as influenza can be generated from segments of DNA.
Classical Reassortment

**Master Donor Virus**

- Six genes from MDV for ca, ts, att

**New Wild Type Strain**

- Hemagglutinin and neuraminidase genes from wild type for immunity

**Co-infect cells**

- 256 possible combinations

**6:2 Vaccine Seed Strain**
Reverse Genetics

Master Donor Virus Plasmids

- PB1
- NP
- PA
- PB2
- M
- NS

New Wild Type Strain Plasmids

- HA
- NA

Electroporate Vero cells

Only one possible combination

Six genes from MDV for ca,ts,att

Hemagglutinin and neuraminidase genes from wild type for immunity

6:2 Vaccine Seed Strain
Advantages of Reverse Genetics

- No genetic modifications introduced
  - Same vaccine seeds as classical reassortment method
  - Genome sequence equivalent to classical reassortant

- Timing of reverse genetics is predictable
  - Earlier start of manufacturing
  - Acceleration of vaccine release to the marketplace

- Further advantages
  - Removes risk of exposure to adventitious agents in the wild type isolate
  - Fewer random mutations observed
  - Identical bulk production process
# Candidate Vaccine Strains Made Using Reverse Genetics

<table>
<thead>
<tr>
<th>Season</th>
<th>H1N1</th>
<th>H3N2</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007-08</td>
<td>Solomon Islands/3/07(^1,2)</td>
<td>Wisconsin/67/05(^1,2)</td>
<td>Malaysia/2506/04(^1,2)</td>
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<tr>
<td></td>
<td>Brisbane/59/07(^1)</td>
<td>Brisbane/10/07(^1)</td>
<td>Florida/4/06(^1,2)</td>
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<tr>
<td></td>
<td>New York/8/07</td>
<td>Texas/37/07</td>
<td>Pennsylvania/7/07</td>
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<tr>
<td>2008-09</td>
<td>Hawaii/31/07</td>
<td>Nevada/5/07</td>
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<td></td>
<td>Peru/1169/07 (cell)</td>
<td>Uruguay/716/07(^2)</td>
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<td></td>
<td>South Dakota/6/07(^2)</td>
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</tbody>
</table>

\(^1\) Prototype vaccine strains.

\(^2\) Antigenically equivalent vaccine production strains.
Thank You!