

# Immunogenicity of the H5N1 A/Indonesia/05/2005 VLP Vaccine:

## Results from a Phase I/IIa Study

August 26, 2008



# Study Objectives

- To assess the safety of the H5N1 VLP vaccine
- To assess the immunogenicity of the H5N1 VLP vaccine
- To select at least one dose for further evaluation in a Phase IIb clinical trial



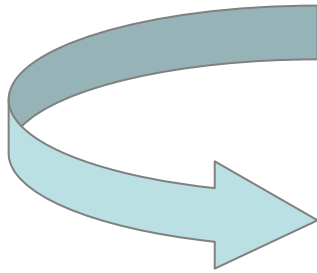
# Overview of Study Design

## **Stage A: Dose Escalation**

2 injections: 15 mcg, 45 mcg, placebo

N=70

Results reported December, 2007



## **Stage B: Dose Ranging**

2 injections: 15 mcg, 45 mcg,  
90 mcg, or a placebo

N=160

Safety and Immunogenicity Results

# Safety

## Stage A

- Unblinded data showed the vaccine was well tolerated among the participants of the study

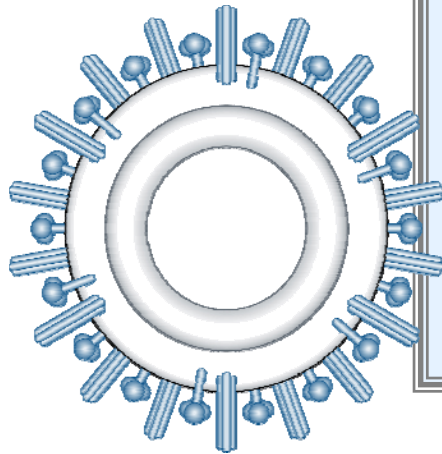
## Stage B

- The clinical team will be blinded to the safety data until safety follow-up has been completed
  - 6 months after the second dose (Q4, 2008)
- The DSMB reviewed the safety data at several points and recommended study continuation
  - Expanded dosage range to 90 mcgs



# Immunogenicity

## Neutralizing Antibody (NA) Responses Against the A/Indonesia Strain After 2 Doses of the H5N1 VLP Vaccine



Percentage of subjects  
with NA titer  $\geq 1:20$   
( $\geq 4$ -fold rise in titer)

15 mcg – 72% (CI: 53,86)

45 mcg – 73% (CI: 55,87)

90 mcg – 94% (CI: 80,99)

Placebo – 0%

# Path Forward

*Select Dose*

*Confirm Safety*

*Confirm Immunogenicity*

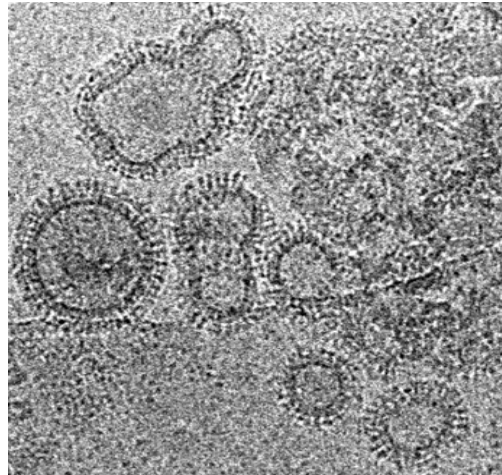
*Demonstrate Manufacturing  
Consistency*

*Intrapandemic – Establish Efficacy*

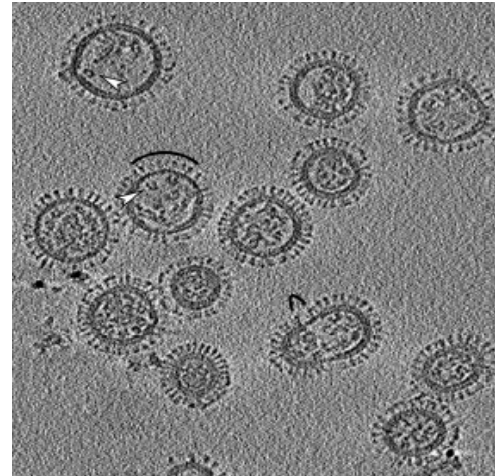
*In collaboration with  
a partner...*



# Potential Immunologic Advantages of Influenza VLP Vaccines



**Novavax H5N1  
(Indonesia) VLPs**

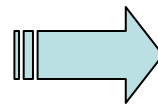


**Influenza virus pleomorphism characterized by cryoelectron tomography**

Audray Harris\*, Giovanni Cardone\*, Dennis C. Winkler\*, J. Bernard Heymann\*, Matthew Brecher\*, Judith M. White\*, and Alasdair C. Steven\*\*

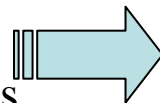
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- Contain 3 immunologically important proteins
  - Current flu vaccines consist almost entirely of HA



- HA – neutralizing ab prevents infection
- NA – neutralizing ab reduces disease severity
- M1 – cell mediated responses reduce disease severity

- Genetic match to wild-type strains causing influenza in humans



- Avoid changes in HA protein that may occur with egg adaptation

# Seasonal Influenza VLP Vaccine Program

- Results from this study of the H5N1 pandemic influenza VLP vaccine candidate support the VLP platform for development of vaccines against seasonal influenza and other diseases
- Phase II studies of the seasonal influenza VLP vaccine candidate are expected to begin in the third and fourth quarters of this year

