



Vaccine Development

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Chief, Vaccine Development
Influenza and Emerging Diseases Division

BARDA Industry Day
November 7, 2017



Areas of Development

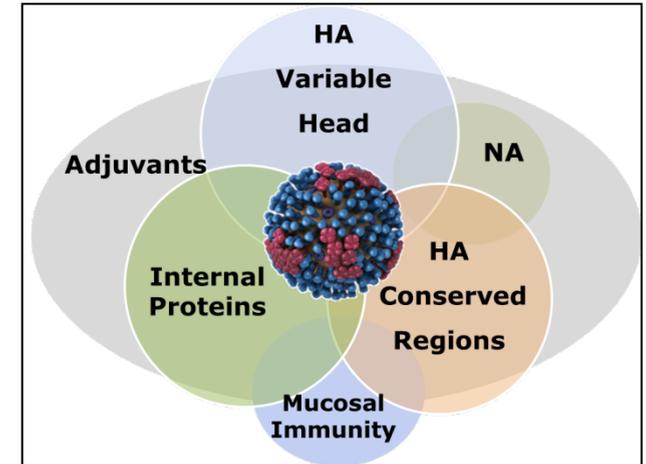
Adjuvant Capacity



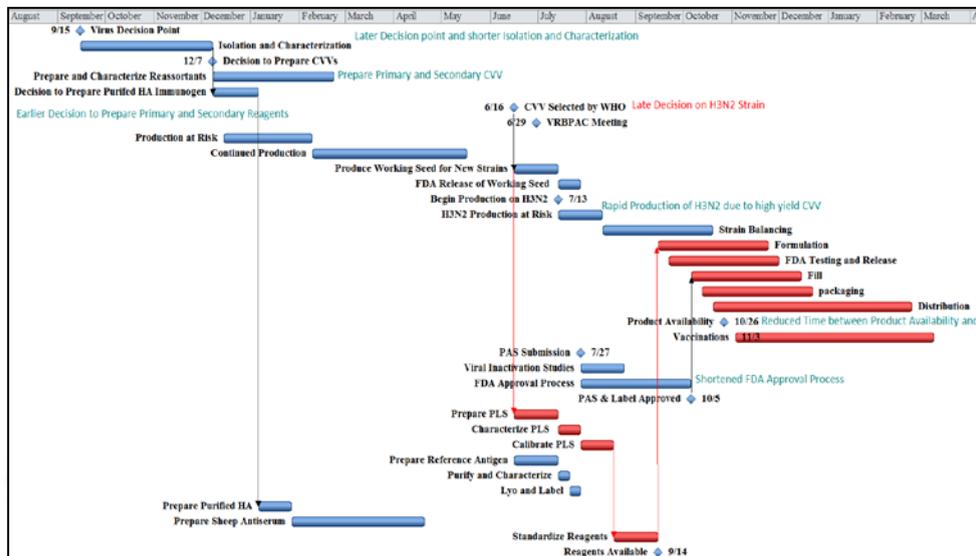
Zika



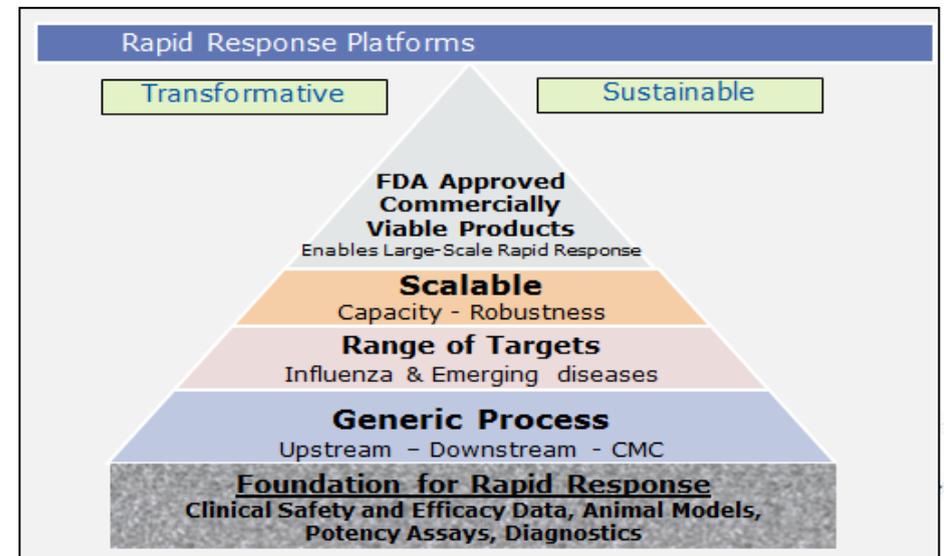
Next Gen Flu Vaccines



Seasonal Influenza Vaccine Improvement



Platform Development



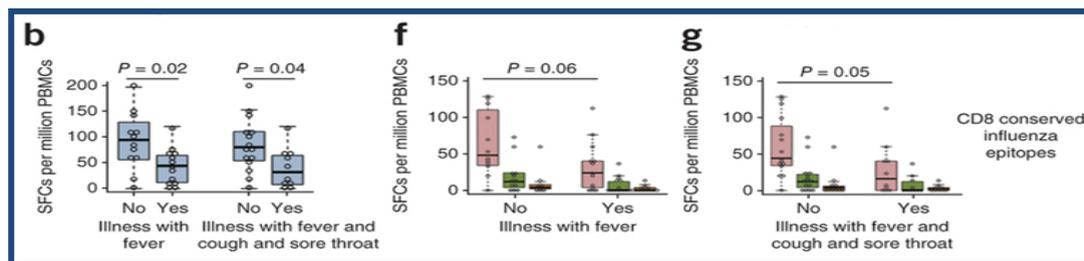
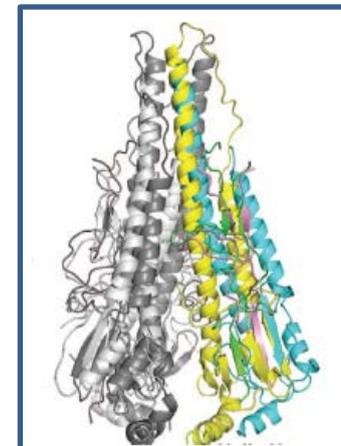
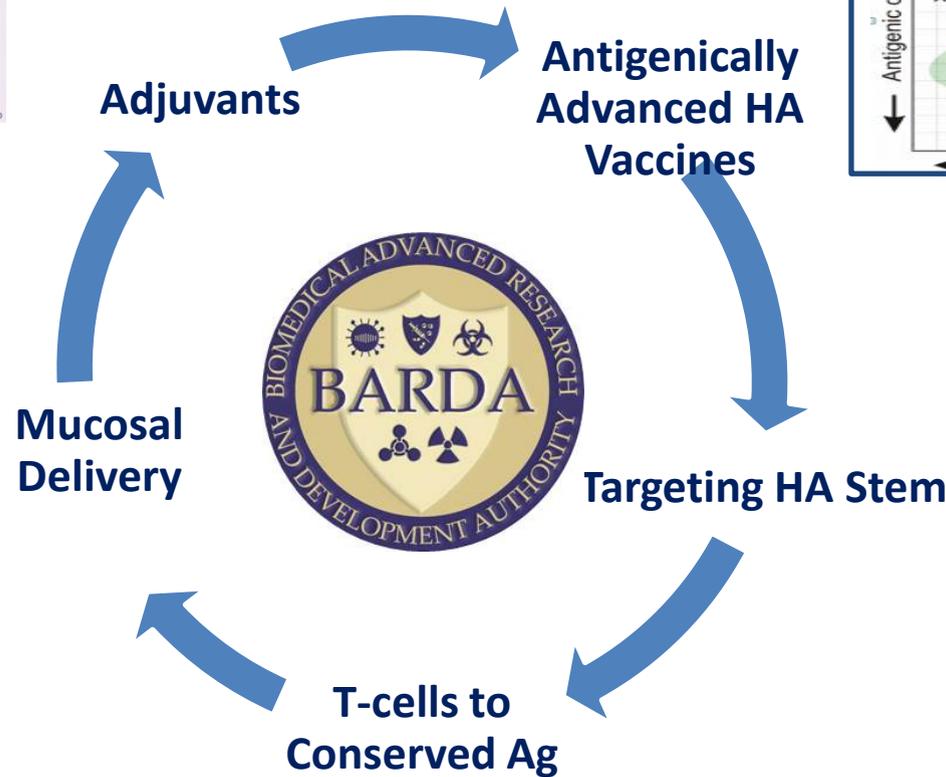
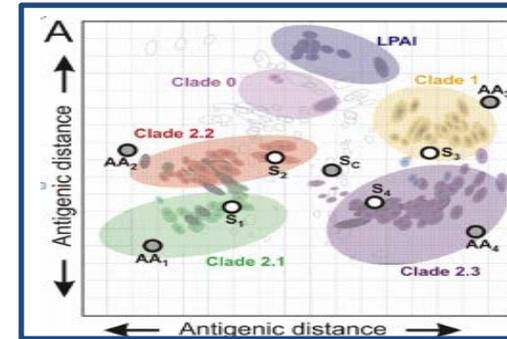
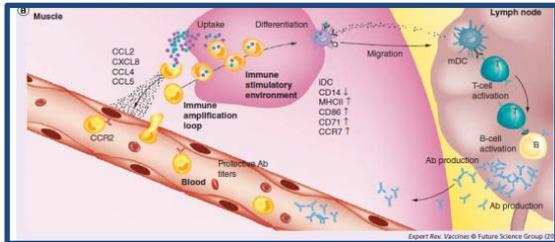


Vaccine Adjuvant Capacity Development





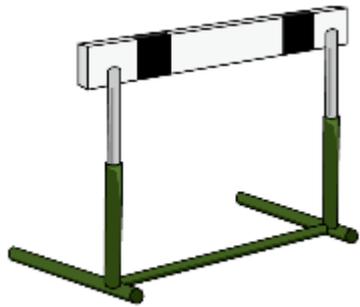
Next Generation Influenza Vaccine (NGIV) Development



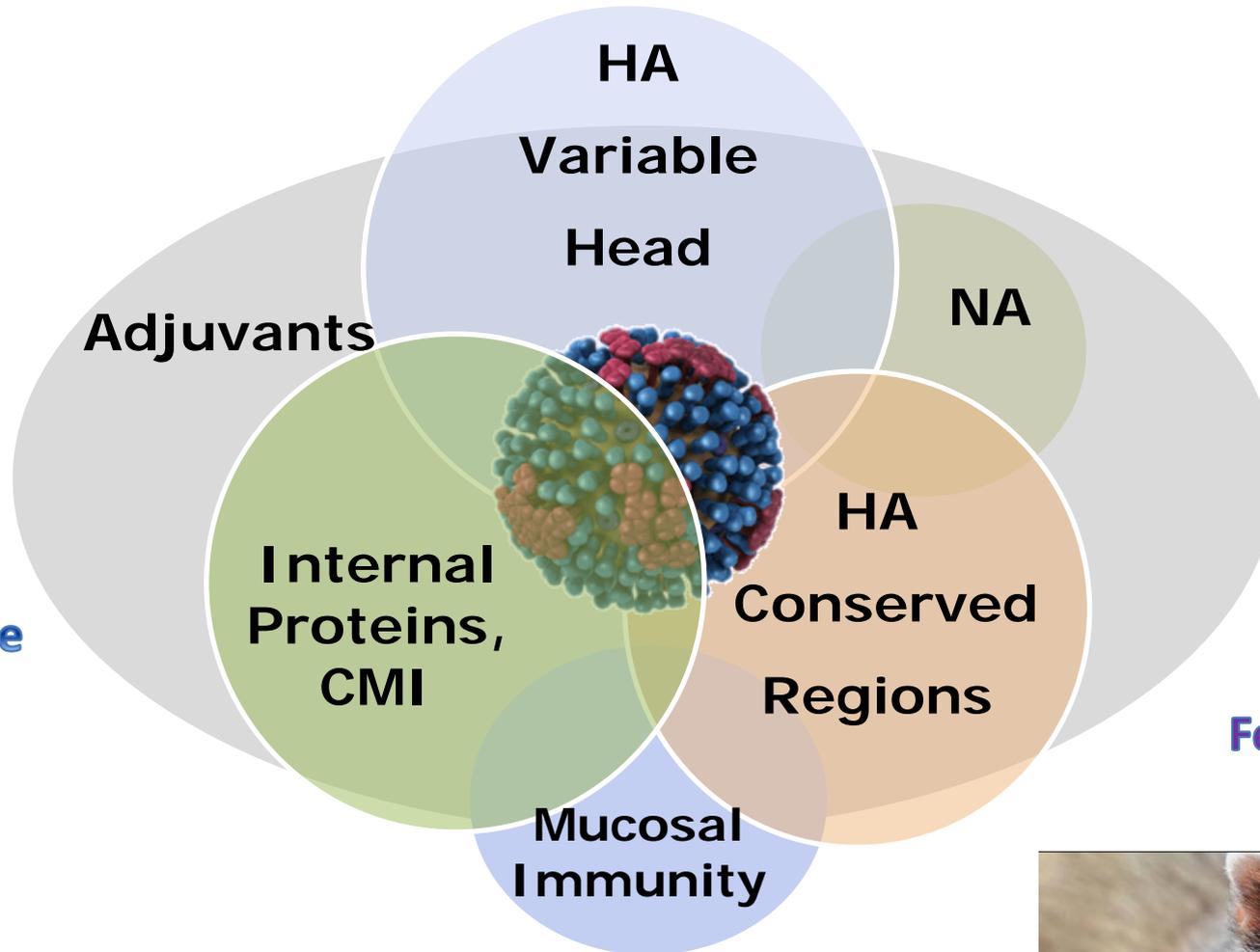


NGIV: An Integrated Approach

**Phase 1 Safety
Data**



**Human Challenge
Model**



**Broad Agency
Announcement**

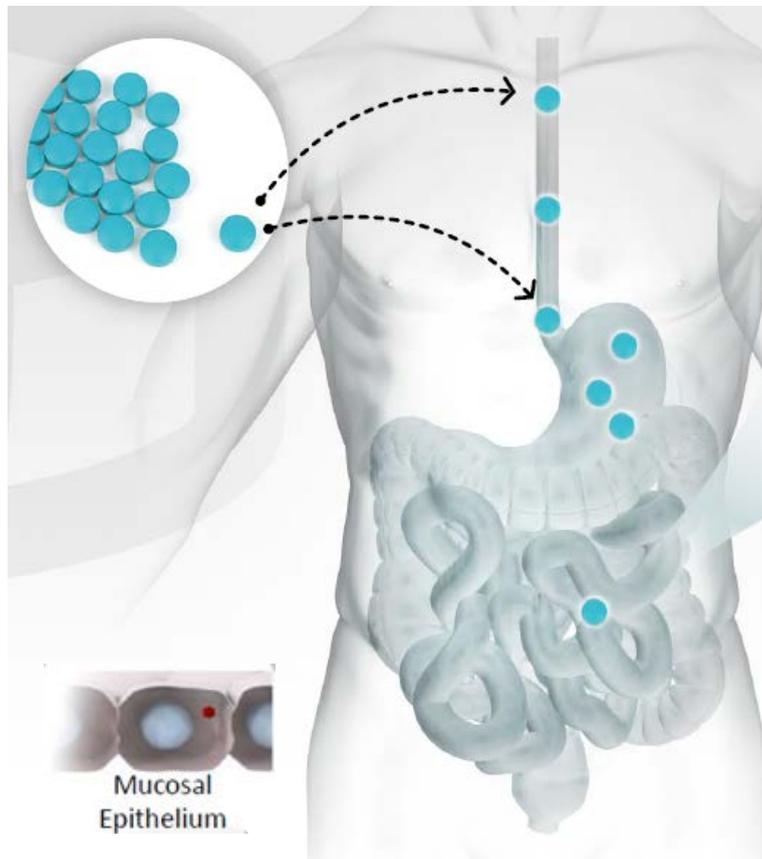


**Ferret Challenge
Model**





Mucosal Immunity: Vaxart



Human Challenge Study

Vaccination



Wait 90 days



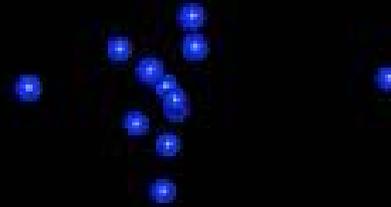
H1N1 Challenge



Vaxart Announces Positive Topline Results for Oral Tablet Vaccine in Phase 2 Influenza Challenge Study



Time-lapse H5 Antigenic Map



Classical

Clade 0

Clade 1

Clade 2.1

Clade 2.2

Clade 2.3.2

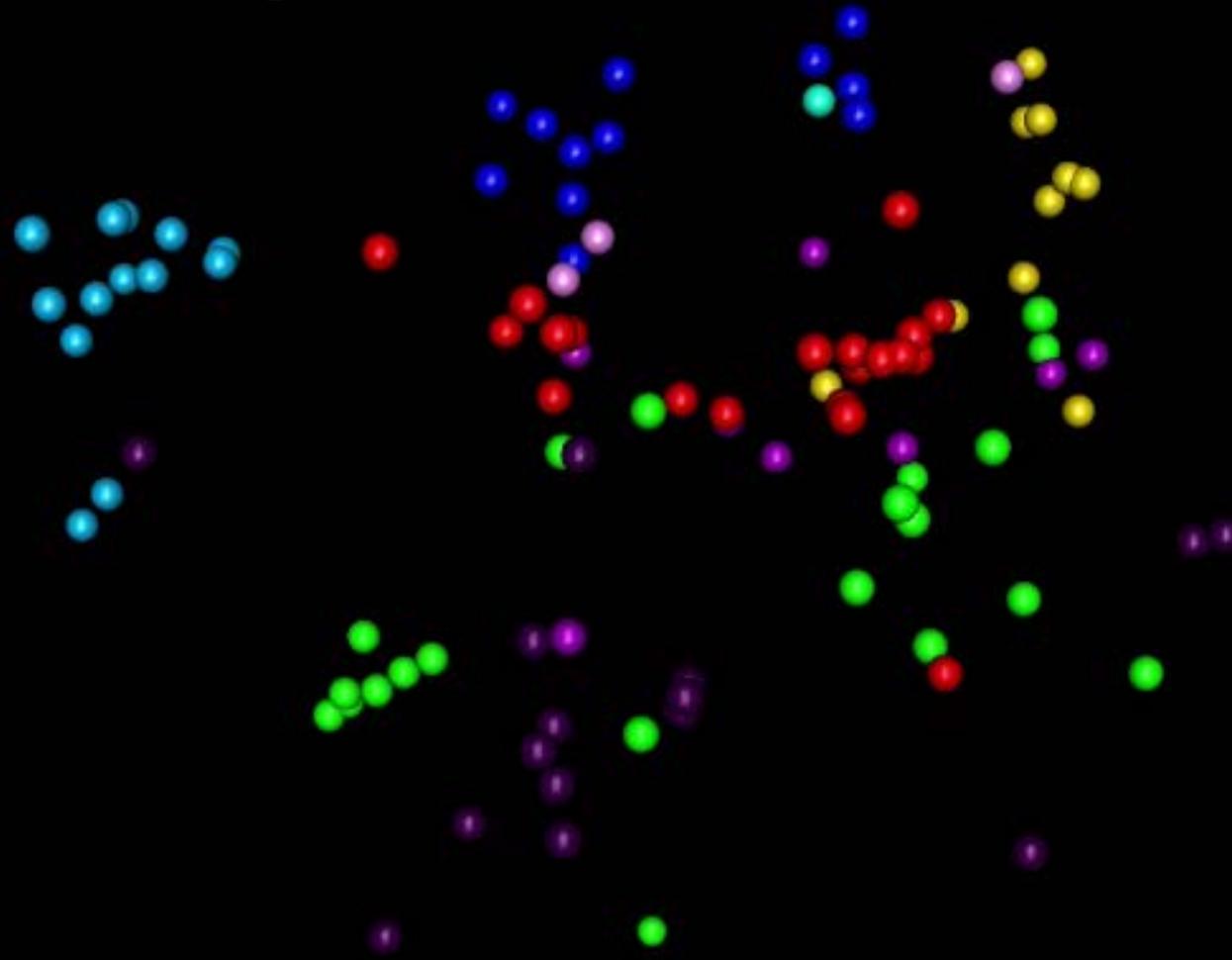
Clade 2.3.4

Clade 2.3.4.4

Clade 9

H5 Antigenic Map

Source: (Erasmus MC, 2017)



Classical

Clade 0

Clade 1

Clade 2.1

Clade 2.2

Clade 2.3.2

Clade 2.3.4

Clade 2.3.4.4

Clade 9

Little antigenic evolution in clade 1 and clade 2.2

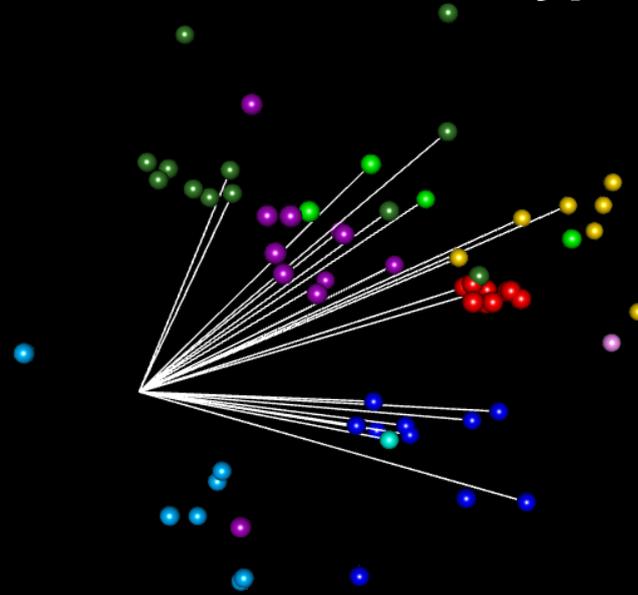
Antigenic relatedness between clade 2.3.4.4 and clade classical

Great intraclade antigenic diversity for clade 2.1 and 2.3

Rationally Designed Pre- pandemic Vaccines

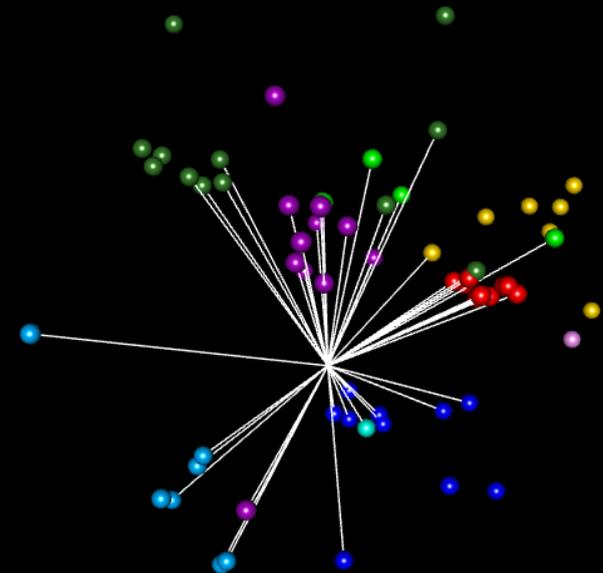
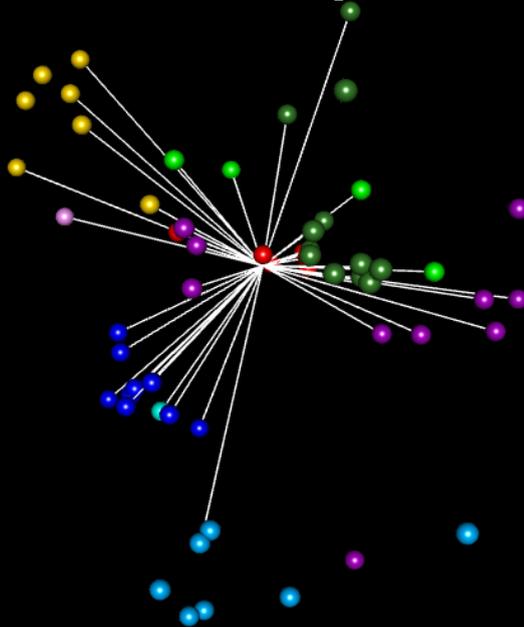
A/Anhui/1/05 wild type

Ferret post-
infection
antisera



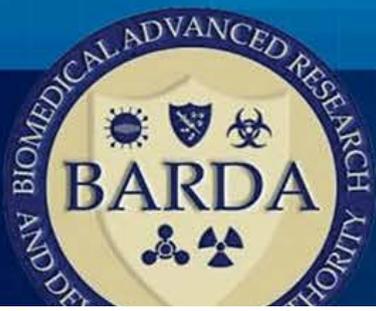
A/Iraq/06

A/Anhui/1/05 mutant

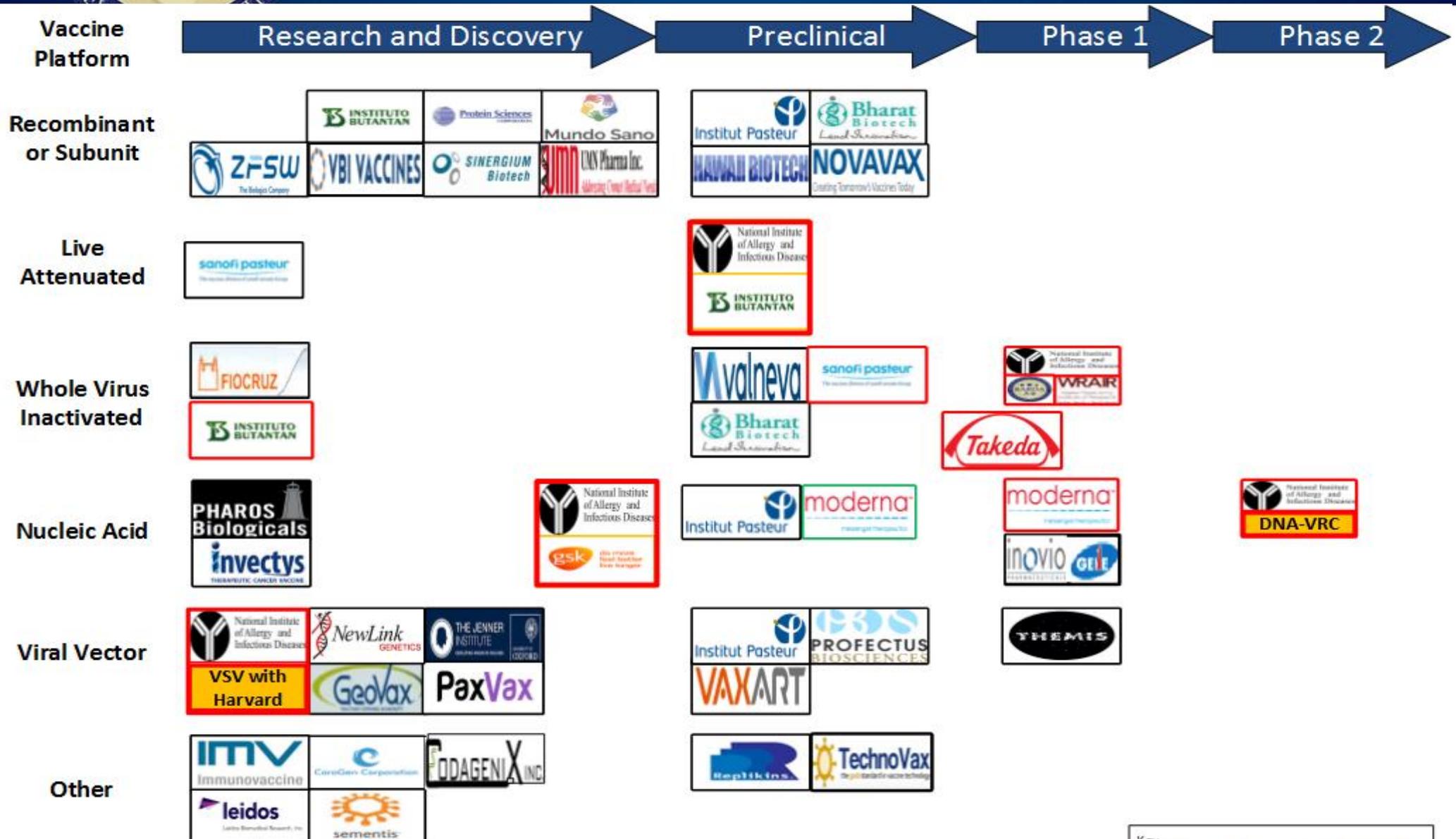


Lines depict HI titers >40

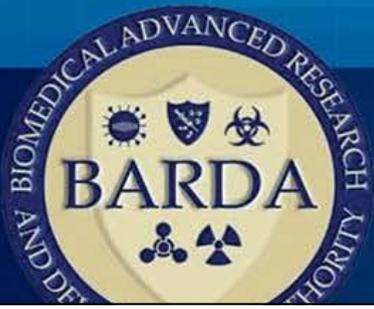
Source: (Erasmus MC, 2017)



ZIKA Vaccine Development Landscape



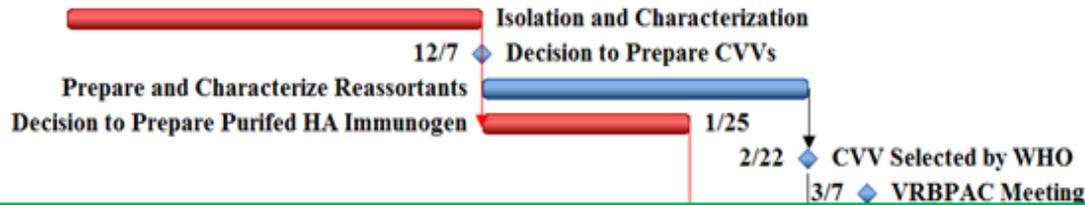
Key
 Supported by BARDA/NIAID —
 New Information —
 Version: October 26, 2017



Seasonal Influenza Vaccine Improvement

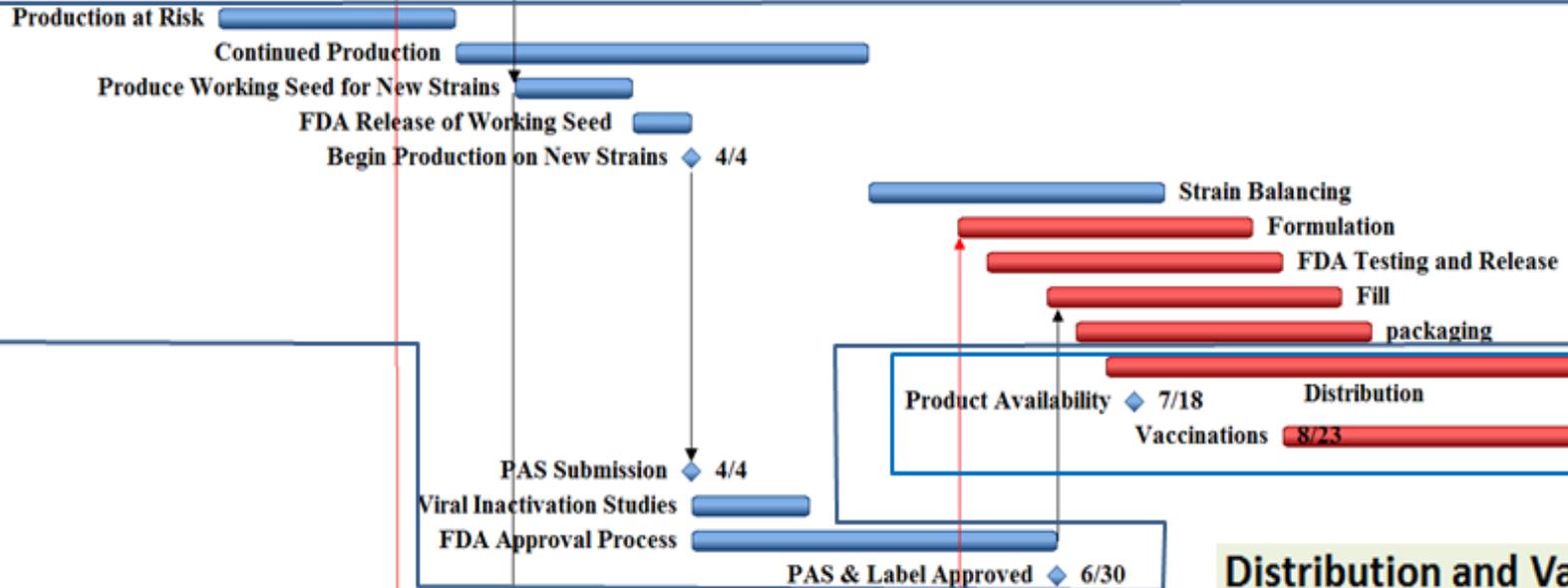
August September October November December January February March April May June July August September October November December

9/1 ♦ Virus Decision Point



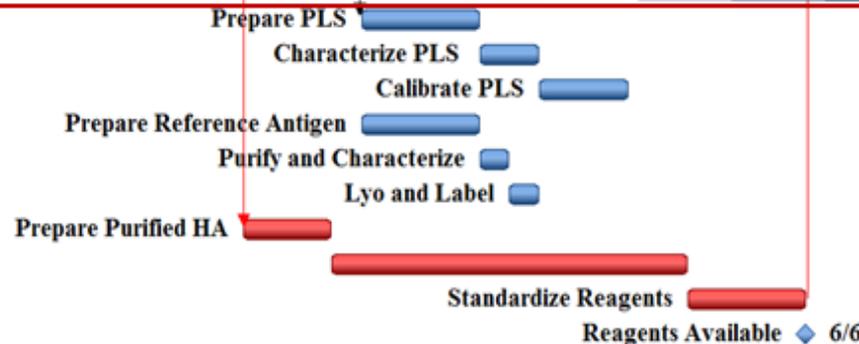
CVV Development and Characterization

Production



Distribution and Vaccination

Reagent Preparation





BARDA BAA

Solicitation Number: BAA-18-100-SOL-00003

Area of Interest #9: Influenza and Emerging Infectious Diseases (IEID) Vaccines

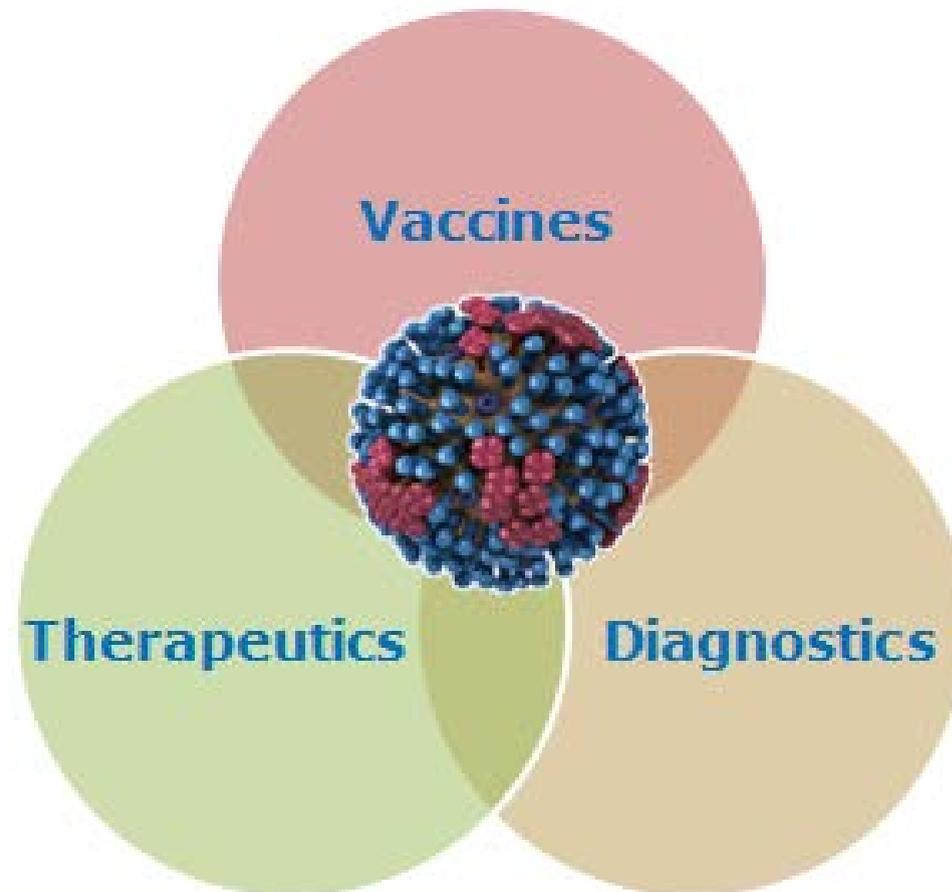
BARDA is seeking technologies that will improve preparedness against influenza and emerging infectious diseases with pandemic potential. Successful Offerors will provide evidence that the proposed vaccine product represents a transformative improvement in key vaccine attributes as compared to currently licensed products.

- 8.1 Advanced development of more effective influenza vaccine candidates**
- 8.2 Innovative vaccine production enhancements.**

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Influenza: An Integrated Response



Early Detection → Early Response → Saving Lives