Novartis Influenza Vaccines: A Partner in Pandemic Preparedness

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Rapid Response for Pandemic Protection

Key features of Pre-pandemic threats

- **Pre-Pandemic Threats**
  - Persistent, perpetual, and unpredictable in strain, scope, scale, impact

- **Pre-Pandemic Preparedness**
  - The Benefits of action
  - The Costs of inaction

Pandemic Influenza Preparedness

Innovating for a more rapid response

= Novartis activity

Summary of Options to Improve Pandemic Influenza Preparedness and Response

(adapted from R Rappuoli and P R Dormitzer, Science 2012;336:1531-1533, published by AAAS)
Vaccines ‘on demand’: Science fiction or a future reality?

Ulmer, Mansoura, Geall (Expert Opinion Drug Discovery, 2015)

From De Gregorio and Rappuoli, Nat. Rev. Immunol. 14, 505-14, 2014
Rapid Response for Pandemic Protection

A Value Proposition Beyond Stockpiles (> insurance policy)

- Vaccine Developers are “1st Responders” to pandemic influenza threats
- Pandemic Plans ≠ Effective Pandemic Performance
  - Making vaccines is challenging: Training is an imperative.
  - Seasonal influenza manufacturing is necessary, but not sufficient
  - Effective pandemic performance requires practice under similar condition
  - Test the ecosystem – S&T, policy/decision-making, permitting, contracting, etc.

- Drive, test and evaluate innovative technologies, strategies, policies (biosafety assessment, permitting, etc.) to keep improving
- Build an expanding strain-specific knowledge-base
  - Manufacturing, clinical, end-to-end performance metrics
  - Novartis’ portfolio includes multiple pandemic/pre-pandemic strains
  - Identify weak links that may be strain-specific
  - Use real experiences to improve models and tracking tools
- Develop regulatory science; integrate new technologies