

CORRELATES OF IMMUNE PROTECTION

Concluding remarks

Why are Correlates of Immunity Important ?

1. Basic immunology ✓ ✓ ✓ ✓
2. Enables correct choice of vaccine antigen
3. To permit consistency of potency
4. To determine susceptibility of an individual or a population
5. If efficacy trial not feasible or ethical, immunological data enable licensure of vaccine
6. Enables bridging from first-generation vaccine to second generation

Plotkin Definitions

- **Correlate of Protection (CoP):** An immune response that is statistically interrelated with protection
- **Absolute Correlate:** A specific level of response highly correlated with protection: a threshold
- **Relative Correlate:** Level of response variably correlated with protection
- **Co-Correlate:** One of two or more factors that
- correlate with protection in alternative, additive, or synergistic ways.

Correlates of Protection

- Confounded by
 - Inoculum size
- Genetics of the host
 - Cholera
 - ETEC
 - Norovirus
 - Rotavirus?
- Age group

Correlates of Protection

Good correlate

Hepatitis A

Vi typhoid

Polio

Not bad

Rotavirus

Cholera

Norvirus

Needs work

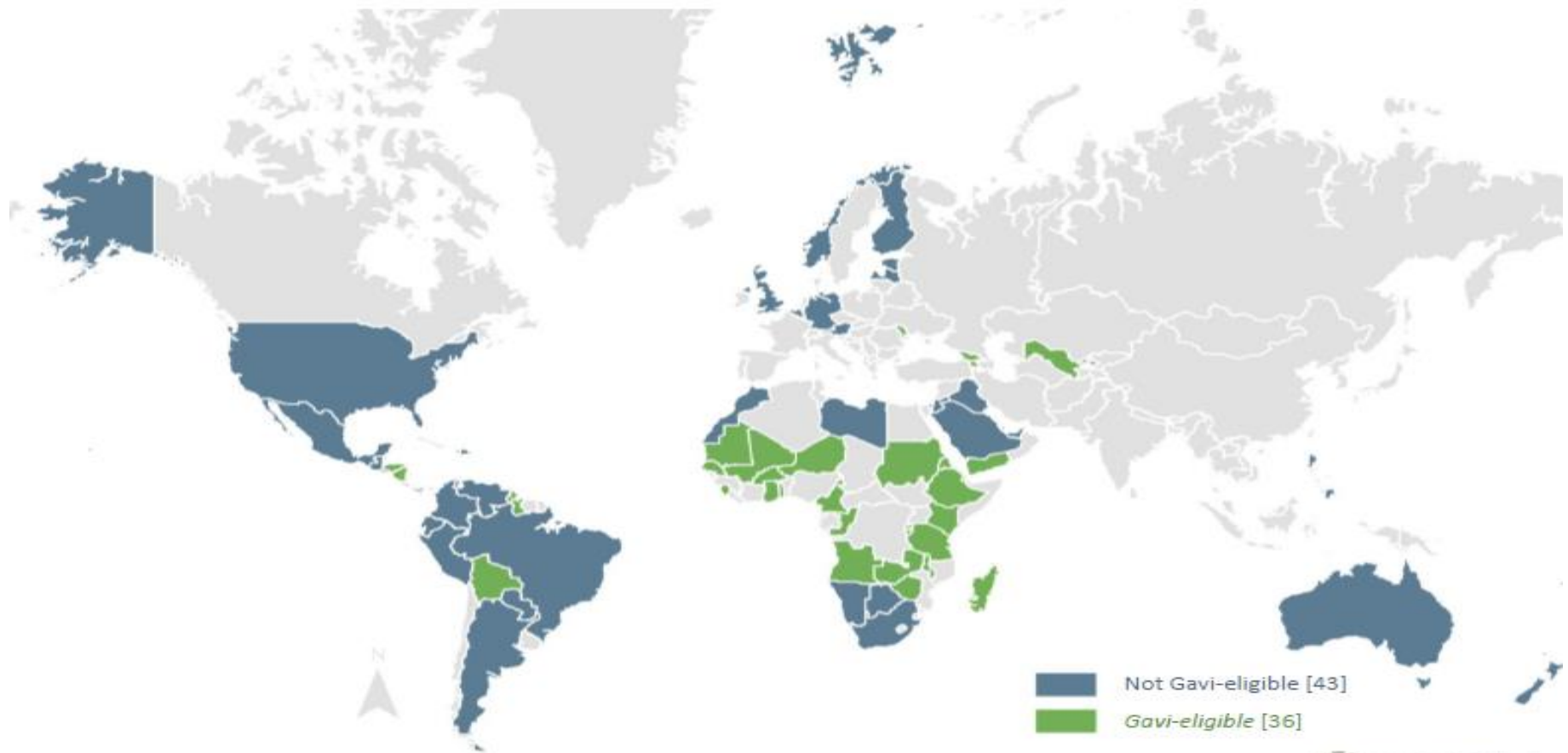
Everything else

Looking ahead

- Holmgren: There is a strong need for methods to measure circulating memory cells after oral vaccination that could predict long term immune protection
- Kotloff: Several MSD diarrhea pathogens are associated with linear growth faltering.
 - Kosek developed a scoring system for diarrhea episodes that are associated with nutritional outcomes.
 - Additional emphasis may be needed on this outcome for vaccine development.
- How will vaccines administered to infants and children interact with natural exposure
- How to increasingly use validated assays

Building on success: understanding difficulties

National RV introductions, 79 countries*



As of Oct 1, 2015