

Tools for Pandemic Preparedness:

Charting and Mapping Vaccine Development Capacities

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Project Summary

With the significant international consequences of recent outbreaks, the ITP Lab conducted extensive stakeholder interviews and macro-level health policy analysis to expose gaps in pandemic preparedness and develop legal frameworks for future threats.

Emerging Danger

- Scientists and public health experts have identified several key pathogens that have caused or are likely to cause severe outbreaks and have few or no medical interventions available

Nipah Virus	Lassa Fever	Zika Virus
<ul style="list-style-type: none"> Emerging zoonosis causing disease in both human and animal hosts Recent outbreaks in Malaysia (1998) and India (2004) No vaccine is currently available 	<ul style="list-style-type: none"> Endemic in several West African countries Mostly transmitted to humans through rodents but person to person transmission is also common No vaccine currently available 	<ul style="list-style-type: none"> Cases reported in 30+ countries Possible link to microcephaly \$3.5+ billion in estimated losses No vaccine is currently available for future outbreaks

Middle East Respiratory Syndrome (MERS)	Severe Acute Respiratory Syndrome (SARS)	Ebola Virus
<ul style="list-style-type: none"> 1000+ cases reported in 24 countries \$2+ billion in losses during 2015 South Korea outbreak No vaccine is currently available for future outbreaks 	<ul style="list-style-type: none"> 8000+ cases reported in 37 countries 700+ deaths prior to containment \$40+ billion in losses worldwide No vaccine is currently available for future outbreaks 	<ul style="list-style-type: none"> 28,000+ cases reported in 10 countries 10,000+ deaths prior to containment \$30+ billion in losses worldwide No vaccine is currently available for future outbreaks

Marburg Virus	Rift Valley Fever	Crimean Congo Hemorrhagic Fever
<ul style="list-style-type: none"> High fatality rate for those infected Clinically similar to Ebola virus Transmitted to humans through fruit bat No vaccine currently available 	<ul style="list-style-type: none"> Outbreaks reported throughout sub-Saharan and North Africa Cases have also spread to the Middle East and Asia No licensed vaccine for human use 	<ul style="list-style-type: none"> Endemic in countries throughout Africa, Asia, the Balkans, and the Middle East High fatality rate for those infected No vaccine currently available

Charting Development Capacities

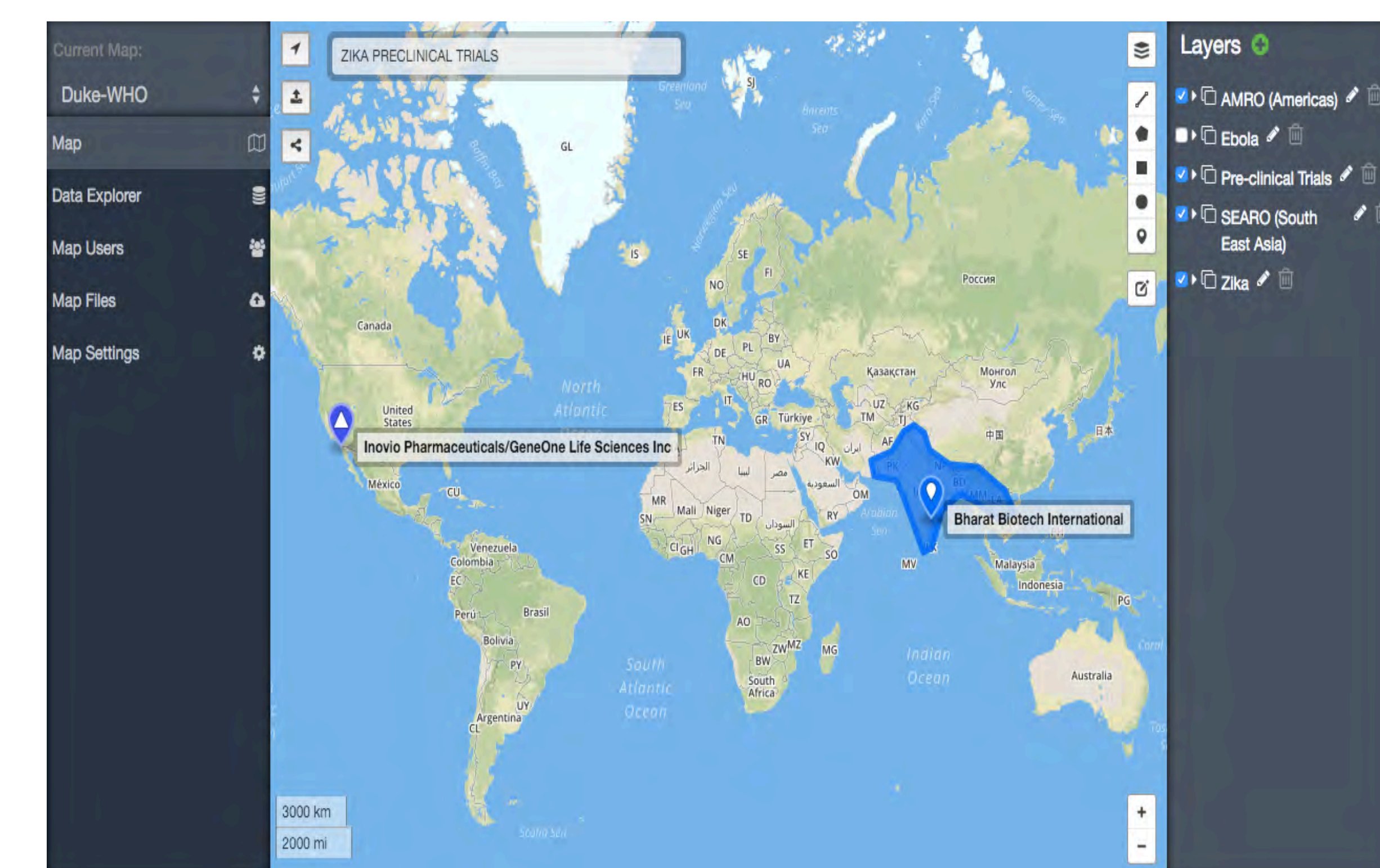
Player	Region	Role	Progress
Inovio Pharmaceuticals/GeneOne Life Sciences Inc	United States/Asia	Research & Development	preclinical trials (expect to perform clinical trials on humans by August 2016)
Bharat Biotech International Ltd	Asia	Research & Development	preclinical trials (expect to perform clinical trials on humans by mid 2017)
Takeda Pharmaceuticals	Asia	Research & Development	preclinical trials
Sanofi	Europe	Research & Development	preclinical trials
NIH	United States	Research & Development	preclinical trials (expect to perform clinical trials on humans by summer of 2016)
Merck & Co	United States	Research & Development	preclinical trials
New Link Genetics Corp	United States	Research & Development	preclinical trials
Johnson & Johnson	United States	Research & Development	preclinical trials
GlaxoSmithKline	Europe	Research & Development	preclinical trials
Sementis Ltd/ University of South Australia	Australia	Research & Development	preclinical trials
Hawaii Biotech	United States	Research & Development	preclinical trials
Repligen Ltd	United States	Research & Development	preclinical trials
Pfizer Inc	United States	Research & Development	preclinical trials
GeoVax Labs Inc. / University of Georgia	United States	Research & Development	preclinical trials
UNICEF / Google	United States/ Europe	Funding	N/A
Global Zika Task Force	Global	Research & Development	preclinical trials
Novavax	United States	Research & Development	preclinical trials

Player	Region	Role	Progress
Medigen Inc	United States	Research & Development	preclinical trials
SAFC Pharma		Research & Development	
University of Maryland School of Medicine		Research & Development	
National Institutes of Health		Funding	
Southwest Foundation for Biomedical Research		Research & Development	
University of Buenos Aires	Argentina	Research & Development	
Unite de Biologie des Infectieux Virales Emergentes	France	Research & Development	
Leiden University Medical Center	Netherlands	Research & Development	
Scripps Research Institute	United States	Research & Development	preclinical trials

Player	Region	Role	Progress
Greffex	United States/ Europe	Research & Development	preclinical trials
Novavax / University of Maryland	United States	Research & Development	preclinical trials
Ludwig - Maximilians University	Germany	Research & Development Clinical Trials	planning to enter phase I clinical trials
Marburg University		Research & Development	
Erasmus Medical Center		Research & Development	
German Center for Infection Research		Funding	
Inovio Pharmaceuticals	United States	Research & Development Clinical Trials	phase I clinical trials
GeneOne Life Sciences	South Korea	Clinical Trials	
Walter Reed Army Institute of Research	United States	Research & Development Clinical Trials	

Player	Region	Role	Progress
Profectus Biosciences, Inc.	United States	Research & Development	preclinical trials

Updateable Mapping Tool



- Online geospatial database with search capabilities that allow for :
 - Filtering by region, country, and pathogen
 - Clickable markers that reveal further details of organization
 - Bubble Map that displays linkages between organizations and their roles in development
- Able to provide critical knowledge of vaccine development landscape and facilitate the formation of alliances

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