

Twitter Thread by Billy Bostickson ■■■&■ ■



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@BillyBostickson



Don't forget that before EIDITH...there was PROPHECY!

" Phase III will to attempt to replicate in a laboratory the viral mutations or evolutions that are documented to have occurred naturally."

<https://t.co/j6avdoCOc8>

The Prophecy program seeks to transform the vaccine and drug development enterprise from observational and reactive to predictive and preemptive by spurring development of a multidisciplinary approach to predicting viral evolution. To achieve this objective, the three-phased program will focus on: 1) development of a viral-evolution platform for generating datasets used to build and validate algorithms predictive of viral evolution; 2) refinement of the platform to include mechanisms capable of controlling multiple selective pressures and accompanying predictive evolutionary models and algorithms; and 3) testing and validation of the system and algorithms using multiple selective pressures on at least three closely related virus strains in an experimental setting. Phase III will to attempt to replicate in a laboratory the viral mutations or evolutions that are documented to have occurred naturally.

<https://t.co/rKY6GPHBdX>

<https://t.co/WWmSsLebJN>

<https://t.co/J1z93m2shc>

<https://t.co/yX7ingDNo7>

<https://t.co/NNSgbuah7x>

<https://t.co/2w3HaDEGWE>

<https://t.co/v4kj66TIEu>

<https://t.co/oelzjv36nS>

<https://t.co/7QMICyZUUN>

Genetic interactions shaping evolutionary trajectories in
an RNA virus population
<https://t.co/4aohe52nAT>

Mutations in influenza A virus neuraminidase and hemagglutinin confer resistance against a broadly neutralizing
hemagglutinin stem antibody
<https://t.co/v247yzd0cG>

<https://t.co/GLzD0XgmBM>

Putting the lid on the devil's toy box
- Homeland Security
<https://t.co/6MTZK5Kj0L>

THESIS

**PUTTING THE LID ON THE DEVIL'S TOY BOX:
HOW THE HOMELAND SECURITY ENTERPRISE CAN
DECIDE WHICH EMERGING THREATS TO ADDRESS**

by

Andrew J. Fox

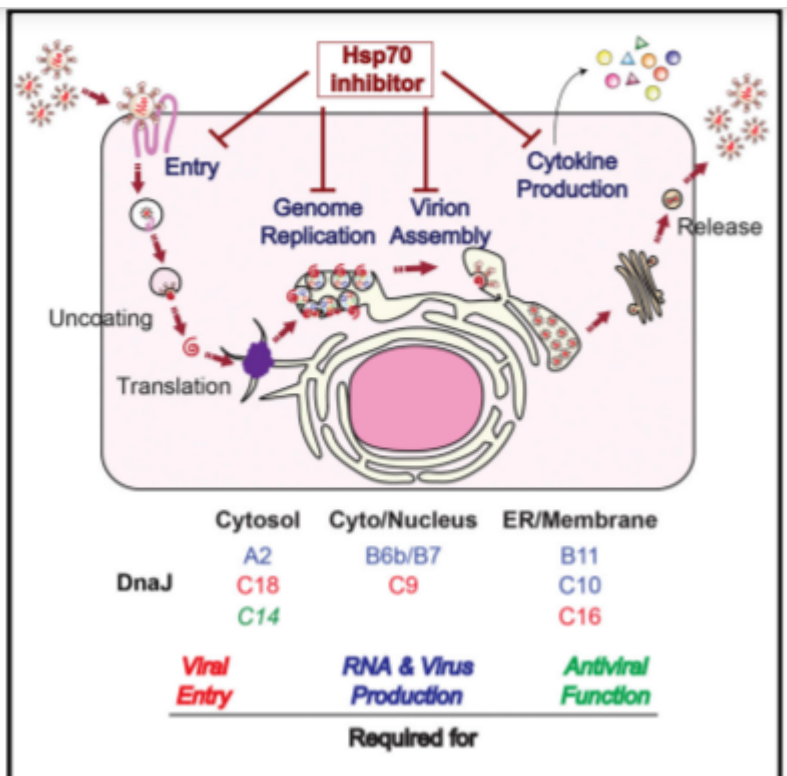
March 2018

Thesis Advisor:
Co-Advisor:

Rodrigo Nieto-Gómez
Kathleen Kiernan

Approved for public release. Distribution is unlimited.

Defining Hsp70 Subnetworks in Dengue Virus
Replication Reveals Key Vulnerability in Flavivirus
Infection
<http://140.116.98.168/public/project/1540-1457330100-1.pdf>



Under the DARPA "Prophecy" Program, there was a focus on Dengue at one point, with funding for four curious papers listed here:

<https://t.co/E422gXtTfL>

- Raul Andino

ENDOGENOUS VIRAL ELEMENTS PRODUCE TRANS-GENERATIONAL ANTIVIRAL PI RNAS IN MOSQUITOS

Mark Kunitomi¹, Michelle Tassetto¹, Irma Sanchez-Vargas², Isabel Ribeiro¹, Patrick Dolan, Taotao Chen¹, Carol Blair², Ken Olson², and Raul Andino¹

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To be effective vectors, mosquitoes must support robust viral replication without significant loss of their fitness. We investigated the mechanisms responsible for antiviral defense in mosquitoes. RNA interference is central to antiviral immunity in mosquitoes, and virally derived small RNAs accumulate during infection. Interestingly, while piRNAs are generally associated with germline defense against mobile genetic elements, we demonstrate that in mosquito, piRNAs also mediate antiviral immunity in mosquito somatic tissues. The piRNA linked Piwi gene family in *Aedes aegypti* has undergone significant expansion, suggesting a potential functional diversification of the family. Indeed we find that production of antiviral virally derived piRNAs (v-piRNAs) requires at least two Piwi proteins: Ago3 and Piwi4 and, strikingly, reverse-transcription dependent synthesis of viral cDNA (vDNA). Further, we find that mosquito genomes have an abundant and diverse set of endogenous viral elements (EVEs) that produce active piRNAs. Our results indicate that mosquitoes have evolved CRISPR-like, trans-generational adaptive antiviral immunity through the acquisition of EVEs that serve as templates for synthesis of small antiviral RNAs.

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