

Why do you get the cold in the winter? Developing a temperature-dependent kinetic model for human rhinovirus infection.
(Technical Report)

Distrust of Pharmaceutical Companies in the U.S.
(STS Research Paper)

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by

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Preface

How can public health for citizens of the United States be improved? For one, technology can lead to a better understanding of disease pathology which enables improved treatment development. Nevertheless, improving public health requires changing the relationship between the public and the healthcare system so as to address public concerns. Thus, both technological advancements and societal reform play crucial roles in improving U.S. public health.

How can computational modeling of human rhinovirus (HRV) inform knowledge of enterovirus behavior? HRV, a member of the enterovirus genus, can be used to gain insight into the mechanisms of the viral genus as a whole to better inform treatment development for these illnesses. A MATLAB compartment model, consisting of a delivery, replication, and encapsidation module, was developed to predict HRV behavior. The model focuses on predicting how it is mechanistically plausible for viral propagation of HRV to be increased at lower temperatures. The model is innovative as it details viral encapsidation by ungrouping parameters in this module. Also, it incorporates temperature dependent kinetics through use of the Arrhenius and Van't Hoff equations. It was found that kinetic temperature dependence and encapsidation ungrouping are necessary to explain HRV temperature dependence.

How are big pharmaceutical companies attempting to regain trust in the eyes of the public? Currently, public trust in the pharmaceutical industry is very low. This has dangerous implications to the state of public health. Advocacy groups, like Patients for Affordable Drugs, are demanding change. Big pharma is working on regaining public trust with help from agencies like the Food and Drug Administration (FDA). Pharmaceutical companies are attempting to regain trust by changing the way they advertise, embracing affordable pricing, and highlighting their dedication to putting patients first.

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