

INTERNATIONAL PEPPER CONFERENCE AUDIENCE

VIROLOGY 101

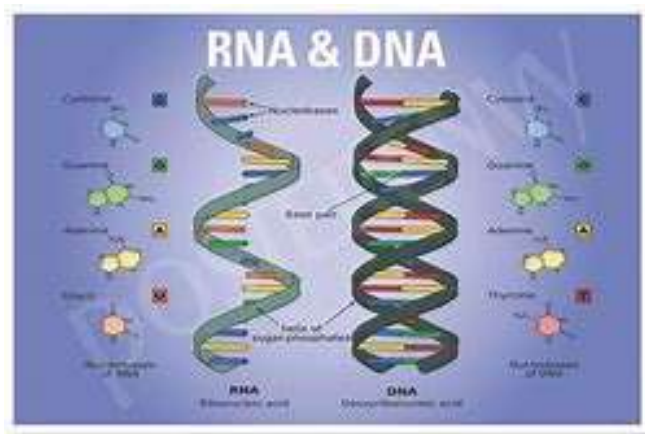
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1. WHAT IS A VIRUS? LIFE?

Viruses are ultramicroscopic particles of different shapes and sizes that can only be observed under an electron microscope. They are made up of genetic RNA (ribonucleic acid) and or DNA (deoxyribonucleic acid) bundles wrapped up in a protein coat.



They are neither alive nor dead but are somewhere in limbo and are the smartest parasites in the world. Their main goal is to reproduce themselves inside a living cell without killing the host. If the host is strong enough (resistant) to destroy the virus, the virus might mutate to a stronger entity to survive but not kill the host.

2. ORIGINS OF HUMAN PANDEMIC VIRUSES

Animal viruses (aka zoonotic viruses) have been in existence for billions of years. They can easily be transmitted (zoonosis) to other animals and humans. Bats can readily transmit these viruses by direct or close contact to

both humans and animals. Bats, because of their extreme flying and exercise activity, have an unusually strong immune system (resistance) that can cause viruses to mutate for their survival. These stronger viruses are then transmitted to other animals and humans. Humans who are physically fit and nutritionally healthy without underlying conditions with **strong immune systems** and are infected, oftentimes remain symptomless, resisting severe virus reaction, but can transmit these viruses unknowingly a few days before and after fully recovering. Such could be the case in COVID-19. Thus, always wear a face mask and keep 6 to 10 feet away from everyone.

3. ORIGIN OF COVID-19/SARS-CoV-2?

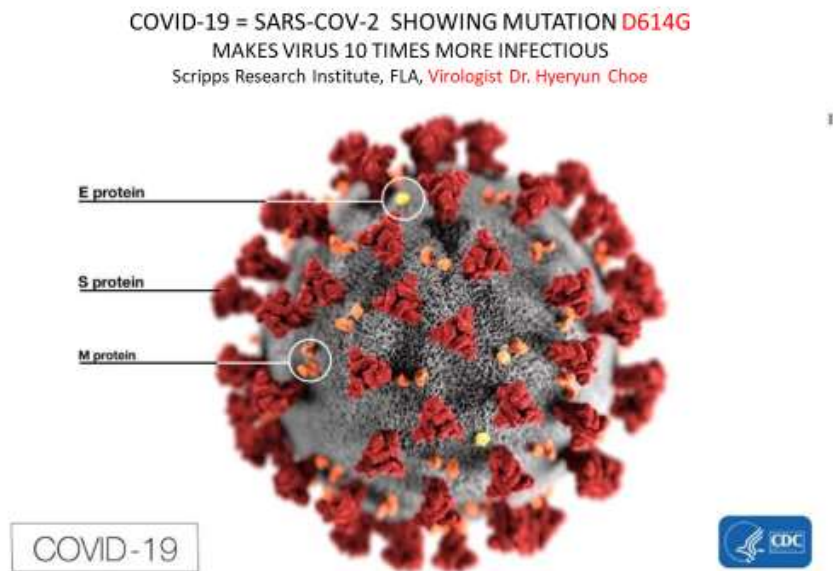
As of right now June 2020, virology experts still do not know exactly the real origin of COVID-19. The Internet and Social Media have been teeming with provocative conspiracy theories this novel virus was created in a Wuhan, China, lab and deployed as a bioweapon or derived from bats grown in tissue culture, intentionally or accidentally transmitted to a researcher, and released into the community, etc., etc..

Expert Virologists have exactly zero evidence or data of this having any connection to a lab, but this cannot be completely ruled out. Creating a new virus from scratch is virtually impossible. We do not know enough about corona viruses to make a virus for release! This virus is unusually different and caught everyone by surprise. There is more evidence to show that COVID-19 clearly originated in nature. Scientists may never be able to track down the origins of the virus or its intermediary host, this is hard business.

However, a must read, are articles regarding Shi Zhengli, known as China's 'BAT WOMAN', a bat virology expert, who researches SARS-like corona viruses of bat origin, their genetic sequences and distribution for the past sixteen years. She sequenced this virus' genome in just three days. These samples were sent to the Wuhan Virology lab. SARS-corona viruses are widely found in those Chinese regions in many animals.

A mutation, D614G, in COVID-19, was discovered in March 2020, Hyeryun Choe, Scripps Research Institute, Jupiter, FLA. The mutation contains 3

protein functional spikes (E, S and M), that renders the virus 5-10 times more infectious to humans. This occurred at about the time it arrived in New York. Vaccines being developed for COVID-19 appear to work well against this virus and its variants. That is exceptionally good news. This virus has mutated several times since then. Some mutations have created an attenuated or weakened parasite and some are more deadly depending on the health/weakness of demographics.



This virus has had a significant impact on a global scale on lives lost and severe economic losses. It presents dangers in that there is no pre-immunity, some vaccines are being tested, as are some drugs/treatments, is highly infectious, and everyone is susceptible. This virus may be mutating towards weakening or strengthening? Virology laboratories around the world have obtained partial genetic sequences of this virus and are using other healthier viruses to produce different types of vaccines. Some (140?) vaccines are already in phase two and three. Millions of dollars are being provided from several countries for this research.

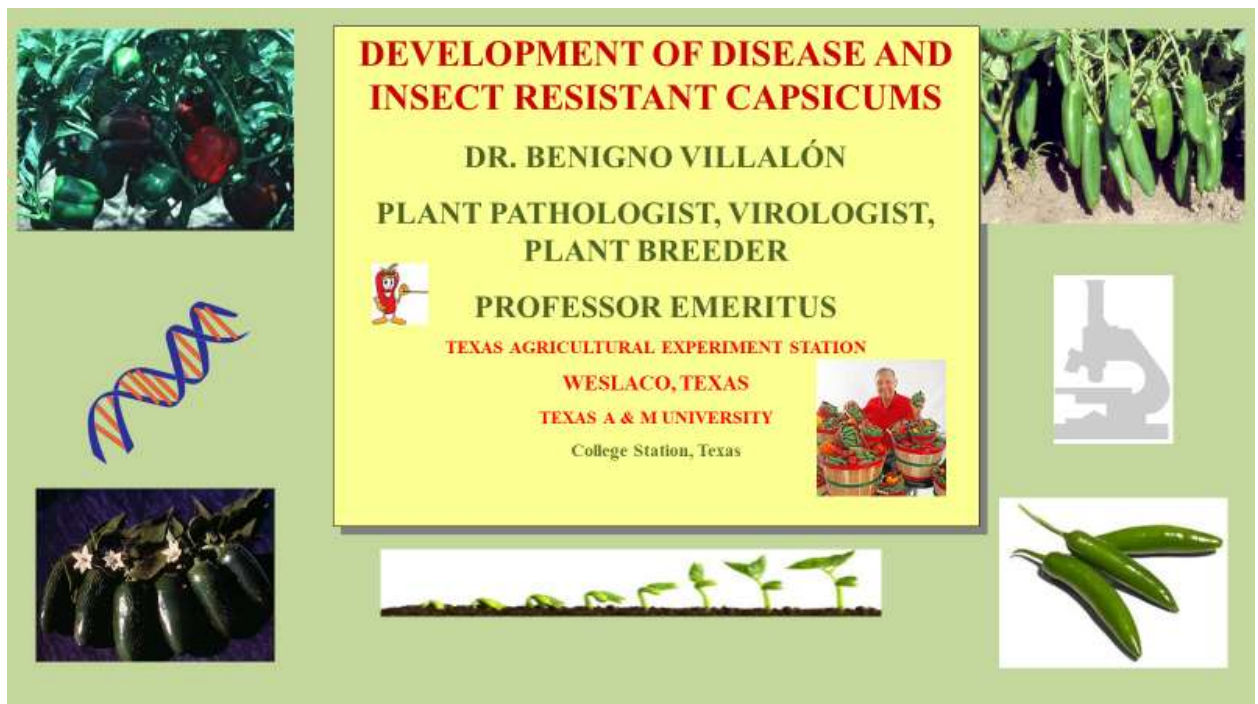
We will survive because these great scientists will develop a good vaccine real soon. Science may not get it right the first or second time, but science

will get it right, eventually. We will be ready for the next pandemic. Stay healthy!

Ben's second installment deals with the total success story of breeding for heritable and sustainable genetic virus and insect resistance in Capsicums at The Texas Agricultural Experiment Station, Texas A&M University, Weslaco, Texas.


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Dr. BEN'S NEXT INSTALLMENT



**DEVELOPMENT OF DISEASE AND
INSECT RESISTANT CAPSICUMS**

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