



THE UNIVERSITY OF HOUSTON COLLEGE OF PHARMACY STUDENT NEWS

The Script

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IN THIS ISSUE

On the Zika Virus

by Austin Hinkel

In the past few weeks, the Zika virus has been making rather prominent rounds on many national news networks, not without good reason. Recent outbreaks of the virus, which reportedly began in Brazil, have made their way into other parts of South and Central America, in addition to the United States. It has even prompted the Centers for Disease Control to issue travel warnings and urge individuals to take precautions against infection and spread of the mosquito-borne virus. But what exactly is the Zika virus, why is it of such concern, and what is being done about it?

The Zika virus can be traced back to 1947 from scientists who had been studying Yellow Fever near the East African Virus Research Institute in Entebbe, Uganda. A transmissible agent was isolated in 1952 from a rhesus macaque that had developed a fever in the nearby Zika Forest, from which the name of the virus is derived. Following its discovery, human cases of Zika virus were mainly isolated to Africa and Southeast Asia and were rather rare up until 2007, where a major outbreak occurred in Yap Island, Micronesia. Of course, its impact is being felt rather sharply today.

To delve into the weeds for a moment, the Zika virus is a single-stranded, 10794 kb long positive sense RNA virus containing two non-coding regions (NCR) at either end of the RNA strand. The RNA strand codes for several proteins that facilitate the viral life cycle including capsid proteins (C), membrane precursors (prM),

envelope proteins (E), and several non-structural proteins (NS). The roughly 53 kDalton E protein serves as the primary virion surface molecule and is involved in binding and membrane fusion. The largest of the viral proteins is NS5, at around 103 kDaltons, whose C-terminus region expresses RNA-dependent RNA polymerase activity and whose N-terminus region appears to be involved in RNA capping as a result of its methyl transferase activity. The 428 nucleotide 3' NCR and its 27 folding patterns are postulated to serve in a myriad of functions including genome stabilization, translation, RNA packaging, and recognition of various cellular and viral factors.

Zika also bears some similarities with the Dengue Fever virus. They are both arboviruses of the family *Flaviviridae* and the genus *Flavivirus* that are transmitted primarily by the same vector, the *Aedes* genus of mosquitoes. However, it seems that sexual transmission of the Zika virus is also a possibility. The symptomatology of Zika virus is comparable to a mild form of dengue, which includes influenza-like symptoms, headache, fever, malaise, joint pain, conjunctivitis and rash. Yet only one in five infected with the virus goes on to exhibit symptoms, which are usually mild and resolve within a week. Treatment recommendations are pretty straightforward, mostly relying on proper hydration, rest, and acetaminophen for management of any pain. One point of note is to avoid the use of aspirin and other NSAIDs for pain in those infected with Zika or Dengue, since they potentiate the risk of bleeding associated with the viral infections.

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The Script is an unofficial, student-managed publication that provides the University of Houston College of Pharmacy student body with news, articles, and opinions relating to our school, students, and profession. This edition of the Script and previous editions are also available on the Pharmacy Council website at:

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The reason Zika virus is making such a commotion of late, despite being a relatively minor medical problem in most people, is due primarily to its impact in pregnant women. Since it is capable of being passed from the mother to the fetus, it has raised some issues in regards to fetal growth and development. Though the average person can get through a Zika infection rather unscathed, the virus seems to be linked to miscarriages and drastic birth defects, most notable of which is microcephaly. It appears to be associated with calcifications in various regions of the developing brain that causes a newborn's head to grow misshapen and smaller than normal, sometimes severely so. It can cause such problems as intellectual disability, seizures, developmental delays, hearing and visions problems, and issues with feeding. Since there is no cure for microcephaly, prevention is the best course of action, which is understandably useless news to the many who have already endured a Zika infection and given birth to children with microcephaly. Recent reports of microcephaly first appeared last fall in Brazil, and by November 28, 2015, there were 646 cases reported in the Brazilian state of Pernambuco alone. Since then, cases of Zika virus have appeared throughout Central and South America, and even into the United States and China, from individuals who had recently traveled to these areas where Zika is endemic. Another recent worry is the possible link between Zika virus and development of Guillain-Barre syndrome, a relatively rare disease in which the immune system attacks the nerves. Though no confirmed cause-effect relationship has been

drawn between Zika virus and Guillain-Barre, there has been a surge in diagnoses of the syndrome in Colombia, where Zika has been having a significant impact. Some have estimated up to one new case announced every day, much higher than average, which is putting even more strain on the Colombian healthcare system.

Zika virus has become such a concern that some governmental organizations have issued states of emergency and suggested delaying pregnancies until more is known and health agencies get a better handle on the virus. The CDC has issued travel warnings and suggested that pregnant women avoid areas where the Zika virus is prominent. There is even concern about the Summer Olympics, which are to be held in Brazil, and what impact the virus might have. President Obama has requested 1.8 billion dollars to fund research on the Zika virus with the hopes of finding a cure or vaccine. Though the WHO is optimistic that vaccine trials are merely months away, some estimates for a Zika vaccine predict that it may take as long as ten years, if one is ever developed at all. For now, the best advice for those at risk of Zika infection is to limit exposure to the mosquito vector by wearing long sleeves and pants, using mosquito repellent, staying indoors with air conditioning, and utilizing nets and screens to keep mosquitos away.



Though most individuals will generally be alright if infected with the Zika virus, limiting its overall spread and the mosquito vector which carries it is a key priority for reducing the infection of pregnant women and the birth defects associated with the virus. It is difficult to put a positive spin to this situation, since Zika is currently a dramatic and growing problem with little progress being made and new cases in new places being reported seemingly every week. Yet we can hope that the scientists, researchers, and health care providers working on this issue will come to an important breakthrough or reach noticeable headway through their efforts that result in a real turnaround. Until then, all we can really do is rely on individual vigilance and the resilience of the human spirit to see us through, which fortunately is much stronger than we often realize.

Meet the Editors

by Joann Sorn

Hello! My name is Joann and I am the assistant editor for our college's newsletter. I would like to say that I am very excited to be working with Austin to start innovating the Script into something new and improved! I am not so great at describing myself, so I'll keep it short and simple. First off, I was born and raised here in the great city of Houston and proud to say I am a pharmacy student just like you at UHCOP! I decided to take on this career path ever since career day during elementary school because I was so intrigued about the idea of drugs and how they worked in our body. With all pharmacy things aside, I really enjoy being able to create and design things, which is why I decided to take a shot at being the assistant editor. When I was younger, I always thought I would be a writer or a journalist, and through the Script, I am able to live that dream I once had as a child. I hope to make this newsletter a lot more exciting for you all to read and to enjoy. If you have any ideas, please let me know and I'll be more than happy to help!



PHARMACY FUN FACTS

- Benefits of acupuncture were discovered when a Chinese soldier was cured from a stiff shoulder of many years when an enemy arrow hit his leg!

- Ignaz Semmelweis figured out that doctors need to wash their hands after a doctor got sick from cutting his finger during surgery.

Q: Basics: Hometown, undergraduate, family, etc.

I was born in Xi'an, China. I am an only child, born to a workaholic mother and a silly father. Moved around a lot as a child, but my family finally settled down in San Antonio, TX. I went to UT Austin for my undergrad and now I'm in Houston!

Q: Why did you want to become a pharmacist?

There are a couple reasons, actually. First, all the research I have done somehow related to pharmacology without me intending for them to. So, when I looked back on that, it made sense for me to go this route. Second, because I worked a lot with the homeless population, I definitely saw a need among them to have access to some of the most basic medications that are available. Each of them was different, so naturally, each situation was also very different. But all of them made me see the importance of medication and how much of a difference something so basic could make. And so, I wanted to learn more and use this field to do something for those around me.

Q: What has been your favorite thing or experience so far in UHCOP?

The people and the good conversations I've been able to have.

Pharmacy Student Q&A

with Shutian Ju

Q: What has been your biggest challenge in pharmacy school?

Not letting school & grades become too big of a priority.

Q: What do you hope to do after graduation?

Hopefully a residency in either infectious disease or critical care and then join a group of other healthcare professionals to start a clinic in another country that has a need.

Q: What motivates you?

Lots of things – my dreams, my failures, people I meet, etc. Basically, anything that reminds me of what I want to accomplish in life.

Q: What is something you're passionate about?

Hmm there are a lot of things as well. But to be general, I'm pretty passionate about life itself, my own and others'. My own because I think being alive is a blessing, so I want to live it to the fullest I can manage. Others' because I absolutely love individuality and it makes me sad whenever people don't realize their worth. And that is something I want to make a difference in.

Q: What is some of the best advice you've received?

Hahaha one is probably "stop thinking that you're so different and special". It grounds me and allows me to look past the traits I like about myself and at the unique characteristics of others. Another one is to "stop asking why because sometimes there is no why."

Q: What do you like to do to relax/hobbies/interests?

All the boring stuff. I like to read, take walks (NOT runs) while listening to audiobooks or music, go to museums or coffee shops, find pretty buildings, meet strangers on the street, grocery shopping, etc. I also co-write for a website/blog called Letters and Stories that tells stories of others introspectively.

Q: What would you be doing if not pharmacy?

I wanted to be a museum curator. Or a flight attendant. Or an archeologist. I also think I have a soul of an architect but have no drawing ability whatsoever. So, oh well.

Q: What does it mean to live a good life?

Living a life that is worthwhile so that when I look back, I don't have too many regrets and have lots of good memories to hold onto.

Q: What's your favorite drug?

Namenda/Memantine partially because its purpose is kind of in its name.





Quotes of the Month

"I am so clever that sometimes I don't understand a single word of what I am saying."

"Some cause happiness wherever they go; others whenever they go."

"Be yourself; everyone else is already taken."

- Oscar Wilde

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Are YOU interested in contributing to The Script? We would love to work with you, so simply let us know! We would also like to hear your thoughts and comments on how we are doing and what we can improve on. Contact us @ uhcop.script@gmail.com