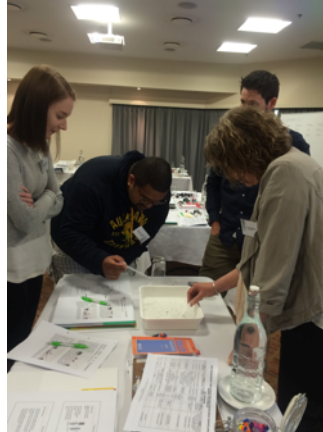




# BORDER HEALTH NEWSLETTER – October 2015

## WELCOME!



Hi everybody, welcome back after a fantastic workshop in Auckland at the Holiday Inn. I enjoyed the Pest Management and Vector Surveillance course with you amazing people. It was great to put faces to names and I think we had numerous productive discussions. The outcome of these will be reflected in revised documents. We would also like to take the opportunity to wish John Gardner Happy Birthday this week! A milestone occasion. And again for those of you who missed the course this time, we are happy

for you to visit the mozzie lab for more discussion, microscopy ID work and trap handling.

## SAMPLES

During October 600 samples were collected by staff from 12 DHBs with 97 positive. The results look similar to those from last month, only that many more *Culex pervigilans* have been found. This also applies if we compare the numbers for October this year and last year. People might disagree when it comes to mosquitoes but I am always happy if we have higher numbers of native species than of the introduced species.

Species	Adults		Larvae	
	Oct 15	Oct 14	Oct15	Oct 14
<b>New Zealand Mozzies</b>				
<i>Aedes antipodeus</i> (winter mosquito)	Nil	5	Nil	Nil
<i>Ae. australis</i> (saltwater mosquito)	Nil	Nil	2	4
<i>Ae. notoscriptus</i> (striped mosquito)	Nil	2	1659	1334
<i>Culex astilae</i>	Nil	Nil	12	Nil
<i>Cx pervigilans</i> (vigilant mosquito)	4	2	1201	394
<i>Cx. quinquefasciatus</i> (southern house mosquito)	3	Nil	9	15
<i>Opifex fuscus</i> (rockpool mosquito)	Nil	Nil	18	8
<b>Total</b>	<b>7</b>	<b>9</b>	<b>2889</b>	<b>1755</b>

## INCURSIONS/INTERCEPTIONS

We have had seven interceptions in October, most of them were not mosquitoes:

- 7.10.2015: A female *Aedes aegypti* was found at Turners & Growers, AKL in a cargo container of fresh Pineapples from the Philippines.
- 12.10.2015: A live chironomid was caught at MG Marketing, AKL in the MPI inspection room associated with mandarins from Australia.
- 13.10.2015: Many dead insects have been brushed off an empty container at a devanning site in Petone, Lower Hutt. They have been identified as 2 female *Culex pervigilans*, a crane fly, many



female and male biting and non-biting midges (Ceratopogonidae and Chironomidae), 1 Simuliidae and 1 Phoridae.

16.10.2015 In Waharoa, Waikato, potential mosquitoes were found in one of 10 containers with Lactose powder in bags. Insects were collected and brought back to Tauranga and reported to Toi Te Ora. MPI reported that the devanning site was low risk (lots of concrete and away from farms/vegetation). As per pictures sent, the insects were identified as non biting midges (Chironomidae).

21.10.2015: A dead cranefly was found at Turners & Growers in Auckland in a container with bananas from Ecuador.

30.10.2015: Associated with a Container from China, Regional Public Health was called to Lower Hutt for an insect, identified as Anisopodidae (window gnat).

31.10.2015: A live non-mosquito was found outside a container of rolled oats at Hubbards Food in Auckland and has been identified as a female chironomid.

## NEWS OF THE MONTH

### **Lone soldier: Sindh's one-man army takes on millions of dengue mosquitoes**

*The Express Tribune with the International New York Times*

*By Sameer Mandhro, 2 November 2015*

KARACHI: Sindh's war against the deadly dengue mosquitoes is getting quite ridiculous. The sneaky winged bugs have reportedly infected over 3,000 people in the current year, with eight people having died as a result. But you need not fear anymore. The Sindh government has the perfect weapon: the man with the phone. This man has taken it upon himself to rid the province of the deadly mosquitoes. He sits in his one-room office in the premises of the Benazir Bhutto Youth Development Programme situated at the Services Hospital, swatting them all day long. And if you ever need him, he is just a call away. This man goes by the name of Dr Masood Ahmed Solangi. You may have read of him in this very newspaper. In fact, when it comes to dengue in Sindh, he is the only man you may have heard from. For Dr Solangi is the Sindh government's Dengue Prevention and Control Programme (DPCP) in its entirety. The provincial government had set up a temporary 'Dengue Surveillance Cell' in 2005. It was converted to the Dengue Prevention and Control Program (DPCP) this year, after the number of patients affected by the virus rose unprecedentedly this year. With 34 deaths in 2014, the provincial government announced Rs41million for the programme. Not a single rupee was released. The amount lapsed and the DPCP is currently liable to pay Rs21million to various contractors. At least eight employees, including six field workers, one social mobiliser and one computer operator, were appointed on a temporary basis last year. They all left after not having been paid for six months.



Dr Masood Ahmed Solangi is the Sindh government's entire dengue control programme. DESIGN: MOHSIN ALAM

Currently, the entire provincial programme is run by one man — the provincial programme manager, Dr Solangi. Three doctors from Civil Hospital, Karachi, have been transferred to support him



## NEW ZEALAND BIOSECURE

temporarily. He runs the programme through a cellular phone. The DPCP seems to be yet another face-saving scheme for the Sindh health department's performance.

According to the health secretary, Saeed Ahmed Mangnejo, it is an initial step. "The DPCP will be made permanent by next year," he told The Express Tribune, adding that the basic objective of the programme was to collect data from different hospitals and liaise between the various departments. Speaking about the numbers, the health secretary said that there were 1,700 dengue cases in Sindh last year, 34 of whom had died. "The number of cases has increased this year, but not deaths," he justified. It is not just the case with Sindh. All provinces are facing almost the same situation, he reasoned.

Health experts believe dengue cannot be wiped out from the country. According to the director of the National Institute of Blood Diseases, Dr Tahir Shamsi, Singapore is the only country in the world that has completely controlled dengue mosquitoes.

"This isn't the right time to take action," explained Dr Shamsi, adding that the authorities must understand the issue. Precautionary measures against the mosquitoes must be taken in April and May. By now, the breeding season is already over and the mosquitoes have matured. According to Dr Shamsi, anti-dengue sprays must be done in April and May to kill the mosquito larvae and prevent them from maturing.

Though dengue fever cases have been reported from across the province, Dr Solangi believes the virus is most endemic in Karachi. "It is an urban disease," he said. For now, however, the programme's activities are only limited to awareness campaigns, with the DPCP having distributed one million pamphlets over the last two years.

Doctors believe that the DPCP will be dormant once again after November and its officials will cry when cases will surface next year. For their part, the health authorities claim that the DPCP will take time to work independently as it faces a number of issues at the moment. "We are totally dependent on other agencies such as the Karachi Metropolitan Corporation and the revenue department's officials," Dr Solangi commented.

Published in The Express Tribune, November 2nd, 2015. fatality this year.

## VECTOR BORNE DISEASES

### South Pacific



### Pacific syndromic surveillance report Week 43, ending 25 October, 2015

*Chikungunya*: As of 25 October there have been a total of 1,345 cases reported from the RMI since February 2015. The number of weekly cases reported is decreasing. An outbreak is ongoing in Tuvalu, as confirmed by the Institut Louis Malardé, French Polynesia.

*Dengue*: French Polynesia reports 25 confirmed cases for week ending 4 October 2015. Dengue serotype-1 has been identified in circulation. There were 10 hospitalisations in September including one severe case.

As of 14 October 2015 American Samoa there have been 450 cases in American Samoa of which 143 were hospitalised. Dengue serotype-3 has been identified in circulation. The number of cases is decreasing.

## ESR - MONTHLY NOTIFIABLE DISEASE SURVEILLANCE REPORT - September 2015



*Dengue fever:* Four cases of dengue fever (2 confirmed and 2 under investigation) were notified in September 2015 compared to five cases (4 confirmed and 1 probable) notified in the same month of the previous year (Figure 1). All cases had been overseas during the incubation period, with one case visiting two countries. The countries visited included Samoa (2 cases), Australia (1 case), Indonesia (1 case) and Thailand (1 case).

*Zika virus:* One confirmed case was notified in September 2015. The case was a female from Auckland DHB, who reported overseas travel to Samoa during the incubation period.

## DENGUE

### Pakistan

#### New record

*Muhammad Qasim*

*November 02, 2015 – The News International*

Rawalpindi - The number of confirmed patients of dengue fever so far registered at the three teaching hospitals in town this year has almost set a new record as it is about to cross the total number of patients of the infection reported in previous four years, from 2011 to 2014.

The occurrence of such an intense dengue fever outbreak this year hints towards poor planning of the concerned government authorities on safeguarding public from the infection that caused huge damage to public health along with national exchequer within last five years.

According to a number of health experts, however, much has been done on documents only as no stage was set ideally ever to avoid breeding of larvae of '*Aedes aegypti*' practically. One can easily witness countless heaps of garbage and water accumulations existing in almost all localities of the district that may turn out to be potential breeding sites for breeding of mosquitoes' larvae giving much room for a possible outbreak next year.

### India

#### Total Nears 15000-Mark; October Sees Maximum 7,283 Cases

*All India Press Trust of India | Updated: November 03, 2015 00:20 IST*

NEW DELHI - The number of dengue cases in the national capital has inched closer to the 15,000-mark with over 7,200 of them being reported in October only, according to a municipal report released on Monday.

Standing at 14,889, dengue outbreak this year has become the worst outbreak since 1996. That year, 10,252 cases and 423 deaths were reported.

### Taiwan

#### Grapples with Record Outbreak

*Ralph Jennings*

*October 27, 2015 4:23 AM*

TAIPEI - Taiwanese officials are reporting their most severe outbreak of dengue fever ever. More than 100 people have died despite the efforts of a robust healthcare system, putting Taiwan on a level with poorer Asian countries that grapple every year with the mosquito-borne disease.

Dengue fever has touched nearly every part of Asia and regularly threatens about 1.8 billion people in the region. Subtropical Taiwan always gets a few cases, but this year the western Pacific island is fighting its biggest outbreak ever, with more than 23,000 sick people as of mid-October.

Dengue fever cases spiked this year from the annual average of 1,000 to 2,000 because of high heat and the Taiwanese habit of collecting fresh water - that quickly breeds mosquitoes as it stands.



Lin Sheng-che, health department director in Tainan, the Taiwanese city with the most dengue fever cases this year, points to standing water as the chief aggravator.

He said one source of standing water are water vessels people often have outdoors, such as scoop basins and water bowls for their dogs, and that those are being taken back in. He suggested people look around their home for any such containers and dump out the water as soon as possible.

Around Asia dengue fever cases have grown over the past 45 years because of population growth, migration to cities and warmer temperatures. Heat combines with standing water to breed disease-carrying mosquitoes, which quickly spread the disease in places with low awareness of insect control, including prevention of bites.

Taiwan has one of Asia's most professional and affordable healthcare systems. But this year was extra hot in southern Taiwan, where most of the cases have occurred. People are also just beginning to realize that their own standing water breeds disease-carrying mosquitoes.

Lee said that 93 percent of patients now at Tainan Hospital say they didn't know they were bitten by the mosquitoes. He says they had no feeling when they got bit, so the most important thing now is for the government to do whatever it can for environmental sanitation.

Health authorities expect the outbreak to end with the island's seasonal mild winter.

## Hawaii

### State moves to head off on Big Island

By COLIN M. STEWART *Hawaii Tribune-Herald*

October 31, 2015

*Hawaii State Epidemiologist Dr. Sarah Park*

The state Department of Health has been inundated with calls reporting possible cases of dengue fever since officials confirmed an outbreak here earlier this week.

However, as of Friday afternoon, the official total remained at two confirmed cases and four probable cases that were waiting on confirmation, said State Epidemiologist Dr. Sarah Park.

Health officials have said they cannot reveal information about the patients or where the cases have been reported because the investigation into the source of the mosquito-borne disease is ongoing. They did say, however, that they believe dengue was brought to the island by a traveler because the disease is not endemic to the island.

"Unfortunately, we cannot pinpoint a place. ... It's so hard to know. We're not trying to hide anything, we're just not sure at this point. It's looking like pretty much a good portion of the Big Island is a potential risk. ... I do suspect that there is not one particular hot-spot," Park said. "We're looking for a few, at least."

Several online commenters and Hawaii Tribune-Herald readers have been critical of the decision not to release more information about where the illness has been reported.

"Residents have a right to know if they are living in a potential hot-spot in order to take strong precautions," wrote Hilo resident Merle Hayward in a letter to the editor. "... Please report the information we all need to have in order to keep ourselves safe."

Currently, two epidemiology investigators are operating on Hawaii Island — one based in Hilo and one based in Kona.

"They're running around all over the island right now," Park said. "They've been interviewing patients, retrieving charts, getting blood drawn. They have their work cut out for them. ... We're in touch with them, and we'll mobilize folks from the other islands if we need to. Right now, the Big Island folks are pulling together."

Park added that mosquitoes tend to remain close to home, not moving more than 200 yards from where they have hatched. So the biggest factor in the spread of the disease is the movement of the humans infected with it. Wherever they travel on the island, they then have the potential of



spreading dengue to local populations of mosquitoes.

One concern, she added, is that the Ironman World Championships held in Kona earlier this month could have contributed to spreading the disease, with multiple athletes and their families from all over the world potentially bringing it here, or spreading it off island after being bitten by mosquitoes here.

“One of the things we’re trying to figure out is how do we get the word out to them, to report back to us if they did come down with an illness. We are reaching out to Ironman organizers to reach through them directly to the athletes,” Park said.

An outbreak on Hawaii Island is of particular concern to health officials, she added, because the prevalence of a particular mosquito here provides the potential for the disease to become endemic, meaning that it would continuously infect the mosquito population.

While the mosquito species *Aedes albopictus* is spread throughout Hawaii and is capable of carrying dengue, the disease tends to die off on its own. Not so for *Aedes aegypti*, which has been found in pockets on the Big Island.

## CHIKUNGUNYA

### Africa

#### Cases up to 20 in the Kédougou region

*Posted by Staff on October 6, 2015*

In a follow-up to a report last month from Senegal, the French language news source, RFI reports that the number of chikungunya cases reported from the Kédougou region has reached 20.

The cases are primarily seen in mine workers in the gold zone. Prior to this past month, the latest active circulation of chikungunya in the affected area was reported between 2009 and 2010.

According to Dr. Moussa Ndiaye, infectious disease specialist in Dakar, “The samples were collected and analyzed by the Pasteur Institute in Dakar. Cases were only isolated at the gold zone, the Kédougou region. It is the only region of Senegal where cases have been reported at this time.”

Chikungunya is a viral disease transmitted to humans by infected mosquitoes. It causes fever and severe joint pain. Other symptoms include muscle pain, headache, nausea, fatigue and rash. Joint pain is often debilitating and can vary in duration. The disease shares some clinical signs with dengue, and can be misdiagnosed in areas where dengue is common. There is no cure for the disease. Treatment is focused on relieving the symptoms. The proximity of mosquito breeding sites to human habitation is a significant risk factor for chikungunya. The disease occurs in Africa, Asia, Latin America and the Indian subcontinent. Senegal was affected by the disease in 2009.

### Jamaica

#### MP Daryl Vaz joins call for sacking of health minister

*Friday, October 30, 2015*

VAZ... the minister’s track record has been mainly characterised by a lack of knowledge of what is taking place in the health sector



WEST Portland Member of Parliament Daryl Vaz has joined the call for Prime Minister Portia Simpson Miller to remove Dr Fenton Ferguson from his position as health minister.

Vaz, in a release yesterday, said the call was made in light of his "ill-fated" stewardship of the health minister, most notably with his handling of the chikungunya virus outbreak last year, the recent death of 19 babies from the outbreak of bacteria at the University Hospital of the West Indies in Kingston and



Cornwall Regional Hospital in St James; and three cases of another bacteria at the Bustamante Hospital for Children in July.

"Minister Ferguson's dismal handling of the chikungunya outbreak is a matter of public record. Babies, infants, and the elderly were among the worst affected and persons are still suffering lingering effects," Vaz said.

Minister Ferguson's track record, he added, has been mainly characterised by a lack of knowledge of what is taking place in the health sector; denial of information brought to public attention by health-care practitioners, regretful admission and then apology for his insensitivity.

Said Vaz: "Dr Ferguson's shockingly poor management of the health sector, his refusal to be open with the country and his failure to implement preventative measures, despite being warned by the health-care practitioners of the potential for a major bacterial infection outbreak, is his most egregious breach."

He said that it must never be forgotten that 19 babies are dead in circumstances that experts from the United Nations and PAHO said should have been prevented. "Minister Ferguson's heartless suggestion in the first instance that the innocent babies were not to be considered babies 'in the real sense' should result in him being relieved of his position," said Vaz

Vaz said the prime minister, who professes to have the interest of the country's most vulnerable at heart, must act now as Dr Ferguson has been entrusted with the health of all Jamaicans and even visitors to the island's shores who may require medical attention.

## ZIKA

### Americas

#### PAHO summary

*Posted by Robert Herriman on October 19, 2015*

The Pan American Health Organization (PAHO) released an epidemiological update on indigenous circulation of Zika virus in the Region of the Americas since first seen in 2014 on Friday.



Western hemisphere map

Public domain image/ E Pluribus Anthony

In February 2014, the public health authorities of Chile confirmed the first case of indigenous transmission of infection by Zika virus in Easter Island (Chile). The virus was reported through June of that year.

Subsequently, in May 2015, the public health authorities of Brazil confirmed indigenous transmission of Zika virus in the northeast. Through October 2015, 14 states confirmed indigenous transmission of the virus: Alagoas, Bahia, Ceara, Maranhao, Mato Grosso, Pará, Paraíba, Paraná, Pernambuco, Piauí, Rio de Janeiro, Rio Grande do Norte, Roraima and São Paul.

This past week health authorities of Colombia reported the detection of the first indigenous case of Zika virus infection in the state of Bolivar.

Outbreaks seen in different regions of the world demonstrate the potential of this arbovirus to spread across the territories where there are Aedes vectors for this virus.

PAHO recommends that its Member States establish and maintain the capacity to detect and confirm cases of Zika virus infection, prepare health services to the possibility and and implement an effective strategy public communication to reduce the presence of mosquito especially in areas where the vector is present.



## Jamaica

### Health officials deny report of Zika virus in Jamaica

*CARIBBEAN 360, OCTOBER 23, 2015*

KINGSTON - Jamaica, Friday October 23, 2015 – On the heels of a local doctor's claim that she had diagnosed a dozen cases of the Zika virus, Chief Medical Officer in the Health Ministry Dr Marion Bullock DuCasse is insisting there is no evidence that the mosquito-borne virus has reached Jamaica.

Dr Sandra Williams-Phillips claims she contracted the virus and she had seen 12 patients who also had the virus, although she acknowledged she had not done any laboratory testing to confirm.

But DuCasse says without confirmation, it could not be said the virus was in Jamaica. "Zika virus has very similar symptoms to dengue and chikungunya and so a conclusive diagnosis without laboratory

testing may not be possible. In addition, Zika has never been in Jamaica nor the Latin American and Caribbean region outside of Brazil and Colombia so we could not rely on just a suspicion.

"The ministry would have to take steps to confirm by laboratory testing if it is circulating if there is a suspicion."

Officials from the St Catherine Health Department has asked Dr. Williams-Phillips to provide required information in a few days so that it can be reviewed and a determination made on whether samples should be sent to the Caribbean Public Health Agency for testing.

The Zika virus, also known as ZIKV, is transmitted by the bite of an infected *Aedes aegypti* mosquito, the same mosquito that transmits chikungunya and dengue.

It is from the same family as, and is similar to, dengue with symptoms that include fever, joint and muscle pain, conjunctivitis, headache, weakness, rash and swelling of the lower limbs.

After the bite of an infected mosquito, symptoms usually appear following the incubation period of three to 12 days. They last for four to seven days. No deaths due to the Zika virus have been recorded worldwide to date.



CHIEF MEDICAL OFFICER IN THE HEALTH MINISTRY DR MARION BULLOCK DUCASSE

## MALARIA

### Venezuela

#### Epidemic tops 100,000; the most ever recorded

*Outbreak News Today*

*Posted by Robert Herriman on November 2, 2015*

In a follow-up to a report three weeks ago concerning the ongoing malaria epidemic in Venezuela, health officials now have put the case tally in the epidemic to 105,757, according to a local media report (computer translated).

The number of cases in 2015 is the highest number recorded since Venezuela began keeping records in 1936. 88,500 malaria patients were reported in all of 2014.

The bulk of the cases have been reported in Bolivar state, which accounts for 79.82% of cases (84,418 cases) and Amazonas accounts for 13.57%. Some 10,000 cases have been seen in children under the age of 10.

The cumulative figure to date shows a 110 percent increase compared to the previous five years.

Malaria is considered the most important parasitic disease affecting humans. The female *Anopheles* mosquito serves as the vector for the parasite.

The mosquito-borne disease continues to sicken and kill far too many people each year, most of them children. In 2012, roughly 207 million cases of malaria occurred worldwide resulting in 627,000





deaths, according to the World Health Organization (WHO). In 2013, 97 countries had ongoing malaria transmission, placing 3.4 billion people at risk for the disease.

## WEST NILE VIRUS

### US, Canada and Europe

*Outbreak News Today*

*Posted by Robert Herriman on October 31, 2015*

More than 1,600 human West Nile virus (WNV) cases have been reported thus far in the United States with more than a quarter of all cases reported from California. According to officials Centers for Disease Control and Prevention (CDC) data Oct. 27, 1,566 WNV cases were reported from 44 states and the District of Columbia.

However, with more up-to-date data from the California Department of Health Friday, 48 additional cases were reported from the Golden State, bringing the national total to over 1,600.

Only Alaska, Hawaii, West Virginia, Rhode Island, New Hampshire and Vermont have not seen a human WNV case.

Nearly 90 fatalities have been attributed to WNV this year to date.

In 2014, 2,205 cases were reported, including 97 deaths.

In Canada, the West Nile virus numbers have more than doubled what was reported in all of 2014. As of Oct. 10, 50 human WNV cases have been reported in Canada (21 in all of 2014) with 90 percent of cases reported from Quebec and Ontario.

In Europe, as of Oct. 29, 106 cases of West Nile fever in humans have been reported in EU Member States and 134 cases in neighboring countries since the beginning of the 2015 transmission season.

West Nile virus is a mosquito-borne disease that can cause encephalitis, a brain inflammation. West Nile virus was first detected in North America in 1999 in New York. Prior to that it had only been found in Africa, Eastern Europe, and West Asia.

According to the CDC, approximately 80 percent of people (about 4 out of 5) who are infected with WNV will not show any symptoms at all.

Up to 20 percent of the people who become infected have symptoms such as fever, headache, and body aches, nausea, vomiting, and sometimes swollen lymph glands or a skin rash on the chest, stomach and back. Symptoms can last for as short as a few days, though even healthy people have become sick for several weeks.

About one in 150 people infected with WNV will develop severe illness. The severe symptoms can include high fever, headache, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, vision loss, numbness and paralysis. These symptoms may last several weeks, and neurological effects may be permanent.

There is no specific treatment for WNV infection.

## NOT ONLY MOSQUITOES

### Ellen DeGeneres On Heidi Klum Having Lice: Host Asks Supermodel 'Do You Bathe?'

*By Mikaela Joyce Sarthou*

*Oct 30, 2015*

During an interview with comedian Ellen DeGeneres in her "Ellen DeGeneres Show," the 42-year-old model admitted that she and her four kids, 11-year-old Leni, 10-year-old Henri, 9-year-old Johan and 6-year-old Lou, had contracted the head critters when the children brought them home.

"First of all, I heard that your whole house is full of lice. So that's why I didn't hug her," DeGeneres said when Klum said the comedian is "scared of her lice."



The "Project Runway" host explained that her kids' school nurse saw them a few months ago when her daughter was itching in her head.

"They looked and sure enough, they found a little egg. I mean, they are like beyond small so we had the lice fairies come over to our house," said Klum.

DeGeneres said that the lice issue is just horrible and when she asked Klum how many times it had happened, the model said it was the second. Out of shock, DeGeneres joked and asked, "Do you bathe?!" and Klum responded, "Of course, we do!"

"Why are you booked her today? I don't understand. Why would not you just stay home and say I'll come next week or something," DeGeneres joked on the supermodel who admitted that she had just become lice-free a few days ago.

Klum further defended her cleansed locks by saying that they have gotten a certificate from the lice fairies who come at home to brush the hair for hours until the lice come off.



The first time Klum had lice issues was in May when she admitted that she fears she may have passed some lice to her friends, according to Contact Music.

"Sure enough, (I'm) covered in lice eggs and lice on my head. Who knows how many months I've had these already? I mean, I went to Australia to New Zealand to London to New York! I went all over the place! I took them global...! It's a mum's nightmare."

Meanwhile, biologist and assistant director at Southern Illinois University-Edwardsville Kyong Sup Yoon told Today that Klum has been infested of head lice rather than body lice since she had acquired them from her children.

The biologist even said that head louse infestation "is not associated with social, economic" and even personal hygiene status. In fact, some researchers believe that lice even like living in a clean head.

Even German supermodel Heidi Klum and her kids do not get spared from having lice. Photo Getty

## **Girl, 16, contracts bubonic plague believed to be from an infected flea bite during a hunting trip in Oregon**

**There's been 16 cases of plague in the US this year, with four people dying**

*By OLLIE GILLMAN FOR DAILYMAIL.COM*

*30 October 2015*

A 16-year-old girl has contracted bubonic plague believed to be from an infected flea's bite during a hunting trip in Oregon.

The victim - who has not been identified - fell ill five days after she started the trip near Heppner, Morrow County, on October 16. She was taken to an unidentified hospital three days later and is recovering in intensive care. Her condition is unknown.

A teenage girl has contracted bubonic plague (bacteria pictured) believed to be from an infected flea's bite during a hunting trip in Oregon

A state and federal investigation has been launched to find out how exactly she contracted the plague.

There have been eight cases in Oregon in the last 20 years, with none of them leading to deaths.

In 2012, an Oregon man lost his fingers and toes to the plague. He had contracted the disease from his cat after trying to remove a mouse from his cat's throat.

There have been 16 cases of bubonic plague in the US this year including this one, with four people dying. Four

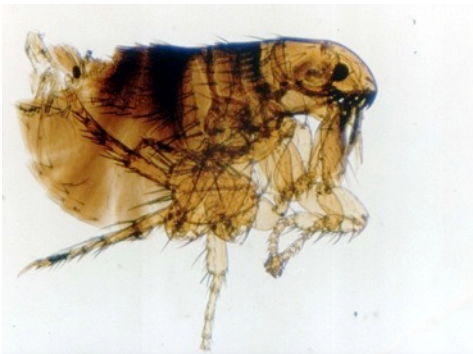




patients with plague were in Colorado, with four more in New Mexico, two in Arizona and Oregon and one in California, Utah, Georgia and Michigan. The Michigan case last month was the first ever in the state. The infectious disease is carried by squirrels, chipmunks and other wild rodents and their fleas.

The Michigan Department of Health and Human Services said the patient - who was also not named - was recovering. The infectious bacterial disease is carried by squirrels, chipmunks and other wild

rodents and their fleas. When an infected rodent becomes sick and dies, its fleas can carry the infection to other animals or humans through bites. It is treatable with antibiotics if caught early, but can be fatal if left untreated. Bubonic plague is the most common form and is characterized by high fever, lethargy and swollen lymph nodes. A plague vaccine is not available at this time. Officials recommend people avoid any contact with wild rodents, especially sick or dead ones, and should never feed squirrels or chipmunks. People should also keep their pets away from wild rodents to avoid infection.



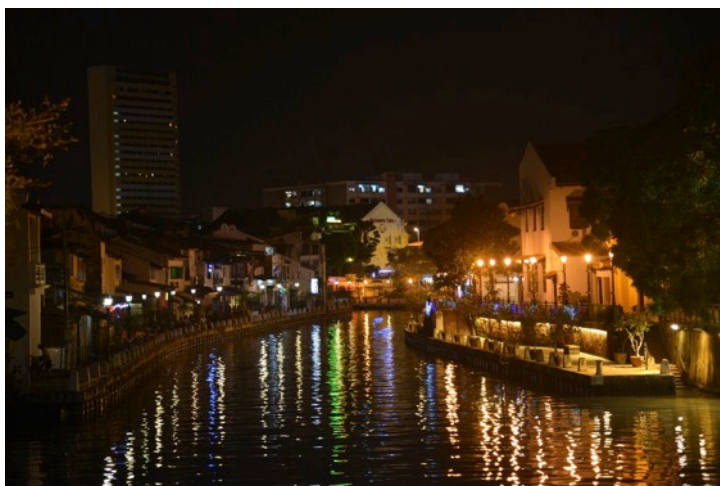
## WORLD OF MOSQUITO TECHNOLOGY

### Street lamp targets dengue fever

*Eco Business*

*Wednesday 28 October 2015*

Researchers at a Malaysian university have built an LED street lamp with a mosquito trap, both powered by wind and solar energy. The lamp can offer communities across the developing world clean power to light their streets and protection from mosquito-borne diseases such as dengue fever, they say. Chong Wen Tong, a mechanical engineer at the University of Malaya in Kuala Lumpur and the project's principal investigator, says the integrated Eco-Greenergy lamp can fight mosquitoes, while reducing greenhouse gases. According to Chong, the lamp's wind turbine is



suitable even at the "low and unsteady" wind speeds sometimes found in the tropics. The mosquito trap relies on the mosquitoes' natural attraction to carbon dioxide, which is breathed out by their human prey. The trap produces this gas to lure in the insects and then a fan prevents them from escaping. This feature is designed to reduce the prevalence of dengue fever, which is transmitted by mosquitoes and whose prevalence is growing in Malaysia.

Tropical countries that are susceptible to mosquitoes carrying infectious diseases such as dengue can take benefit from street lights that can trap mosquitoes while

providing light powered by renewable energy. Image: Sarunyu L / Shutterstock.com  
SciDev Net

Dengue is widespread in the tropics. Although the disease rarely kills, it may cause as many as 390 million infections a year, and about ten times as many people across 128 countries may be at risk of infection.

The lamp can be sold for use in "suitable locations all around the world" that have the infrastructure



in place to set up and maintain the lamps, Chong says. But although LEDs last much longer than conventional street lighting, each lamp costs around US\$2,850 to buy and install, making it quite expensive.

The lamp cost US\$30,000 to develop and pilot over 18 months, Chong tells SciDev.Net.

Two of the lamps have been installed through a pilot project at the University of Malaya campus, with three others at the university's Field Studies Centre in the state of Selangor, Chong says. However, results from this pilot have not yet been released.

"This device is tailor-made for developing countries, where power outage and dengue fever are common problems for rural residents," says Bernard Saw Lip Huat, a mechanical and materials engineer at the University of Tunku Abdul Rahman in Selangor, Malaysia.

Saw praises the lamp's green energy system and easy installation, saying these factors help improve its appearance and functionality.

"I firmly believe that these benefits have the potential to make this invention extremely desirable to the engineering world today," he says.

## WORLD OF MOSQUITO SCIENCE

### How Mosquitoes Locate Veins So Quickly

*Asian Scientist Newsroom*

*October 30, 2015 In the Lab*

The suspects are bloodthirsty and remorseless. The challenge for investigators is distinguishing how mosquitoes locate veins so quickly. Two olfactory receptors expressed on a mosquito's stylet are crucial for the accurate and efficient identification of veins for blood sucking. Asian Scientist Newsroom | October 30, 2015 | In the Lab AsianScientist (Oct. 30, 2015) - Researchers from Seoul National University (SNU) have demonstrated a key component in a mosquito's olfactory system to detect veins on its victim. Their work, published in *Scientific Reports*, may contribute to the fight against the spread of diseases by mosquitoes. Mosquitoes are one of the most lethal animals in the world. Last year, they killed almost a million people, according to the World Health Organization (WHO). Mosquitoes are typically a minor inconvenience to many of those in developed countries, but through the spread of fatal diseases such as malaria, yellow fever, and dengue, they are a terrifying presence in many developing regions such as Africa, South America, and Asia. Previous studies have demonstrated that mosquitoes are attracted to humans due to their emissions of octenol (found in human breath, and sweat) and carbon dioxide as well as odors emitted by sweat (lactic acid) and feet (isovaleric acid). However, it remained a mystery how mosquitoes are able to unerringly and swiftly locate the veins of its victim and suck blood before the victim even realizes its presence. Professor Ahn Young-joon and Professor Kwon Hyung-woon from SNU's College of Agriculture and Life Science sought to understand the mechanism that allowed mosquitoes to be so efficient. Ahn, Kwon and the team have discovered that sensory hairs located at the tip of a mosquito's piercing-sucking stylet, an essential apparatus for blood feeding, played a major role. These hairs housed olfactory neurons that expressed two conventional olfactory receptors, AaOr8 and AaOr49. The team demonstrated that these receptors were activated by volatile compounds present in blood, proving that the receptors were critical in allowing mosquitoes to locate the veins. By inhibiting the gene expression of these AaOrs through RNA interference, the scientists crippled the mosquitoes' efficiency and delayed their blood feeding. It took them to take up to fifteen minutes to feed, whereas normally, mosquitoes would feed within thirty seconds. The newly discovered



olfactory systems proved to be central to a mosquito's blood feeding. The findings of Ahn and Kwon have provided a more thorough understanding of mosquitoes' feeding process. Using this knowledge, genetic disruption of the newly discovered olfactory receptors may decrease mosquito bites, prevent its breeding, and thus curb the spread of mosquito-borne diseases worldwide.

## DID YOU KNOW?

### How mosquitoes helped U.S. win Revolutionary War

From *The Evolution of Everything* by Matt Ridley. Copyright © 2015 by Matt Ridley.

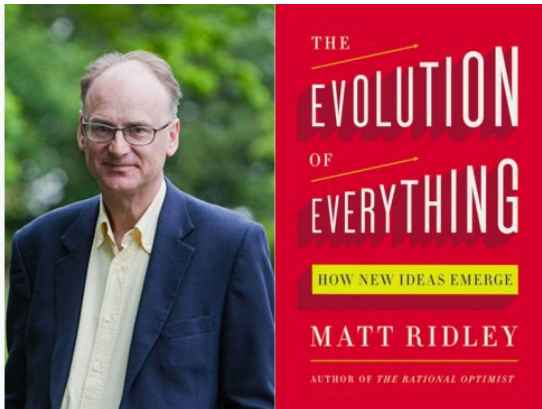
*Thestar.com - Insight*

Although humans are fascinated by design and top-down leadership, many events and ideas evolve from the bottom up, author Matt Ridley argues. In this excerpt from *The Evolution of Everything*, he examines the effect of the malaria parasite on the American revolutionaries' victory against Britain.

In 1493, his magnificent account of the great Columbian exchange that followed contact between the eastern and western hemispheres, Charles Mann shows how again and again the forces that truly shaped history came from below, not above. For instance, the American Revolution was won by the malaria parasite, which devastated General Charles Cornwallis's army in the Carolinas and on the Chesapeake Bay, at least as much as it was won by George Washington. I say this not as a bad-loser Brit seeking excuses, but on the authority of the distinguished (American) environmental historian J.R. McNeill. Referring to female mosquitoes of the species *Anopheles quadrimaculatus*, he writes: "Those tiny amazons conducted covert biological warfare against the British army."

In 1779 the British commander Henry Clinton adopted a "southern strategy," and sent his forces by sea to occupy the Carolinas. But the Carolinas were infested with malaria, which broke out afresh every spring, especially among new arrivals from Europe. It was the vivax strain of the parasite,

which debilitates and weakens its victims, sometimes facilitating death from other causes. Rice-growing made the problem worse, providing ample habitat for the mosquitoes. "Carolina in the spring is a paradise, in the summer a hell and in the autumn a hospital," wrote one German visitor. Most white colonists had survived malaria in their youth and acquired some resistance. Most black slaves had brought some degree of genetic immunity to malaria with them from Africa. So the American South was the worst possible place to invade with foreign troops.



PETER WALTON, Matt Ridley tries to dispel the myth that we can control our world

After capturing Charleston, the British under Cornwallis marched inland. As platoons of perspiring, pale-skinned Scotsmen and Germans tramped through the woods and rice fields in June 1780 (the height of the mosquito season), the *Anopheles* mosquitoes and *Plasmodium* parasites could not believe their luck. They both gorged themselves on blood, the mosquitoes swallowing it, the parasites being swallowed by its cells.

When the time came to fight a battle, most of the army was debilitated by fever, including Cornwallis himself. In the words of McNeill, Cornwallis's army simply melted away at one battle. Only the local loyalists, fever-seasoned, could stay in the field. It did not help that the only cure for malaria — quinine from the bark of the *Cinchona* tree — was monopolized by the Spanish, who had cut off trade with the British in support of their French and American allies.

Come the winter, Cornwallis's men recovered, and he moved specifically to "preserve the troops



from the fatal sickness, which so nearly ruined the Army last autumn.” But Clinton ordered him to return to the coast ready to receive reinforcements, so Cornwallis reluctantly fell back to Yorktown, a fort between two feverish swamps on the Chesapeake Bay. George Washington, with French and northern troops, marched south to besiege him, arriving in September. Cornwallis, his “force daily diminished by sickness,” surrendered within three weeks.

Since malaria takes more than a month to incubate, the newly arrived French and Americans began to fall sick only after the battle was over. “Mosquitoes,” says McNeill, “helped the Americans snatch victory from the jaws of stalemate and win the Revolutionary War, without which there would be no United States of America. Remember that when they bite you next Fourth of July.”

Of course, we cannot take away all the credit that George Washington earned as a general. But the American leaders’ reputations were made by the turn of events at least as much as the other way round. Microscopic events, at that. Of course, you could argue that the war was unwinnable for the British anyway, and that eventually they would have succumbed even with out the mosquitoes. It is important not to substitute a Great Insect theory for a Great Man theory. But then, that rather reinforces the point that the determinants of war were bottom-up ones.