



**Food and Agriculture Organization
of the United Nations**



Emergence and Current distribution of TiLV

Win Suarchetpong

**Project Inception Workshop of GCP/RAF/510/MUL:
Enhancing capacity/risk reduction of emerging Tilapia Lake Virus (TiLV) to African tilapia aquaculture
Southern Sun Myfair Hotel, 23-24 October 2018, Nairobi, Kenya**

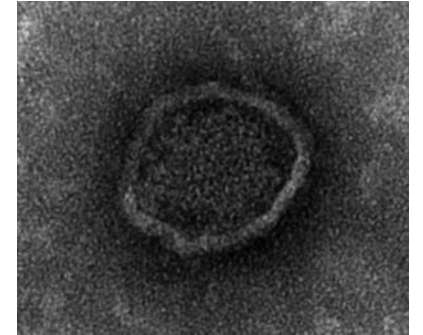
Identification of a new emerging disease

"to open Pandora's box"
means to perform an action
that may seem small or
innocent, but that turns out
to have severely detrimental
and far-reaching negative
consequences. (Wikipedia)

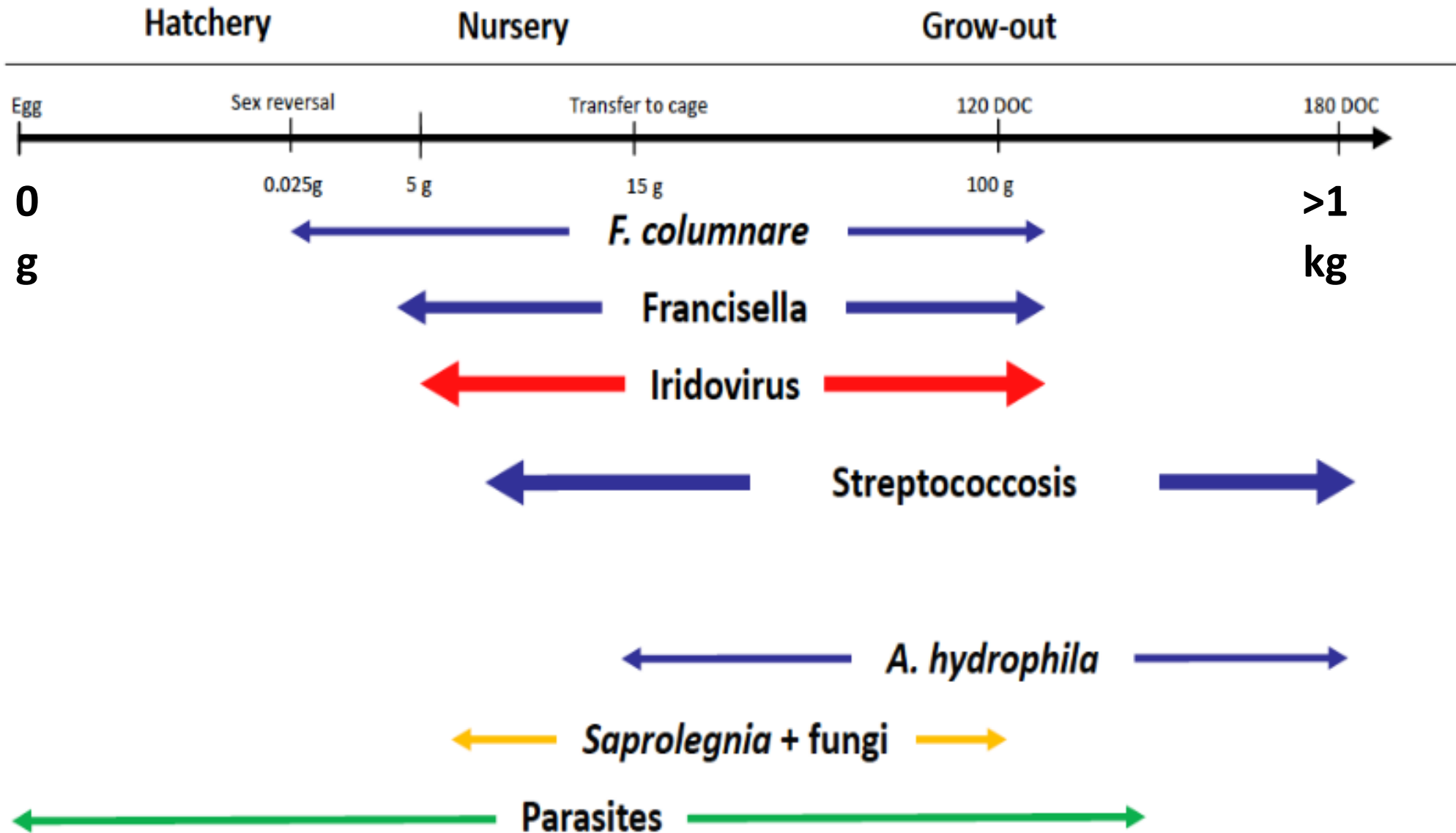


Current information on TiLV

- RNA, envelope, Orthomyxo-like virus
- Mainly affect tilapia, closely related species and giant gourami
- No report of harm to human or other animals
- **Strict biosecurity** reduces the impact of disease and spreading of virus
- Not on the **OIE disease list**



Infectious diseases of tilapia

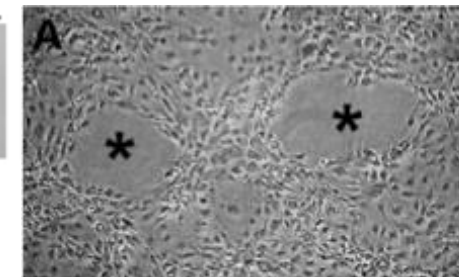
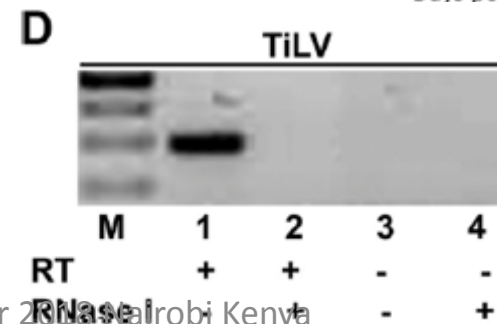
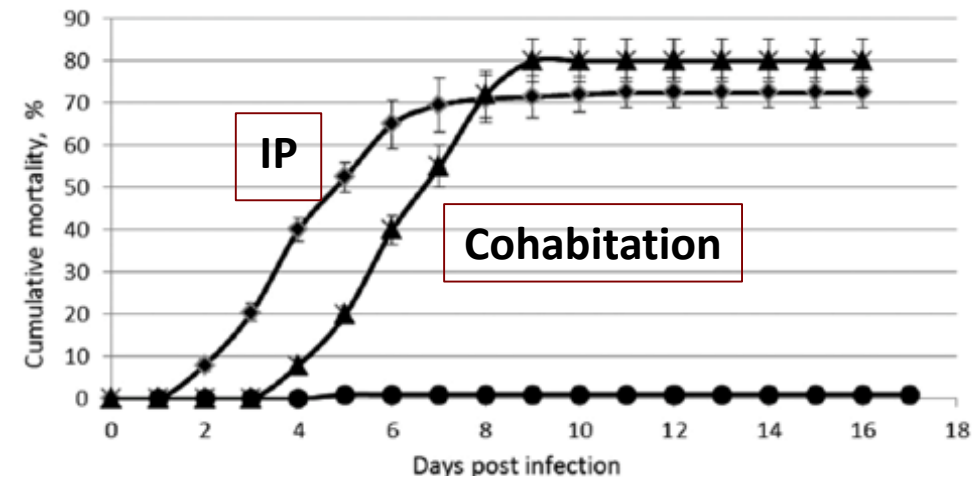
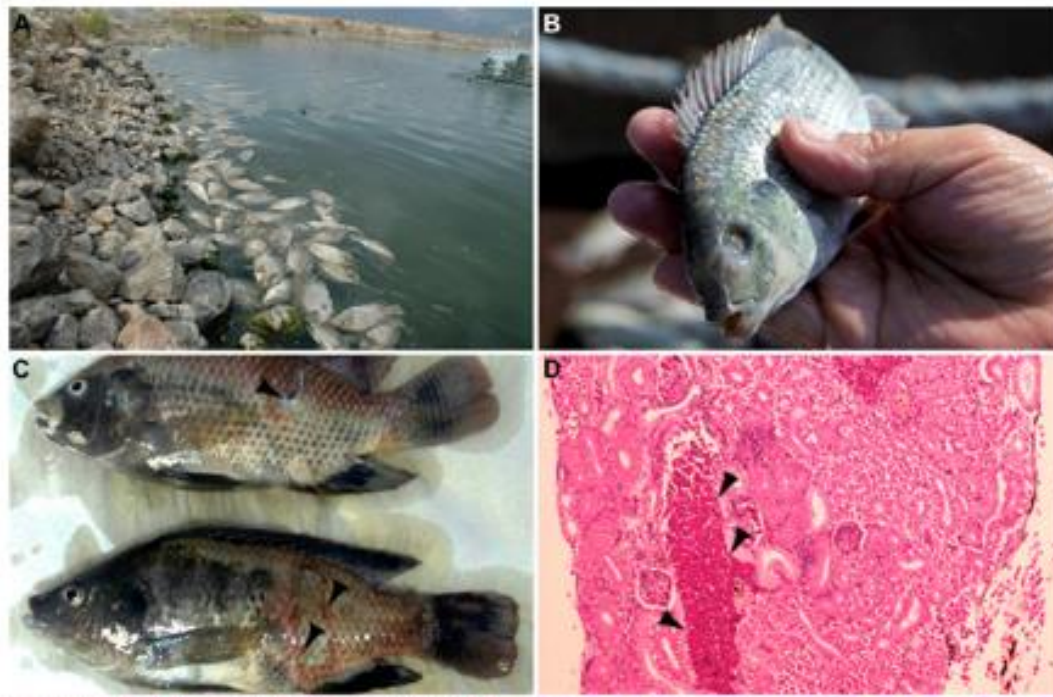


Identification of a Novel RNA Virus Lethal to Tilapia

Tilapia Lake Virus: TiLV

Marina Eyngor,^a Rachel Zamostiano,^b Japhette Esther Kembou Tsofack,^b Asaf Berkowitz,^a Hillel Bercovier,^c Simon Tinman,^d Menachem Lev,^e Avshalom Hurvitz,^f Marco Galeotti,^g Eran Bacharach,^b Avi Eldar^a

Department of Poultry and Fish Diseases, The Kimron Veterinary Institute, Bet Dagan, Israel^a; Department of Cell Research and Immunology, The George S. Wise Faculty of Life Sciences, Tel Aviv University, Tel Aviv, Israel^b; The Hebrew University-Hadassah Medical School, Jerusalem, Israel^c; Department of Animal Facility, Faculty of Life Sciences, Bar Ilan University, Ramat Gan, Israel^d; Ein Gev Fisheries, Kibbutz Ein Gev, Israel^e; Dan Fish Farms, Kibbutz Dan, Upper Galilee, Israel^f; Department of Food Science, Section of Veterinary Pathology, University of Udine, Udine, Italy^g



Syncytial hepatitis of farmed tilapia, *Oreochromis niloticus* (L.): a case report

Journal of Fish Diseases 2014, 37, 583–589

H W Ferguson¹, R Kabuusu¹, S Beltran², E Reyes², J A Lince² and J del Pozo³

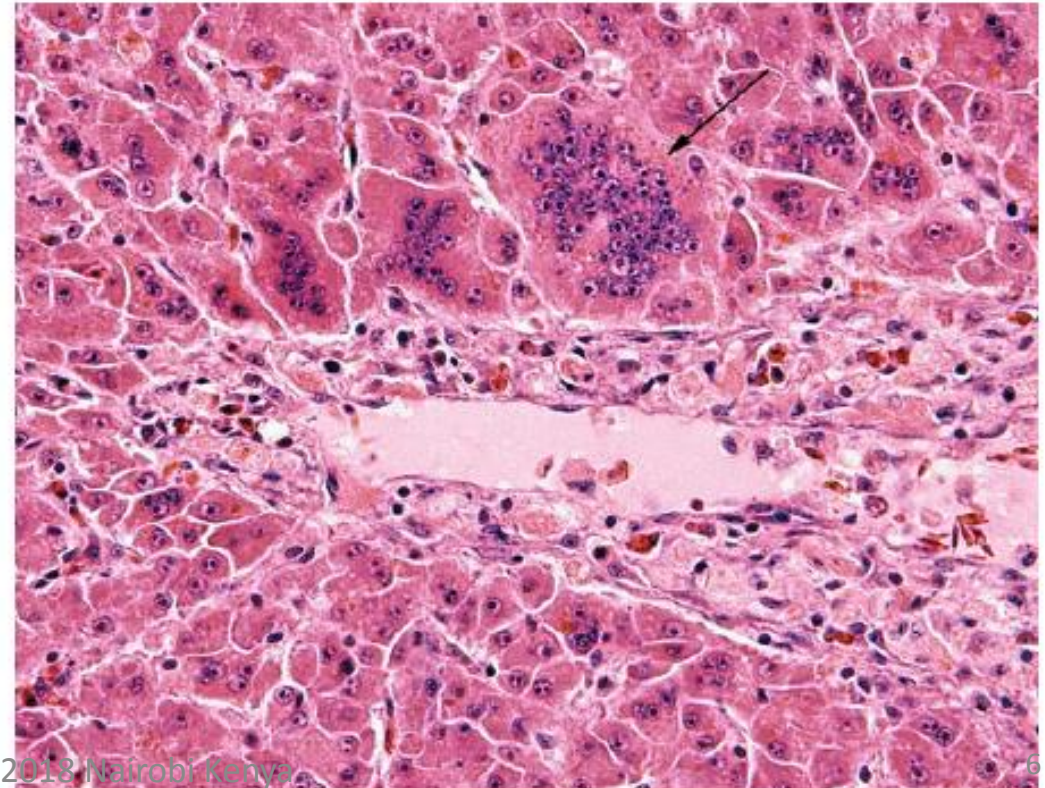
1 Marine Medicine Programme, School of Veterinary Medicine, St George's University, St George, Grenada

2 Prodimar S.A., Guayaquil, Ecuador


3 Department of Pathology, Royal (Dick) School of Veterinary Medicine, University of Edinburgh, Edinburgh, Scotland, UK



Ascites



Detection of Tilapia Lake Virus in Egyptian fish farms experiencing high mortalities in 2015

P Nicholson^{1*} | M A Fathi^{2,3*} | A Fischer⁴ | C Mohan⁵ | E Schieck⁴ | N Mishra⁶ |
A Heinemann⁷ | J Frey¹ | B Wieland⁸ | J Jores^{1,4} 

**Bacteria in the genus
Aeromonas are
commonly isolated
from TiLV infected fish**

Farm ID	Diseased fish/total fish sampled Morbidity rate (%) ^a	TiLV detected	<i>Aeromonas</i> species detected
1	7/13 (54%)	–	<i>A. veronii</i> <i>A. hydrophilia</i>
2	14/26 (54%)	–	<i>A. veronii</i>
3	13/24 (54%)	+	<i>A. veronii</i>
4	13/30 (43%)	–	<i>A. veronii</i> <i>A. ichthiosmia</i> <i>A. enteropelogenes</i>
5	21/40 (53%)	+	<i>A. veronii</i>
6	14/20 (70%)	–	<i>A. veronii</i> <i>A. enteropelogenes</i> <i>A. jandaei</i>
7	8/24 (33%)	+	<i>A. veronii</i> <i>A. ichthiosmia</i>
8	10/10 (100%)	+	<i>A. enteropelogenes</i> <i>A. hydrophilia</i>
WF	0/20 (0%)	–	<i>A. veronii</i>

Short communication

A case of natural co-infection of Tilapia Lake Virus and *Aeromonas veronii* in a Malaysian red hybrid tilapia (*Oreochromis niloticus* × *O. mossambicus*) farm experiencing high mortality

M.N.A. Amal^{a,f,*}, C.B. Koh^b, M. Nurliyana^a, M. Suhaiba^a, Z. Nor-Amalina^c, S. Santha^c, K.P. Diyana-Nadhirah^c, M.T. Yusof^d, M.Y. Ina-Salwany^{c,f}, M. Zamri-Saad^{e,f}

^a Department of Biology, Faculty of Science, Universiti Putra Malaysia, Selangor, Malaysia

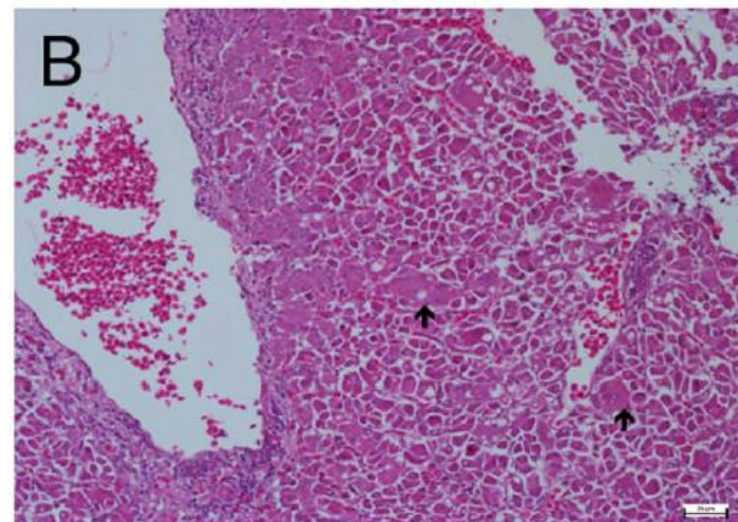
^b Cargill Feed Sdn. Bhd., West Port, Klang, Selangor, Malaysia

^c Department of Aquaculture, Faculty of Agriculture, Universiti Putra Malaysia, Selangor, Malaysia

^d Department of Microbiology, Faculty of Biotechnology and Biomolecular Sciences, Universiti Putra Malaysia, Selangor, Malaysia

^e Department of Veterinary Laboratory Diagnosis, Faculty of Veterinary Medicine, Universiti Putra Malaysia, Selangor, Malaysia

^f Laboratory of Marine Biotechnology, Institute of Bioscience, Universiti Putra Malaysia, Selangor, Malaysia






ORIGINAL ARTICLE

WILEY



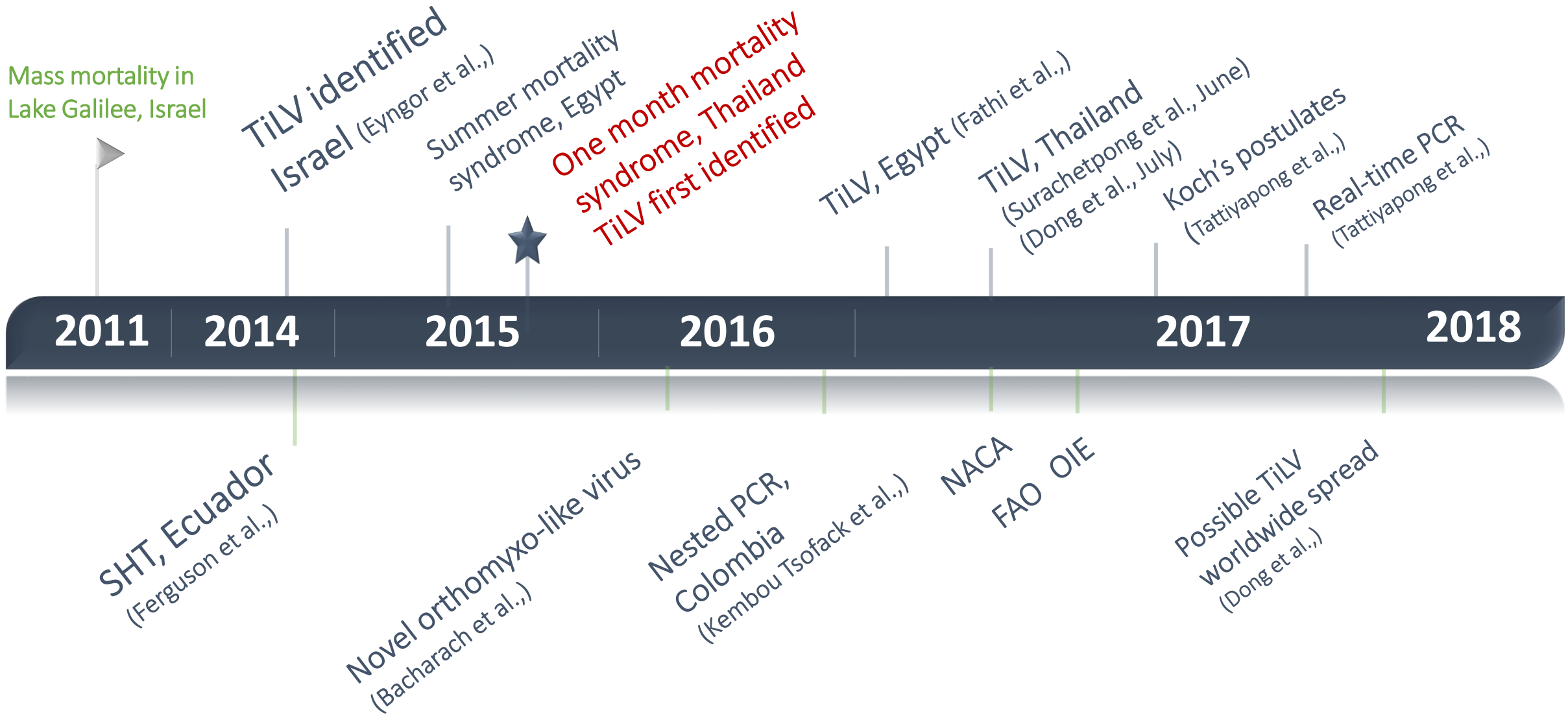
Detection of tilapia lake virus (TiLV) infection by PCR in farmed and wild Nile tilapia (*Oreochromis niloticus*) from Lake Victoria

K K Mugimba^{1,2*} | A A Chengula^{1,3*} | S Wamala^{1,2} | E D Mweha^{1,3} | C J Kasanga³ |
D K Byarugaba² | R H Mdegela³ | S Tal⁴ | B Bornstein⁴ | A Dishon⁴ | S Mutoloki¹  |
L David⁵  | Ø Evensen¹ | H M Munang'andu¹ 

- **Examined 191 fish, 28 showed positive TiLV by PCR**
- **High prevalence in head kidney and spleen**

TiLV discovery

Mass mortality in
Lake Galilee, Israel





the Fish Health Platform in
ies where it has



Asia Regional Aquatic Animal
Health Programme

**AQUATIC A
(Asia**



DISEASE ADVISORY

Tilapia Lake Virus (TiLV) – an Emerging Threat to Farmed Tilapia in the Asia-Pacific Region

Network of Aquaculture Centres in Asia-Pacific, Bangkok, Thailand

Janu

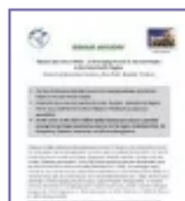
Quarterly Aquatic Anima



The 73rd edition of the Q
provides information about
In

Disease at
region

TILAPIA L



Ti
Is
th
PATHOGE
Philippines, Thailand, Indone
methods



Urgent update on possible worldwide spread of tilapia lake virus (TiLV)



Current distribution of TiLV



3 continents and 14 countries

**TiLV discovery
in
Thailand**

Unknown cause(s) of tilapia death

Sarun You Patthong feeling ลงทุนลงแรงเลี้ยง ครั้งแรกก็หื้อแล้ว...
12 hrs · Ampho Ban Pho

เมื่อก่อนเลิกงาน กลับมานั่งให้อาหารปลานังดูแล้วรู้สึกมีความสุขแต่ตอนนั้นเลิกงานกลับมาต้อง
มาไล่ตามความตาย ให้อาหารปลานังดูแล้วรู้สึกมีความสุขแต่ตอนนั้นเลิกงานกลับมาต้องมาไล่
ตักปลาตาย แล้วเอามาฝังหื้อแล้วคับ



Pictures from facebook

Autsadayut Chernchom ชมรมคนเลี้ยงปลานิล
20 hrs ·

ปล่อยี่ไซตโใบขามได้สามวัน คัยรู้มั่งว่าเป็นอะไรคับ. ขอบคุณคับ



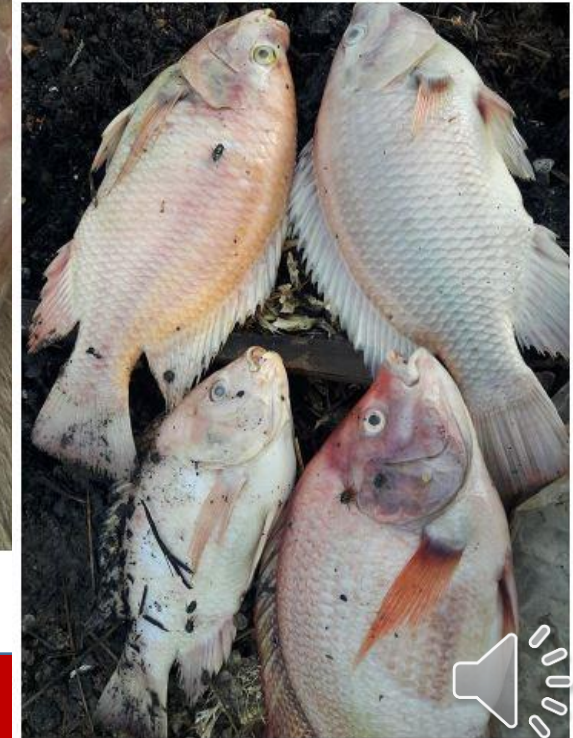
ปาริฉัตร ม่วงปาน ชมรมคนเลี้ยงปลานิล
4 mins ·

สอบถามคะตายวันละตัว อาการท้องจะบวมๆ ให้อินเยอะเกินไปไหมคะ หัวอาหาร 4.5
กก./วัน/ปลา 3000 ตัว



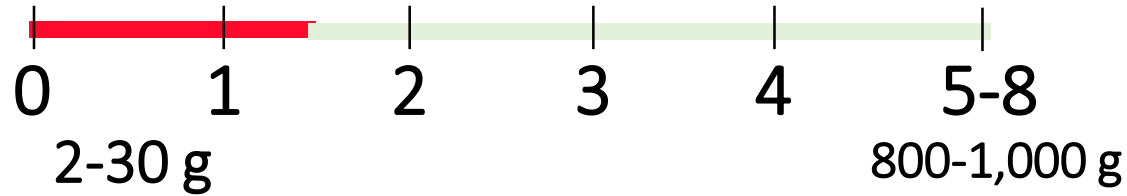
Yuii Thamcharoen
May 18 at 6:35pm

ปลา 4 เดือนเต็มยังไม่โตขึ้น ให้อาหารเม็ด ตีน้ำทุกคืน หยอยตายวันละ4-5 ตัว ตามมา5-6 วัน
แล้วตีมน้ำเข้าบ่อก็ยังไม่โตเหมือนเดิม ทัดมีวิธีแนะนำไหมคะให้ปลาหยุดตาย

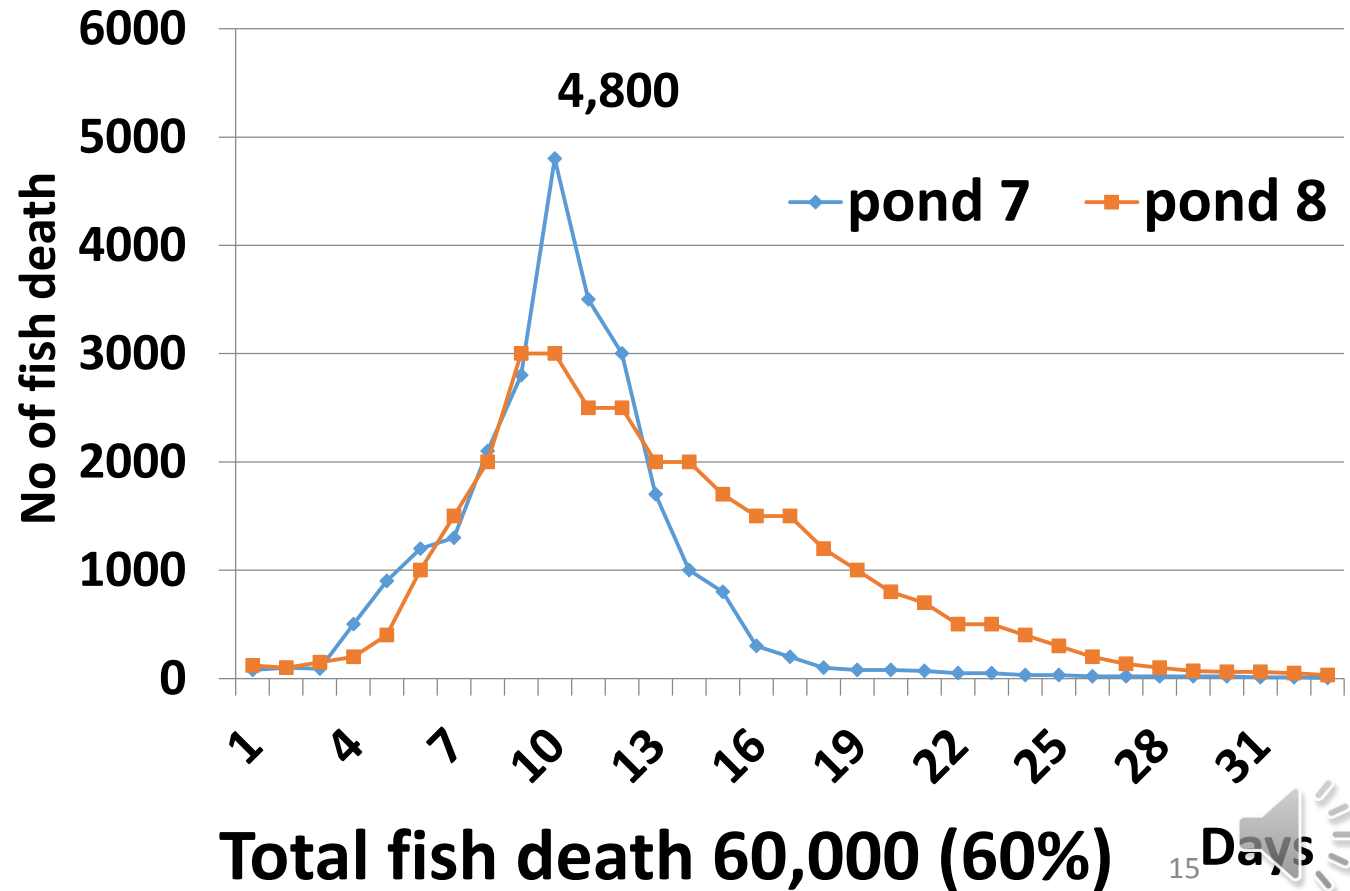


Tilapia One Month Mortality Syndrome (TOMMS)

Months in cage/pond culture



Pattern of fish death



Mass mortality in fry, juvenile, fingerlings



Win Surachetpong



Win Surachetpong



Win Surachetpong

Gross signs



WIN SURACHETPONG



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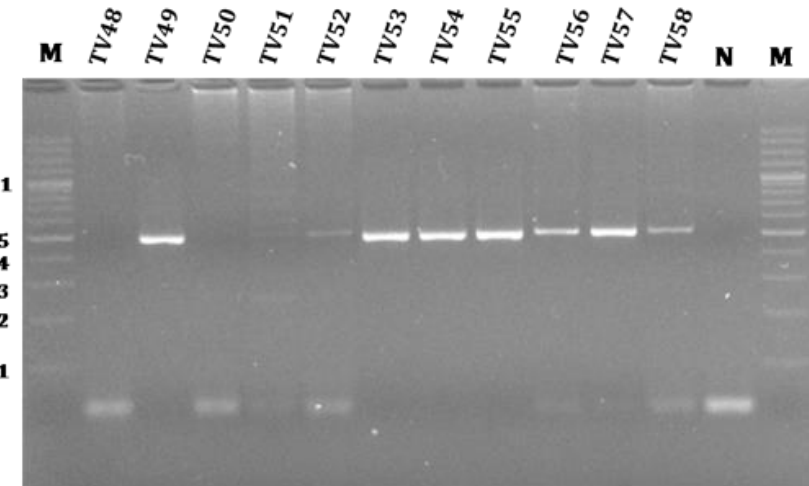
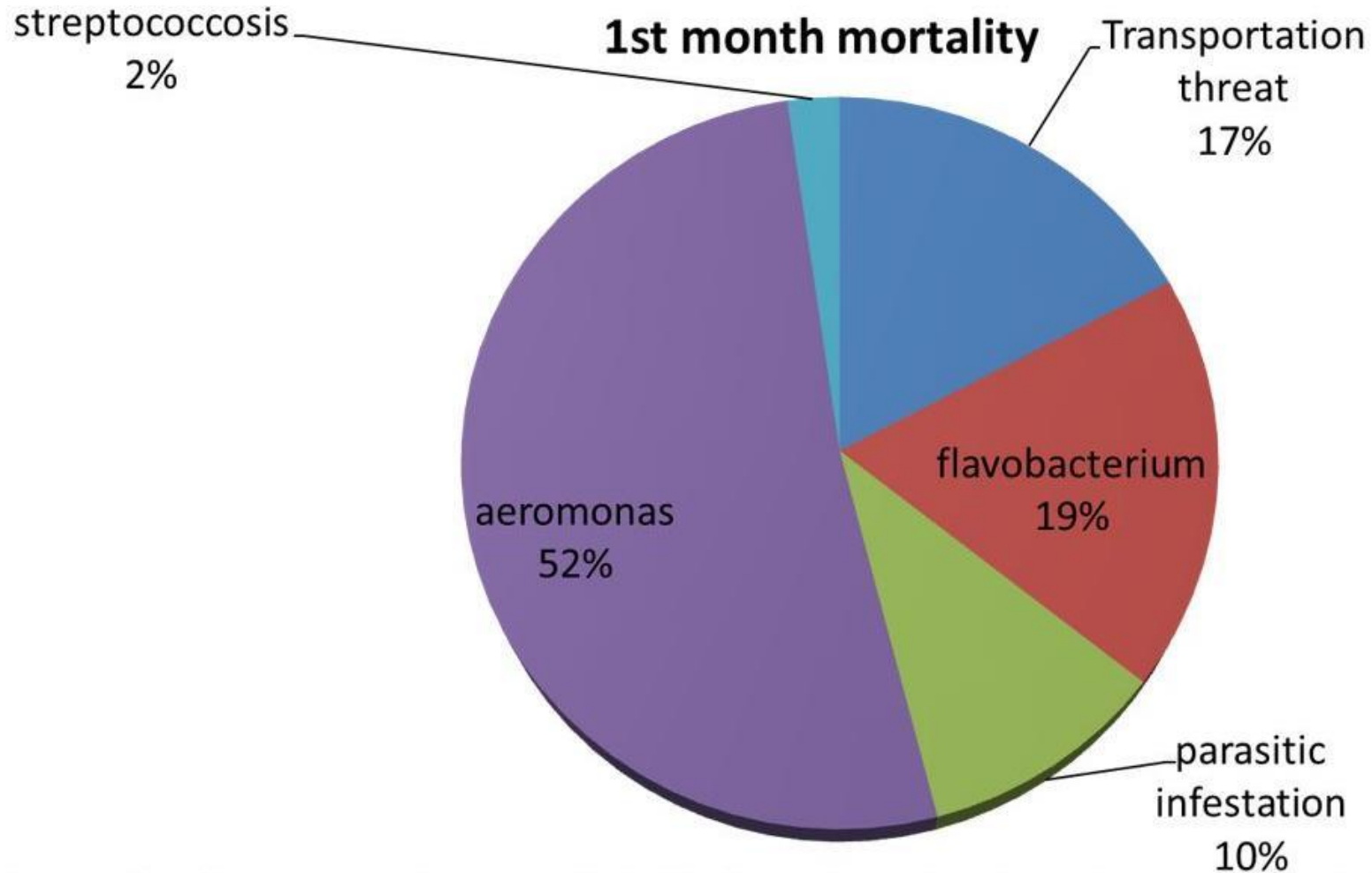
WIN SURACHETPONG

Clinical signs: Anemic fish



Bacterial culture results of TOMMS

Data between June and December 2015 in a hatchery farm (600,000 fingerlings)



TOMMS & Tilapia Lake Virus ??

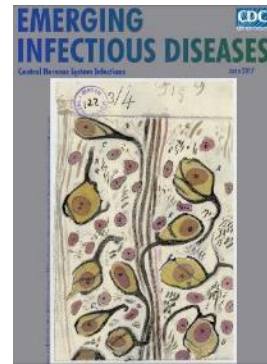


Outbreaks of Tilapia Lake Virus Infection, Thailand, 2015–2016

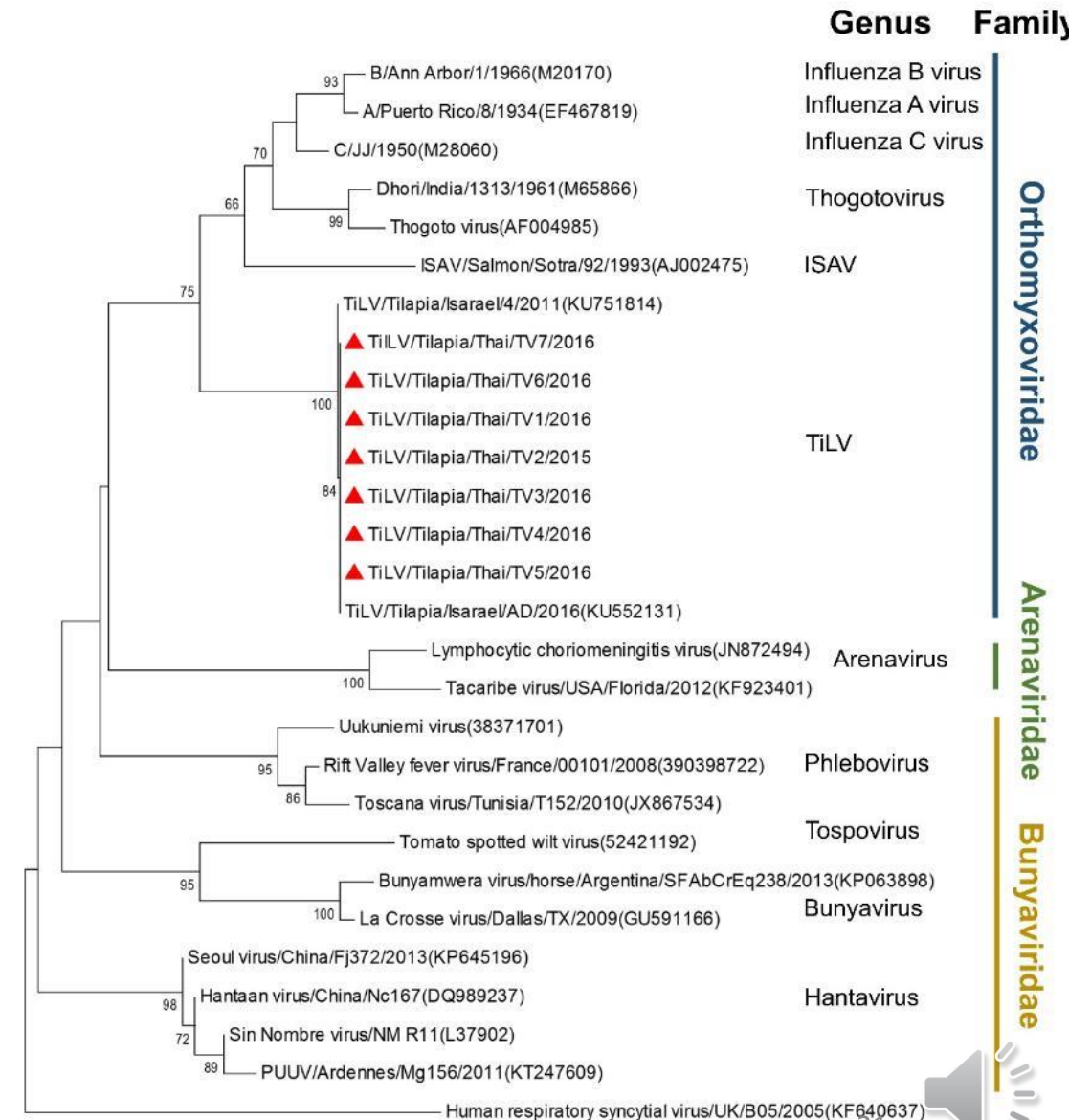
Win Surachetpong, Taveesak Janetanakit, Nutthawan Nonthabenjawan, Puntanat Tattiyapong, Kwanrawee Sirikanchana, Alongkorn Amonsin

Author affiliations: Kasetsart University, Bangkok, Thailand (W. Surachetpong, P. Tattiyapong); Chulalongkorn University, Bangkok (T. Janetanakit, N. Nonthabenjawan, A. Amonsin); Chulabhorn Research Institute, Bangkok (K. Sirikanchana); Ministry of Education, Bangkok (K. Sirikanchana)

DOI: <https://dx.doi.org/10.3201/eid2306.161278>

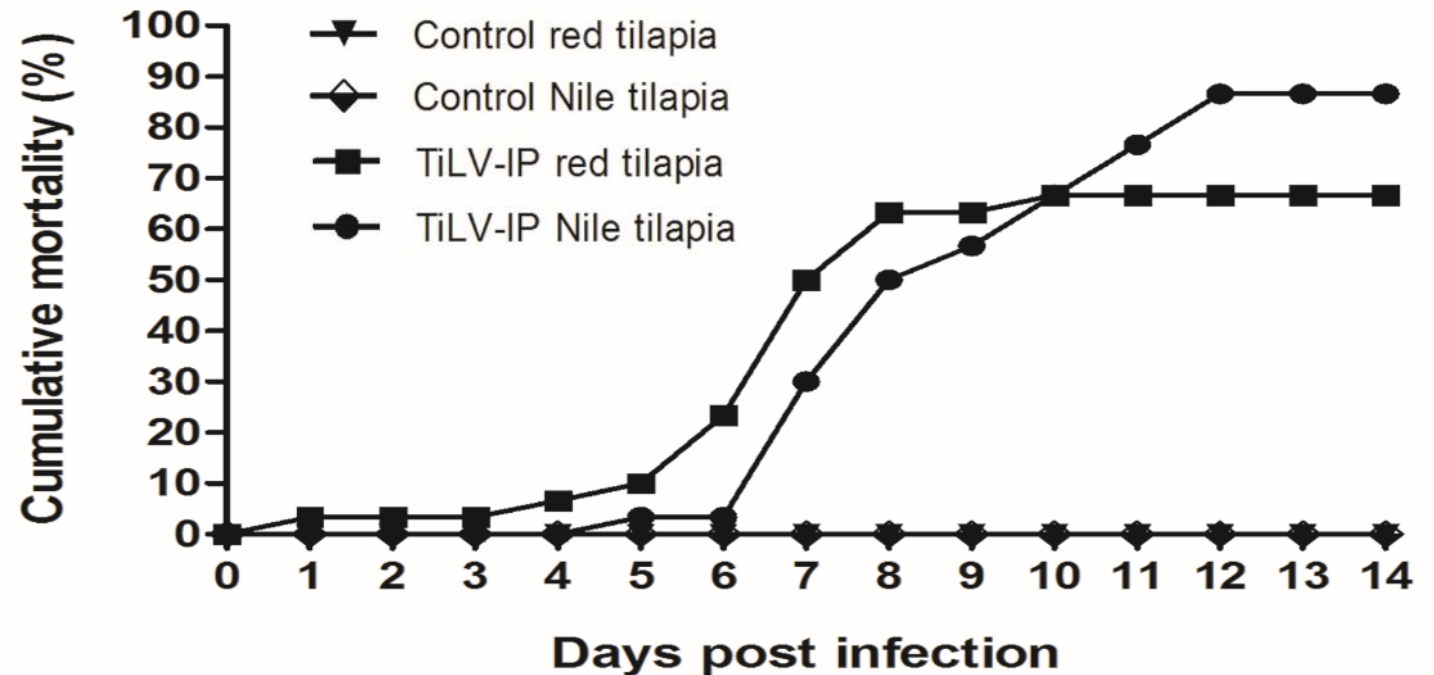
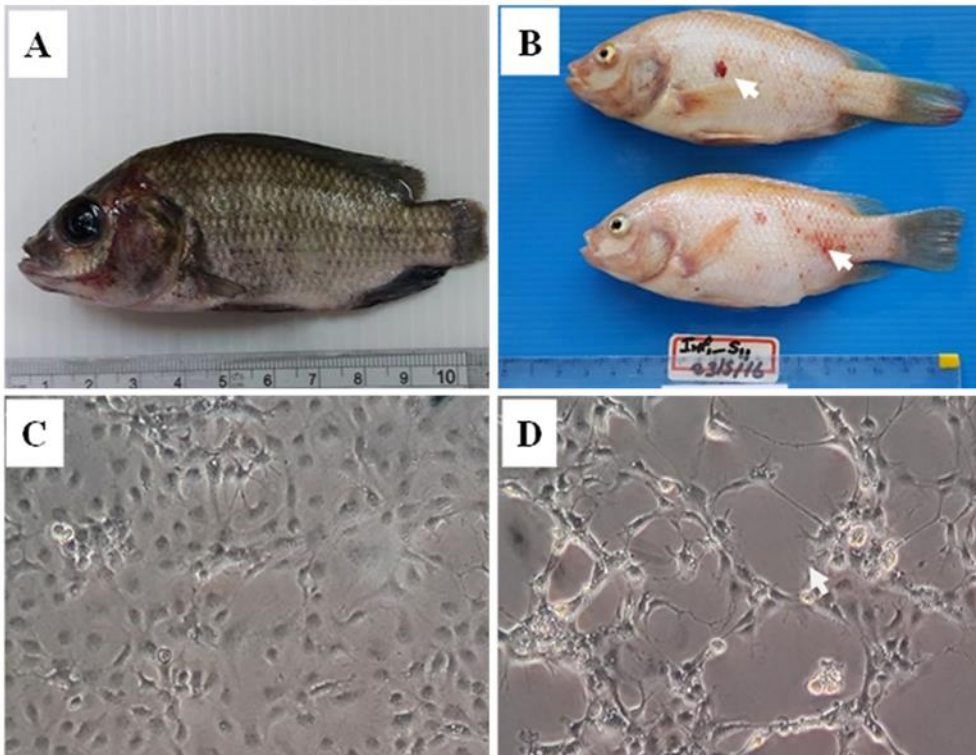


Orthomyxo-like virus



Experimental infection of Tilapia Lake Virus (TiLV) in Nile tilapia (*Oreochromis niloticus*) and red tilapia (*Oreochromis spp.*)

Puntanat Tattiyapong^{a, b}, Worawan Dachavichitlead^{a, b}, Win Surachetpong^{a, b}  



Take home messages....

- **Tilapia Lake Virus has been detected since 2011**
- **To date, TiLV positive samples were reported in 14 countries**
- **Multiple infections of TiLV, bacteria and parasites are commonly found: Summer mortality, One month mortality syndrome**



**Food and Agriculture Organization
of the United Nations**

Thank you for your attention

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