Donald Lightner

University of Arizona

United States

Professor Donald Lightner is a pre-eminent pathologist of cultured shrimp and finfish at the Department of Veterinary Science and Microbiology, University of Arizona, where he directs an OIE reference laboratory for shrimp diseases. Dr. Lightner's research deals with virology, histology, toxicology, electron microscopy and other tools for disease diagnosis, pathogen characterization and treatment. He has been instrumental in the prevention of disease through nutrition, immunology and development of specific pathogen-free stocks.

Development of a PCR Diagnostic Test for EMS

D.V. Lightner, R.M. Redman, C.R. Pantoja, B.L. Noble, L.M. Nunan, Loc Tran and Silvia Gomez J

Two *Vibrio parahaemolyticus* isolates underwent metagenomic sequencing

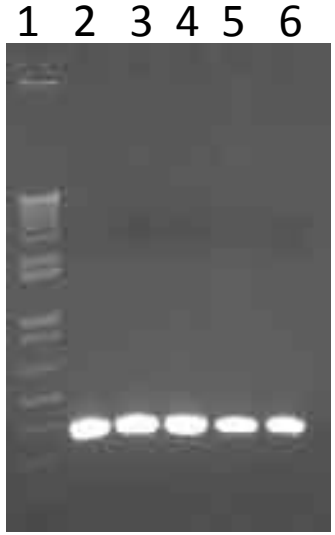
- Sequenced were VP A/2 & VP A/3.
- VP A/2 does *not* cause AHPND/EMS.
- VP A/3 does cause AHPND/EMS.
- Primers were designed from the metagenomic sequencing data for the extra-chromosomal genetic material that was found.
- These primers gave the following results:

Vibrio parahaemolyticus isolates

Samples:

1. 1 Kb marker
2. 13-028 A/3- Vietnam
3. 1335- Vietnam
4. 12-297B- Vietnam
5. 13-306D/4- Mexico
6. 13-028 A/2- Vietnam

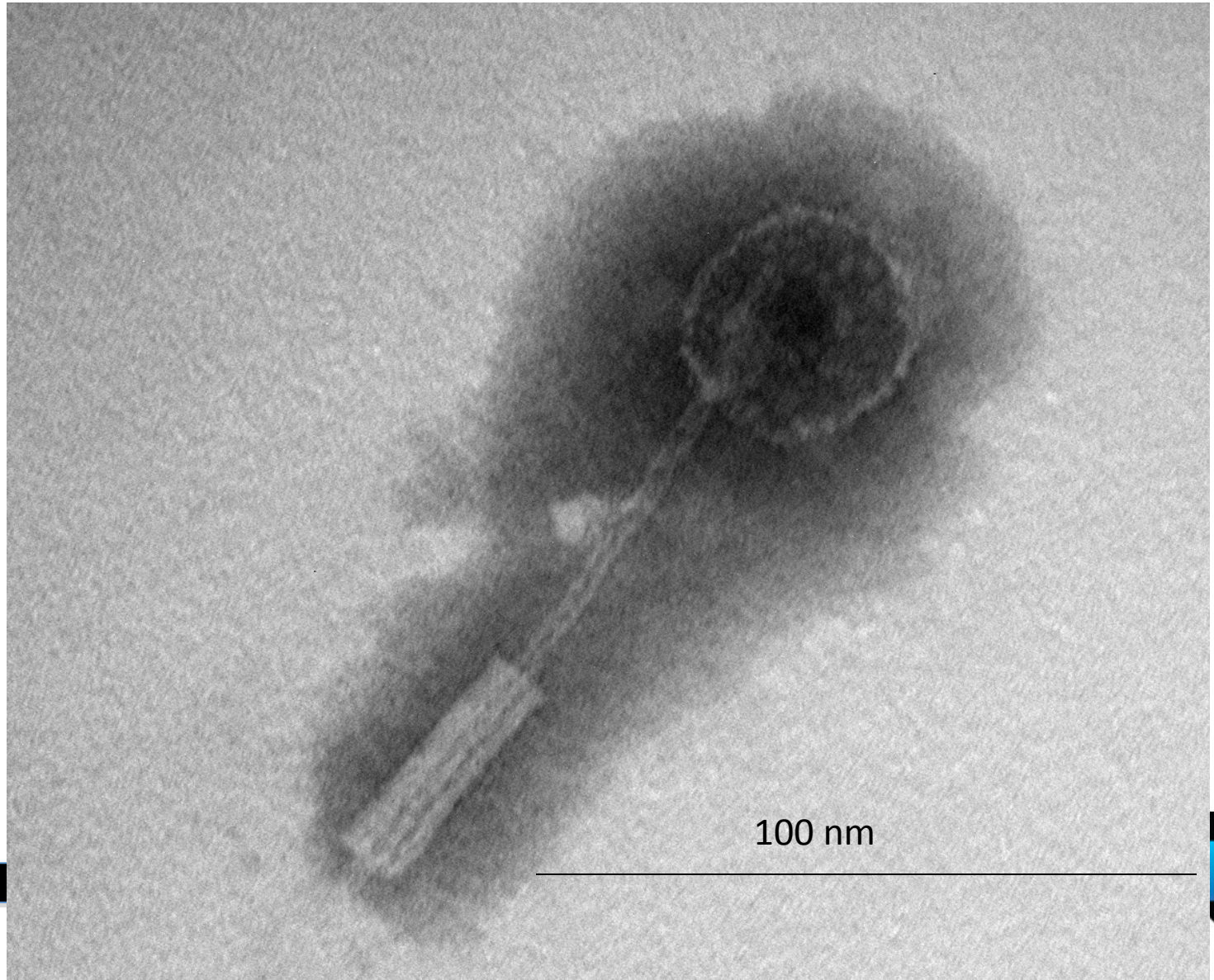
Tox R



All of the isolates

Vibrio parahaemolyticus

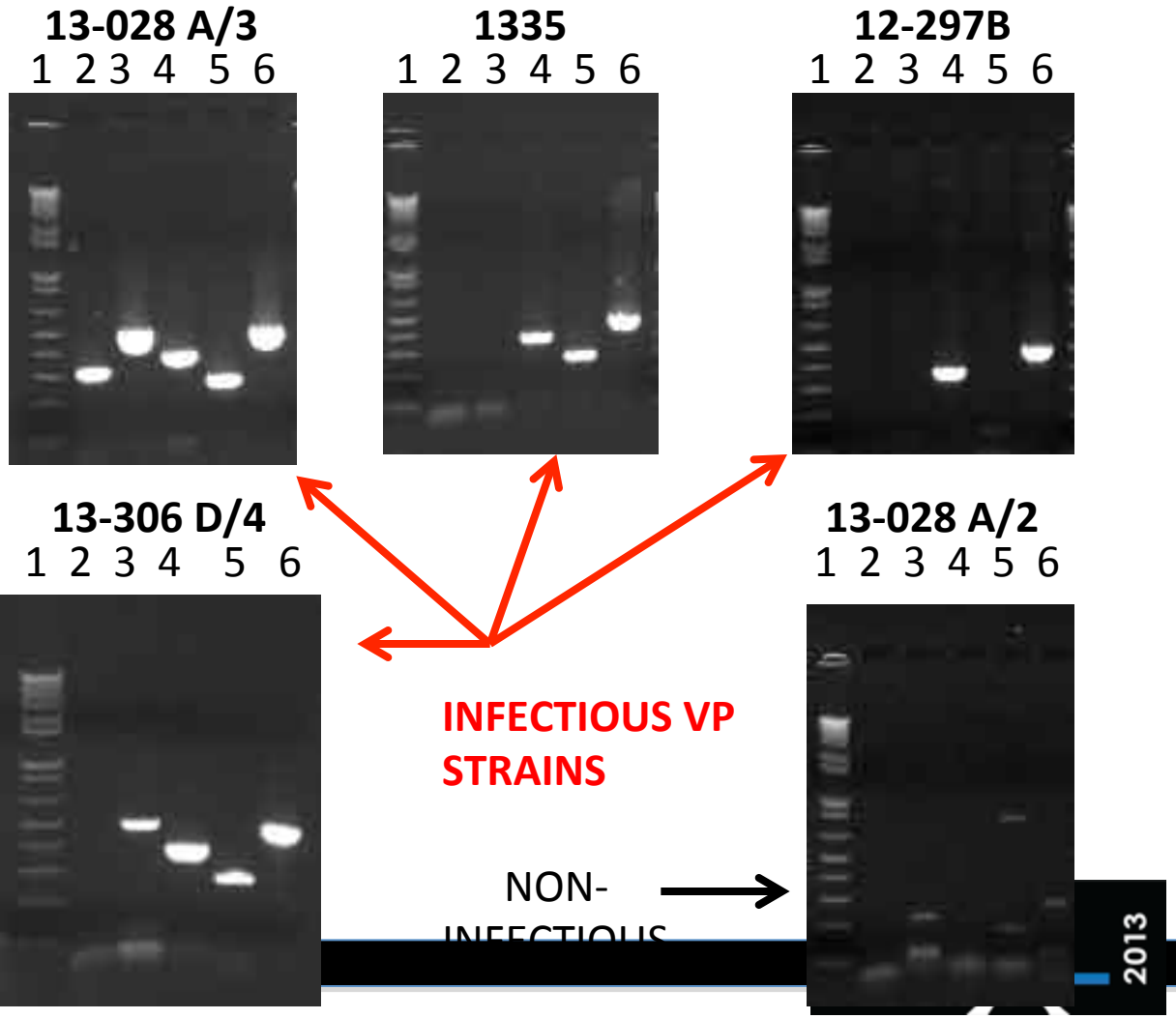
Phage found in *Vibrio parahaemolyticus* isolate A/3 that was shown to cause EMS/AHPND



Screening for Mobile Genetic Elements

Samples:

1. 1 Kb marker
2. Phage
3. Contig 32
4. Contig 52
5. Contig 73
6. Contig 89



DNA Sequences ("Contigs") 52 & 89

- Contigs 52 & 89 are consistent amplicons present among the four AHPND-causing isolates.
- A PCR kit may be developed for the VP agent of AHPND/EMS based on Contigs 52 &/or 89.

The UAZ-APL Intention is:

- Assign this PCR technique to a company that will distribute diagnostic kits to EMS/AHPND affected regions that will include:
    - China
    - Vietnam
    - Malaysia
    - Thailand
    - Mexico
- PCR positive broostock or PLs would be destroyed or placed on a regime of "approved" antibiotics in an attempt to "clear" them of the agent of EMS/AHPND.