



# The Chick Papers

A Monthly Newsletter from the Georgia Poultry Laboratory

July 2015

## A Closer Look at Atypical Salmonella in Poultry Samples by Selena York

Over the last few years we have observed an increasing number of isolates that have serogrouped, but are not identified as Salmonella by the VITEK 2. We have seen a number of isolates identified as Shigella or Salmonella Typhi, which are not found in avian species; Salmonella Gallinarum, which is the causative agent of fowl typhoid and has not been isolated in the United States since the late 1980's; and others which the VITEK 2 only lists possible identifications. All of these isolates were serotyped as typical Salmonella by conventional and molecular methods. The exception being a large number of non-motile isolates, which were commonly identified as Shigella, had to be serotyped by molecular methods due to failure to express any of their flagellar or "H" antigens. We wanted to look closer at these isolates and determine why they were not identified as Salmonella by the VITEK 2, but were serotyped as Salmonella.

A total of 107 isolates from 21 commercial companies, including broiler, broiler-breeder, layer and layer-breeder companies, as well as a couple of private farms, had one or more of these isolates. A break down of the sample sources included chick paper (33), fluff (3), carcass rinse (5), processing plant water (1), drag swabs (42), a mouse (1) and organs from birds (18). The various groups identified by the VITEK 2 are separated with their respective serotype identification (Table 1). The majority of the isolates (65) were identified as Shigella or E. coli/Shigella by VITEK 2. Thirty-eight of those were serotyped as Typhimurium. Based on the serotype and atypical biochemical identification, we considered the possibility that these were live Typhimurium vaccine strains.

A biochemical analysis of a set of typical Typhimurium isolates and the "atypical" Typhimurium isolates showed a number of enzyme reactions missing in the atypical isolates. When the MeganVac I and Poulvac strains were added the comparison there was a closer association between the MeganVac I and atypical strains. Several of the atypical isolates were sent to Dr. John Maurer's lab for PFGE fingerprinting and the results showed the same pattern as the MeganVac I strain. The VITEK 2 was able to correctly identify Shigella, Hafnia and Typhimurium, regardless of the media or the incubation time, but had a difficult time biochemically identifying Pullorum and MeganVac I. Pullorum resulted in six different biochemical identifications, depending on the media and incubation time; the MeganVac I was similar with four different biochemical identifications.

It is important that clinicians realize that not all Salmonella will produce a typical pattern. We used the Vitek 2 identification system, other identification systems may give different results depending on the biochemicals tested. The main point is that an atypical or suspicious result should lead to additional testing and confirmation. This study emphasizes the importance of serotyping isolates. It is important to not report out atypical Salmonella identifications based solely on biochemical identification systems. For example, a lab should know that Shigella and Salmonella Typhi are not possible identifications from poultry. Furthermore the identification of Salmonella Gallinarum would result in a great deal of confusion and controversy. Realizing that CDC and other health agencies, beside USDA, regard S. Pullorum and S. Gallinarum as the same organism and would identify it as Salmonella Gallinarum. However, from poultry, USDA still distinguishes between the two serotypes.

ID Group	No	Typhimurium	Kentucky	Enteritidis	Other serotypes
Shigella	48	27	11	0	10
E.coli/Shigella	14	4	3	0	7
Arizona	5	0	2	0	3
Arizona/Salmonella	4	0	1	0	3
Gallinarum	1	0	1	0	0
Gallinarum/Salmonella	6	0	1	5	0
Gallinarum/Paratyphi A	2	0	1	1	0
Paratyphi A	2	0	1	0	1
Paratyphi A/Salmonella	3	0	2	0	1
E. fergusonii	1	1	0	0	0

## Tours and Visitors



July 17 David Tinworth (left) and Dr. Chris Morrow (right) from Bioproperties (an Australian Vaccine producer) visited the Lab



July 24 Dr. Wabi (center) from the country of Benin visited GPLN



July 27 Riverside Military Academy Biology and Chemistry Students Visit GPLN for Lecture & Tour

## GPLN Events

- July 9 Dr. Louise Dufour-Zavala attended a Georgia Department of Agriculture AI Briefing
- July 11-14 GPLN presented papers and posters at the American Association of Avian Pathologist (AAAP) meeting in Boston, MA...

**Selena York (poster)** - A Closer Look at Atypical Salmonella in Poultry Samples

**Dr. Arun Kulkarni (poster)** - The Genomic Constellation of the S Gene Segments from Recent Reovirus Isolates Associated with Tenosynovitis and Runting-Stunting Cases in Georgia

**Brenda Glidewell (poster)** - Experiences Performing ELISA Using Liquid Handling Systems Robotics

**Dr. James Davis (poster)** - Lymphocytic Pneumonia Associated With a Mycoplasma Synoviae Infection in Broiler Chicks

**Dr. Doug Anderson** - Investigation of a suspected Lipid Storage Disease in a Hawa'ian Nene Goose (*Branta sandvicensis*)

**Dr. Louise Dufour-Zavala** - Correlation Between Areas of High Poultry Population Density and Those of High Disease Prevalence Using Geographic Information Systems

**Len Chappell** - Contribution of Mycoplasma Intensification Program in the Diagnosis of Mycoplasma Synoviae (MS) in Georgia Flocks

- July 17-19 Dr. Louise Dufour-Zavala attended the Georgia Poultry Federation Summer meeting in Destin, FL.
- July 21-23 Dr. Doug Waltman, Jessi Kimbrell, and Phillip Shockley (retired GPLN) attended the NPIP OSA/GCC meeting in Salt Lake City, UT.
- **Bacteriology Department Has New Employee:** Jessicca Ledford

joined the Bacteriology team early in July. Her duties will include inoculation and plating for Salmonella testing

- **July 22 Dr. Louise Dufour-Zavala lectured the Masters of Avian Medicine (MAM) students.** The students attending were Dr. DG Sandu, Dr. Victoria Drouet, and Dr. Tyler Gamble

- **July 22 "Wise Use of Credit" Seminar by Regions Bank Representatives by Kimberly Cobb and Josh Dixon**



(l-r) Dr. Waltman, Jessi Kimbrell, and Phillip Shockley Attending NPIP Conference in Utah



Regions Bank Gives GPLN Employees Credit Use Tips and Strategies