

Curriculum Vitae

Fernanda Bottaro de Oliveira Santos, Ph.D.

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Curriculum Vitae

Personal Information

Name Fernanda Bottaro de Oliveira Santos
Citations SANTOS, F. B. O.
Gender Female
DOB 02/18/1978 – Brazil

Work address North Carolina State University
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Electronic address

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Education

- 2002 - 2006** Doctoral degree in Poultry and Animal Sciences.
Minors in Food Safety and Biotechnology
Dissertation title: Impact of poultry age, season, litter quality, and nutritional intervention strategies on *Salmonella* prevalence, populations, serotypes, genotypes and antibiotic resistance profiles
Year: 2006
Adviser: Dr. Brian W. Sheldon
Institution: North Carolina State University, NCSU, USA
- 1995 - 1999** Bachelor degree in Veterinary Medicine.
Monograph title: *Escherichia coli* prevalence in yolk of 1-day old broiler chickens
Adviser: Paulo Lourenço da Silva
Institution: Federal University of Uberlandia, UFU, Uberlandia, Brazil

Complementary education

- 2020** Reflective Educational Design |RED| Core Teaching Certification |CTC|
North Carolina State University
- 2018** 17th Annual Workshop on the Pathology of Mouse Models for Human Disease (*Scholarship Awardee*)
The Jackson Laboratory, Bar Harbor, Maine
- 2017** Autoantibody Testing in Diagnosis of Autoimmune Neurological Disorders – Webinar
Florida Hospital
- 2017** Biostatistics
Florida Hospital
- 2017** Human Microbiome in Health and Disease – Webinar
Florida Hospital
- 2011** Short-course in Good Manufacturing Practices for Animal Feeding Industries.
EMBRAPA Swine and Poultry, CNPSA, Brazil
- 2011** Short-course in Customer Service.
EMBRAPA, Brazil

- 2011** Short-course in Knowledge Management.
EMBRAPA, Brazil
- 2010** Short-course in Introduction to New Employees.
EMBRAPA, Brazil
- 2010** Short-course in Epidemiology and Public Health.
Portal Educação, Brazil
- 2003** 17th Annual Graduate Student Professional Development Workshop.
North Carolina State University, NCSU, USA
- 2003** Professional Development Series in Kick Start Your Career.
North Carolina State University, NCSU, USA
- 2002** NCSU Training Program in Humane Care and Use of Animals - IACUC.
North Carolina State University, NCSU, USA
- 1998** Short-course in Windows 95 and Power Point.
Microcamp Internacional, MICROCAMP, Brazil
- 1997** Short-course in MS DOS, Windows, Word for Windows, Excel, Access.
Datapro Tecnologia, DATAPRO, Brazil

Professional Activities

1. North Carolina State University (Current Employer)

Position information

Working title: Assistant Professor

Work schedule: Full-time

Main area: Food safety, microbiology, food packaging, food product development

Hiring date: July 1st, 2019

Activities

Course instructor:

FS 475 Problems and Design in Food and Bioprocessing Science

FSA 520 Pre-Harvest Food Safety

FS 522 Food Packaging

FSA 530 Post-Harvest Food Safety

FS 553 Food Laws and Regulations

FS 751 Food Ingredient Technology in Product Development

2. AdventHealth University (former Adventist University of Health Sciences)

Position information

Working title: Adjunct Faculty

Work schedule: Part-time

Main area: Microbiology, Pathophysiology, Epidemiology, Genetics, Undergraduate Seminar

Hiring period: January 6th, 2013 to current

Activities

Course instructor:

General Microbiology (with lab)

Principals of Microbiology (online course with online lab)

Concepts of Pathophysiology

Introduction to Epidemiology

Genetics (with lab)

Undergraduate Seminar

Research: *probiotic and prebiotic research*

3. AdventHealth (former Florida Hospital) – Center for Thrombosis Research

Position information

Working title: Research Scientist

Work schedule: Full-time

Main area: Immunology and Autoimmune Disorders,
Hematology

Hiring period: January 3rd, 2017 – September 15th, 2018

Activities

Research:

Development of a mouse model of systemic lupus erythematosus for studying the role of human Fcy receptors in disease pathogenesis and inflammation.

Support the other active research projects being conducted in the Center of Thrombosis Research.

4. EMBRAPA Swine and Poultry – CNPSA

Position information

Working title: Researcher A

Work schedule: Full-time

Main area: Poultry Microbiology

Hiring period: October 5th, 2010 – August 13th, 2012

Activities

Laboratories of Genetic and Animal Health

Research activities:

Salmonella control, poultry health and food safety. Study of Salmonella prevalence in the Brazilian poultry industry, more specifically egg laying industry. Use of HACCP systems on poultry farms to control the spread of pathogens associated with food poisoning.

5. American Society for Microbiology – ASM

Position information

Working title: Translator

Work schedule: volunteer

Main area: Microbiology

Volunteer since: April 2010

Activities

Member of the International Education Committee (IEC) Volunteer Translators Network Program. The program aimed to make American Society for Microbiology web-based materials more accessible to international members.

6. Florida Hospital College of Health Sciences – FHCHS

Position information

Working title: Instructor

Work schedule: 2 hour section/week

Course title: Principles of Chemistry – Online Course

Main area: Chemistry

Hiring period: January 2010 - December 2010

Activities

Section Instructor of online course, DCHE 101 – Principles of Chemistry (Introduction to General Chemistry, Organic Chemistry and Biochemistry). Students in this course included nursing students and those entering related health programs such as, nuclear medicine or health sciences.

Other activities

Visiting professor. Professor invited to teach sections of the General Biology and Genetics courses of the Florida Hospital College of Health Sciences with Dr. J. Russel Butler.

7. North Carolina State University – NC STATE

Position information and activities

2007 - 2007 Working title: Researcher

Collaborated with a study conducted to determine 1) the effect of a dietary direct-fed microbial (DFM) on turkey poul performance, 2) the effect of a DFM on a *Salmonella* challenge, and 3) the effect of feed processing on the efficacy of the dietary DFM. Bird performance was measured weekly. Liver, spleen, total and lower intestinal tract weights, intestinal length, and most-probable-number *Salmonella* populations were determined.

- 2002 - 2006** Working title: Graduate student
Worked under the USDA-IFAFS Grant. Surveyed *Salmonella* populations, as a function of farm, season, and bird age, in fresh excreta and litter from commercial North Carolina turkey, broiler and layer farms. Additionally, studied the effects of intrinsic and extrinsic litter characteristics, such as pH, temperature, moisture content, water activity and ammonia levels on litter *Salmonella* populations. Characterized field *Salmonella* isolates by serotyping (Kauffman-White Scheme), genotyping (pulsed-field gel electrophoresis) and antibiotic resistance/susceptibility profiling (Sensititre® susceptibility plates).
Determined the effect of inclusion of wood shavings and coarse ground corn on cecal *Salmonella* colonization, growth performance, intestinal histomorphology and pH of the gastrointestinal tract of turkeys fed a corn/SBM-based diet. Investigated the effect of inclusion of whole triticale and coarse ground corn on cecal *Salmonella* colonization, growth performance, intestinal histomorphology and pH of the gastrointestinal tract of broilers fed either triticale/SBM- or corn/SBM-based diets. Additionally, determined the effect of housing (traditional litter floor house versus Broilermatic Cage System®) on cecal *Salmonella* colonization, growth performance, intestinal histomorphology and pH of the gastrointestinal tract of broilers fed either triticale/SBM- or corn/SBM-based diets.
- Assisted the "Feed Mill Management and Feed Formulation Course" of the North Carolina State University under the supervision of Dr. Peter R. Ferket. The focus of this work was good manufacturing practices for feed milling industries and HACCP.
- 2001 - 2001** Working title: Intern-volunteer
Assisted graduate students to accomplish their microbiological studies by performing support tasks such as: collect and prepare samples, set-up of experiments and tests, and maintenance of laboratory glassware and equipment.

8. Bayer Animal Health - BAYER

Position information

Working title: Veterinarian
Work schedule: Part-time, 20 hours/week
Main area: Biosecurity and animal health
Hiring period: June 2000 - October 2000

Activities

Worked as a veterinary consultant in the Bayer Biosecurity Project – Poultry Production Pest Control, which included rodent, insect and other pests control at poultry houses, feedmill and hatchery.

9. Planalto Poultry Company Ltd. (*Granja Planalto Ltda.*)

Position information and activities

1999 - 2000 Working title: Intern
Work schedule: Part-time, 20 hours/week
Main area: Quality control programs/ISO 9002
Internship period: January 1999 - March 2000

Establishment of the quality control program (ISO 9002) in hatcheries, feed mill and broiler and layer breeder farms. Working under the supervision of Pedro Crosara Gustin, Department of Research and Development, Granja Planalto.

1996 - 1996 Working title: Intern
Work schedule: Part-time, 20 hours/week
Main area: Poultry hatchery
Internship period: December 1996 - July 1997

Assisted on different management tasks with concentration on the business aspects of running a poultry hatchery. For example: record keeping, service on equipments, supervise workers, establish output goals, monitor production, and oversee maintenance of the property and equipment.

10. AVIPA Laboratories (*Avicultura Integral e Patologia Animal S/A Ltda*).

Position information

Working title: Intern
Work schedule: Full-time, 40 hours/week
Main area: Diagnostic laboratory
Internship period: January 5th - January 16th, 1998

Activities

Assistance in daily activities, such as sampling of one day old chicks and feed for the isolation of *Salmonella*, preparation of ELISA reactions, preparation of culture media to be used in the laboratory of microbiology and virology and maintenance of materials and equipment laboratory.

11. Polivet Laboratory and Veterinary Policlinic Ltd. (*Polivet Laboratório e Policlínica Veterinária Ltda.*) - POLIVET

Position information

1996 - 1996 Working title: Intern
Work schedule: Full-time, 40 hours/week
Main area: Clinic in medicine veterinary
Internship period: July 1st - July 15th, 1996

Activities

Assistance in daily activities of the clinic, such as regular check-ups of domestic animals, mainly dogs and cats, surgeries, laboratorial diagnostic of diseases, and maintenance of materials and equipment laboratory.

12. Federal University of Uberlandia (*Universidade Federal de Uberlândia*) - UFU

Position information and activities

1996 - 1996 Working title: Intern
Work schedule: Full-time, 40 hours/week
Main area: Nursing in Veterinary Medicine
Internship period: January 1st - January 15th, 1996
Internship in the Veterinary Hospital of Federal University of Uberlandia, Uberlandia, MG, Brazil.

- 1995 - 1995** Working title: Intern
Work schedule: Full-time, 40 hours/week
Main area: Nursing in Veterinary Medicine
Internship period: January 1st - January 15th, 1995
Internship in the Veterinary Hospital of Federal University of Uberlandia, Uberlandia, MG, Brazil.
- 1995 - 1995** Working title: Teaching assistant
Work schedule: Part-time, 20 hours/week
Main area: Cytology, histology and embryology
Period: August - December of 1995
Teaching assistant of the Cytology, histology and embryology of domestic animals course.

Summary of Research Areas

- 1. Autoimmune Disorders and Thrombosis**
Study the effects of immunoglobulin G (IgG) receptors, also known as Fc gamma receptors (FcγRs), on the development of autoimmune disorders, including as systemic lupus erythematosus. Development of a novel mouse model to study autoimmune disorders.
- 2. Probiotics and prebiotics**
Study the effects of using prebiotics to stimulate the growth of probiotic bacteria. Target prebiotics include, but not limited to, non-starch polysaccharides, soluble fibers, and yeast-derived prebiotics. Probiotic bacteria include, but not limited to, *Lactobacillus* sp. and *Bifidobacterium* sp.
- 3. *Salmonella* and *Campylobacter* control, poultry health and food safety**
Study the prevalence and diversity of serovars of *Salmonella* and *Campylobacter* present in poultry production sectors. Study and identification of risk factors associated with infection by *Salmonella* sp. in poultry. Genotypic comparison among isolates of *Salmonella*. Prevention and control of *Salmonella* and *Campylobacter* in poultry production sectors.
- 4. *Salmonella* colonization of turkeys and use of DFM (Direct-Fed Microbials) in the diet for turkeys**
Determine the effect of using special microorganisms called DFM (trade name: PRIMALAC) administered directly into the feed of turkeys, as well as its effect against intestinal colonization of poultry by *Salmonella*. Studied the effect of feed processing on the effectiveness of these microbial agents.

5. Molecular biology, Food Safety, Nutrition and Animal Production
Epidemiological study of *Salmonella* in commercial poultry farms of North Carolina, USA. Study of alternative methods and nutritional strategies capable of improving the performance of commercial poultry (broilers and turkeys) and reduce the intestinal colonization of poultry by *Salmonella*.
6. Quality Control Programs (HACCP, GPP, GMP, ISO 9002)
Establishment of quality control programs at pre-harvest level (hatcheries, feed mill and poultry farms).
7. Pathogen growth (*Salmonella*, *Campylobacter* and *Listeria*) in foods of animal origin (processed and fresh).
Testing of products used to reduce microorganisms that cause foodborne infections.

Journal Reviewer

1. **Science Alert Journals Technical Editor** – Since 2011
Research Journal of Microbiology
Current Research in Bacteriology
Current Research in Poultry Science
Bacteriology Journal
Microbiology Journal
2. **Brazilian Journal of Microbiology** – Since 2011
3. **UNOPAR Científica. Biological and Health Sciences** – Since 2010
4. **Journal of Food Safety** – Since 2009

Languages

English	Comprehension: fluent Communication: fluent Writing: fluent Reading: fluent
Portuguese	Comprehension: fluent Communication: fluent Writing: fluent

Reading: fluent

Spanish
Comprehension: good
Communication: basic
Writing: basic
Reading: good

Awards and Honors

- 2016** Qualified scientist of the science fair projects winners – Orange County, FL (2nd place in Microbiology, 3rd place in Health and Biomedical Sciences)
- 2016** Qualified scientist of the science fair projects winners of the International Community School (1st and 2nd place in Microbiology, 1st place in Health and Biomedical Sciences, and 1st place in the overall fair)
- 2015** Qualified scientist of the science fair project winner of the State of Florida (3rd place in Animal Sciences)
- 2015** Qualified scientist of the science fair project winner – Orange County, FL (1st place in Animal Sciences)
- 2015** Qualified scientist of the science fair project winner of the International Community School (1st place in Animal Sciences)
- 2007** Best Doctoral Dissertation of the Year, Poultry Science Department, North Carolina State University
- 2007** Outstanding Graduate Research Paper and Presentation Award, Southern Poultry Science Society
- 2006** Outstanding Graduate Research Paper and Presentation Award, Poultry Science Association
- 2006** Outstanding Research Award, North Carolina State University
- 2005** Outstanding Graduate Research Paper and Presentation Award, Southern Poultry Science Society
- 2005** Outstanding Research Award, North Carolina State University
- 2004** Outstanding Graduate Research Paper and Presentation Award, Southern Poultry Science Society
- 2003** Nominated participant of the 17th Annual Graduate Student Professional Development Workshop, North Carolina State University
- 2001** Certificate of Recognition for Studies in English as a Second Language,

PUBLICATIONS

Published abstracts

1. **Santos, F.B.O.**, Harris, G.K., Cheng, Y. Surveying the Effects of COVID on Undergraduate and Graduate Education. Teaching and Learning Symposium, North Carolina State University. Online, 2021.
2. Cheng, Y., Harris, G.K., **Santos, F.B.O.** Gauging the Effects of COVID-19 on Learning: An Integrated Approach. 2020 ITLC Lilly Online Conference – Evidence-based Teaching & Learning. Online, 2020.
3. **Santos, F.B.O.**, Amirkhosravi, A., Davila, M., Robles-Carrillo, L., Martins, P., Santos Jr., A.A., Francis, J. The Role of Human Fc Gamma Receptors in the Pathophysiology of Lupus Syndrome. Experimental Biology 2019. Orange County Convention Center; Orlando, FL, USA; 2019.
4. Adams, V.R., Johnson, A.K., **Santos, F.B.O.**, Santos Jr., A.A. Antimicrobial Properties of Cinnamon Essential Oil on *Salmonella* Typhimurium. Experimental Biology 2019. Orange County Convention Center; Orlando, FL, USA; 2019.
5. Adams, V.R., Johnson, A.K., **Santos, F.B.O.**, Santos Jr., A.A. The Effect of Cinnamon Essential Oil on *Lactobacillus species*. Experimental Biology 2019. Orange County Convention Center; Orlando, FL, USA; 2019.
6. Adams, V.R., Johnson, A.K., **Santos, F.B.O.**, Santos Jr., A.A. The Effect of Cinnamon Essential Oil on *Escherichia coli*. Experimental Biology 2019. Orange County Convention Center; Orlando, FL, USA; 2019.
7. Johnson, A.K., Adams, V.R., B. B. Walker, **Santos, F.B.O.**, Santos Jr., A.A. The Synergistic Effect of Fiber Blends on *Lactobacillus rhamnosus*. Experimental Biology 2019. Orange County Convention Center; Orlando, FL, USA; 2019.
8. Santos, A.B., Santos Jr., A.A., Gillen, C., **Santos, F.B.O.** Effect of Fiber Concentration on the Growth of *Lactobacillus rhamnosus*. In: Experimental Biology 2018. San Diego Convention Center; San Diego, CA, USA; 2018.
9. Santos, A.B., Santos Jr., A.A., Gillen, C., **Santos, F.B.O.** Heat Treatment of Fibers Used as Growth Supplement for *Lactobacillus acidophilus* and *Lactobacillus rhamnosus*. In: Experimental Biology 2017. McCormick Place Convention Center; Chicago, IL, USA; 2017.
10. Santos Jr., A.A., Santos, A.B., Gillen, C., **Santos, F.B.O.** The Effect of Heat on Fibers Used as Growth Supplement for Lactobacilli. In: 4th Annual Florida Hospital Research Forum. Creation Conference Center; Orlando, Florida, USA; Organized

by: Florida Hospital Research Enterprise, 2017.

11. **SANTOS, F.B.O.**, Presley-Van Houten, K., Vinning, A. Santos Jr., A.A. The Addition of a Service-Learning Component to a General Microbiology Class Curriculum. In: 22nd American Society for Microbiology Conference for Undergraduate Educators - ASMCUE. Bethesda North Marriott Hotel & Conference Center; North Bethesda, Maryland, USA; Organized by: American Society for Microbiology, 2016.
12. Santos, A.B., **Santos, F.B.O.**, Santos Jr., A.A., Gillen, C. The Effect of Different Fiber Sources on the Growth of *Lactobacillus acidophilus* and *Lactobacillus rhamnosus*. In: ASM Microbe 2016, ICAAC 2016. Boston Convention and Exhibition Center; Boston, Massachusetts, USA; Organized by: American Society for Microbiology, 2016.
13. **Santos, F.B.O.**, Santos, A.B., Gillen, C., Santos Jr., A.A. The Effect of Prebiotic Supplementation on the Growth of Probiotic Bacteria. In: 3rd Annual Florida Hospital Research Forum. Creation Conference Center; Orlando, Florida, USA; Organized by: Florida Hospital Research Enterprise, 2016.
14. Santos Jr., A.A., Ferket, P.R., **SANTOS, F.B.O.**, Sheldon, B.W. Reduction of *Salmonella* shedding of commercial broilers flocks of North Carolina farms by dietary wheat and enzyme supplementation. In: International Poultry Scientific Forum, 2007, Atlanta. **2007 International Poultry Scientific Forum Abstracts**. Champaign: Poultry Science Association, 2007. p.783.
15. Santos Jr., A.A., Ferket, P.R., **SANTOS, F.B.O.**, Nakamura, N., Collier, C., Gaskins, H.R. Denaturing gradient gel electrophoresis analysis of 16S ribosomal DNA amplicons to analyze changes in ileum bacterial population of turkeys fed different diets and after infection with *Salmonella* sp. In: Poultry Science Association Annual Meeting, 2006, Edmonton. **2006 Poultry Science Association Annual Meeting Abstracts**. Champaign: Poultry Science Association, 2006. p.32 – 33.
16. Santos Jr., A.A., Ferket, P.R., Grimes, J.L., **SANTOS, F.B.O.** Reduction of Intestinal *Salmonella* spp. colonization in turkeys by dietary wheat, triticale and enzyme supplementation. In: International Poultry Scientific Forum, 2005, Atlanta. **2005 International Poultry Scientific Forum Abstracts**. Champaign: Poultry Science Association, 2005. p.95 – 95.
17. Payne, J.B., **SANTOS, F.B.O.**, Li, X., Sheldon, B.W. Characterization of *Salmonella* spp. prevalence and populations in commercial broiler production. In: International Poultry Scientific Forum, 2004, Atlanta. **2004 International Poultry Scientific Forum Abstracts**. Poultry Science Association, 2004. v.83. p.1771.
18. Li, X., Payne, J.B., **SANTOS, F.B.O.**, Anderson, K.E., Sheldon, B.W. Impact of the laying hen cycle and molting on the prevalence and populations of *Salmonella*. In: International Poultry Scientific Forum, 2004, Atlanta. **2004 International Poultry Scientific Forum Abstracts**. Champaign: Poultry Science Association, 2004. p.69 – 69.
19. Santos Jr., A.A., Ferket, P.R., Grimes, J.L., **SANTOS, F.B.O.** Dietary mineral retention of growing and finishing turkeys fed wheat-based diets supplemented

with enzymes. In: Poultry Science Association Annual Meeting, 2003, Madison. **Poultry Science Association Annual Meeting Abstracts**. Champaign: Poultry Science Association, 2003. v.82. p.66 – 66.

20. Li, X., Payne, J.B., **SANTOS, F.B.O.**, Sheldon, B.W. Occurrence of *Salmonella* on Poultry and Swine Farms. In: International Association for Food Protection Annual Meeting, 2003, New Orleans. **Proceedings of the 90th IAFP Annual Meeting**. Des Moines: International Association for Food Protection, 2003. v.66. p.114 – 114.

Published expanded abstracts

1. **Santos, F. B. O.**, Ramenzoni, M. L. F., Lazzarotti, M., Vaz, C. S. L., Bretano, L. Esteves, P. A.

Maintenance of Microbial Cultures of Interest for Poultry Science and Industry.

In: 25th World Poultry Congress. **World's Poultry Science Journal**, Supplement 1, Expanded Abstract - Poster Presentation – Young Scientist, p. 17-20, 2012.

Keywords: Broilers, Campylobacter jejuni, longitudinal study

2. Vaz, C. S. L., Voss-Rech, D., Pozza, J. S., **Santos, F. B. O.**, Coldebella, A., Silva, V. S.

Dynamics of thermophilic *Campylobacter* colonization in broiler flocks reared on reused litter.

In: 25th World Poultry Congress. **World's Poultry Science Journal**, Supplement 1, Expanded Abstract - Poster Presentation – Food Safety, p. 9-11, 2012.

Keywords: Broilers, Campylobacter jejuni, longitudinal study

3. Freitas, R.C., Santos Jr., A.A., **Santos, F.B.O.**, Soares, J.L., Neves, M.M., Almeida, T.B. Performance Parameters of Broiler Supplemented with Essential Oils.

In: 25th World Poultry Congress. **World's Poultry Science Journal**, Supp. 1, Expanded Abstract, Poster Presentation, Nutrition and Feed Technologies, p.687-690, 2012.

4. A. A. Santos, Jr, **SANTOS, F. B. O.**, P. R. Ferket, M. T. Oliveira

Effect of exogenous enzyme supplementation on performance, intestinal morphometry and incidence of *Salmonella* sp. in turkeys.

In: 47th Brazilian Society of Animal Science Annual Meeting. **Proceedings of the 47th Brazilian Society of Animal Science Annual Meeting**. Brasilia: Brazilian Society of Animal Science, 2010.

Keywords: Enzyme, Endoxylanase, Growth performance, Salmonella

5. **SANTOS, F. B. O.**, A. A. Santos, Jr, P. R. Ferket

Reduction of intestinal colonization by *Salmonella* through the use of wheat and triticale and enzyme supplementation of the diet of commercial turkeys.

In: 47th Brazilian Society of Animal Science Annual Meeting. **Proceedings of the 47th Brazilian Society of Animal Science Annual Meeting**. Brasilia: Brazilian Society of

Animal Science, 2010.

Keywords: Fiber, Body weight, Non-starch polysaccharides, Salmonella enterica, Xylanase

Journal articles

1. **SANTOS, F. B. O.**, A. A. Santos, Jr., E. O. Oviedo-Rondon, P. R. Ferket.
Influence of Housing System on Growth Performance and Intestinal Health of *Salmonella*-challenged Broiler Chickens.
Current Research in Poultry Science, v.2, p.1 - 10, 2012.
DOI: 10.3923/crpsaj.2012.1.10
2. J. B. Payne, X. Li, **SANTOS, F. B. O.**, C. M. Williams, B. W. Sheldon
Survey of *Salmonella* populations from swine waste treatment technologies.
Journal of Swine Health and Production, v.19, p.100 - 106, 2010.
3. A. A. Santos, Jr, P. R. Ferket, **SANTOS, F. B. O.**, N. Nakamura, C. Collier
Change in the Ileal Bacterial Population of Turkeys Fed Different Diets and After Infection with *Salmonella* as Determined with Denaturing Gradient Gel Electrophoresis of Amplified 16S Ribosomal DNA.
Poultry Science, v.87, p.1415 - 1427, 2008.
DOI: 10.3382/ps.2006-00462
4. J. L. Grimes, S. Rahimi, E. Oviedo, B. W. Sheldon, **SANTOS, F. B. O.**
Effects of a Direct-Fed Microbial (Primalac) on Turkey Poult Performance and Susceptibility to Oral *Salmonella* Challenge.
Poultry Science, v.87, p.1464 - 1470, 2008.
DOI: 10.3382/ps.2008-00498
5. **SANTOS, F. B. O.**, B. W. Sheldon, A. A. Santos, Jr, P. R. Ferket
Influence of Housing System, Grain Type, and Particle Size on *Salmonella* Colonization and Shedding of Broilers Fed Triticale or Corn-Soybean Meal Diets.
Poultry Science, v.87, p.405 - 420, 2008.
DOI: 10.3382/ps.2006-00417
6. **SANTOS, F. B. O.**, B. W. Sheldon, A. A. Santos, Jr, P. R. Ferket, M. D. Lee, A. Petroso, D. Smith
Determination of Ileum Microbial Diversity of Broilers Fed Triticale- or Corn-Based Diets and Colonized by *Salmonella*.
Journal of Applied Poultry Research, v.16, p.563 - 573, 2007.
<https://doi.org/10.3382/japr.2006-00105>

7. **SANTOS, F. B. O.**, D. H. D'Souza, L. Jaykus, P. R. Ferket, B. W. Sheldon
Genotypes, Serotypes, and Antibiotic Resistance Profiles of *Salmonella* Isolated from Commercial North Carolina Turkey Farms.
Journal of Food Protection, v.70, p.1328 - 1333, 2007.
<https://doi.org/10.4315/0362-028X-70.6.1328>
8. X. Li, J. B. Payne, **SANTOS, F. B. O.**, J. F. Levine, K. E. Anderson, B. W. Sheldon
Salmonella Populations and Prevalence in Layer Feces from Commercial High-Rise Houses and Characterization of the *Salmonella* Isolates by Serotyping, Antibiotic Resistance Analysis, and Pulsed Field Gel Electrophoresis.
Poultry Science, v.86, p.591 - 597, 2007.
DOI: 10.1093/ps/86.3.591
9. J. B. Payne, X. Li, **SANTOS, F. B. O.**, B. W. Sheldon
Characterization of *Salmonella* from Three Commercial North Carolina Broiler Farms.
International Journal of Poultry Science, v.5, p.1102 - 1109, 2006.
DOI: 10.3923/ijps.2006.1102.1109
10. **SANTOS, F. B. O.**, A. A. Santos, Jr, P. R. Ferket, B. W. Sheldon
Influence of Grain Particle Size and Insoluble Fiber Content on *Salmonella* Colonization and Shedding of Turkeys Fed Corn-Soybean Meal Diets.
International Journal of Poultry Science, v.5, p.731 - 739, 2006.
DOI: 10.3923/ijps.2006.731.739
11. **SANTOS, F. B. O.**, X. Li, J. B. Payne, B. W. Sheldon
Estimation of Most Probable Number *Salmonella* Populations on Commercial North Carolina Turkey Farms.
Journal of Applied Poultry Research, v.14, p.700 - 708, 2005.
<https://doi.org/10.1093/japr/14.4.700>

Published proceedings

1. B. W. Sheldon, X. Li, J. B. Payne, **SANTOS, F. B. O.**, K. E. Anderson
Surveillance of *Salmonella* populations, prevalence and serotype diversity in layer feces as a function of production cycle and molting.
In: XII European Poultry Conference, 2006, Verona. **EPC 2006 PROGRAMME**.
Beekbergen: World Poultry Science Association, 2006. v.62. p.560 – 565.
Keywords: Salmonella populations, Prevalence, Serotypes, Layer, Molting
2. **SANTOS, F. B. O.**, X. Li, J. B. Payne, B. W. Sheldon
Assessment of *Salmonella* populations, prevalence and serotype diversity from commercial North Carolina turkey farms.

In: Animal Waste Management Symposium, 2005, Raleigh. **Animal Waste Management Symposium Proceedings**. Raleigh: Poultry Science Department, 2005. p.642 – 648.

Keywords: Turkey farms, Litter, Fecal, Salmonella populations, Prevalence, Serotypes

3. J. B. Payne, X. Li, **SANTOS, F. B. O.**, B. W. Sheldon

Characterization of *Salmonella* prevalence, populations, serotypes and antibiotic resistance in commercial broiler production.

In: Animal Waste Management Symposium, 2005, Raleigh. **Animal Waste Management Symposium Proceedings**. Raleigh: Poultry Science Department, 2005. p.350 – 361.

Keywords: Salmonella populations, Broiler farms, Salmonella serotypes, Most probable number, Antibiotic resistance

4. A. A. Santos, Jr, **SANTOS, F. B. O.**, P. R. Ferket

Dietary inclusion of non-starch polysaccharides and enzymes discourages *Salmonella* colonization in turkeys.

In: Animal Waste Management Symposium, 2005, Raleigh. **Animal Waste Management Symposium Proceedings**. Raleigh: Poultry Science Department, 2005. p.636 – 641.

Keywords: Fiber, Enzyme, Growth performance, Salmonella, Turkey

5. X. Li, J. B. Payne, **SANTOS, F. B. O.**, C. M. Williams, B. W. Sheldon

Efficacy of swine waste management technologies on the fate of *Salmonella* species.

In: Animal Waste Management Symposium, 2005, Raleigh. **Animal Waste Management Symposium Proceedings**. Raleigh: Poultry Science Department, 2005. p.369 – 378.

Keywords: Salmonella, Population, Prevalence, Serotype diversity, Swine waste treatment, Land application

6. X. Li, J. B. Payne, **SANTOS, F. B. O.**, K. E. Anderson, B. W. Sheldon

Surveillance of *Salmonella* populations, prevalence and serotype diversity in layer feces as a function of production cycle and molting.

In: Animal Waste Management Symposium, 2005, Raleigh. **Animal Waste Management Symposium Proceedings**. Raleigh: Poultry Science Department, 2005. p.362 – 368.

Keywords: Salmonella, Egg production cycle, Molting, Serotypes, Antibiotic resistance

Magazine articles

1. **SANTOS, F. B. O.**, VAZ, C. S. L.

Salmonella, Food Safety and the Brazilian Egg Laying Sector: Challenges and Opportunities.

Avicultura Industrial. Itu, SP, Brazil, p.12 - 16, 2011.

Keywords: Salmonella, Epidemiology, Egg laying sector

Presentations

1. Santos, A. B., A. A. Santos, Jr., C. Gillen, **F. B. O. Santos**.

Heat Treatment of Fibers Used as Growth Supplement for *Lactobacillus acidophilus* and *Lactobacillus rhamnosus*, 2017.

Keywords: Lactobacillus, probiotics, prebiotics, heat treatment

Meeting: Experimental Biology 2017. McCormick Place Convention Center; Chicago, Illinois, USA; Organized by: The American Association of Anatomists (AAA), The American Physiological Society (APS), American Society for Biochemistry and Molecular Biology (ASBMB), American Society for Investigative Pathology (ASIP), American Society for Nutrition (ASN), and American Society for Pharmacology and Experimental Therapeutics (ASPET), 2017.

2. Santos, Jr., A. A., A. B. Santos, C. Gillen, **F. B. O. Santos**.

The Effect of Heat on Fibers Used as Growth Supplement for Lactobacilli, 2017.

Keywords: Lactobacilli, prebiotics, heat treatment

Meeting: 4th Annual Florida Hospital Research Forum. Creation Conference Center; Orlando, Florida, USA; Organized by: Florida Hospital Research Enterprise, 2017.

3. **SANTOS, F. B. O.**, K. Presley-Van Houten, A. Vinning, A. A. Santos, Jr.

The Addition of a Service-Learning Component to a General Microbiology Class Curriculum, 2016.

Keywords: Microbiology, Service-learning, Community outreach

Meeting: 22nd American Society for Microbiology Conference for Undergraduate Educators - ASMCUE. Bethesda North Marriott Hotel & Conference Center; North Bethesda, Maryland, USA; Organized by: American Society for Microbiology, 2016.

4. Santos, A. B., **F. B. O. Santos**, A. A. Santos, Jr, C. Gillen

The Effect of Different Fiber Sources on the Growth of *Lactobacillus acidophilus* and *Lactobacillus rhamnosus*, 2016.

Keywords: Lactobacillus, probiotics, prebiotics

Meeting: ASM Microbe 2016, ICAAC 2016. Boston Convention and Exhibition Center; Boston, Massachusetts, USA; Organized by: American Society for Microbiology, 2016.

5. **F. B. O. Santos**, A. B. Santos, C. Gillen, A. A. Santos, Jr.

The Effect of Prebiotic Supplementation on the Growth of Probiotic Bacteria.

Keywords: Probiotics, prebiotics, bacterial growth

Meeting: 3rd Annual Florida Hospital Research Forum. Creation Conference Center; Orlando, Florida, USA; Organized by: Florida Hospital Research Enterprise, 2016.

6. **SANTOS, F. B. O.**, A. A. Santos, Jr, P. R. Ferket

Reduction of intestinal colonization by Salmonella through the use of wheat and triticale and enzyme supplementation of the diet of commercial turkeys, 2010.

Keywords: Enzyme, Endoxylanase, Growth performance, Salmonella

Meeting: 47th Brazilian Society of Animal Science Annual Meeting. Othon Plaza Hotel; Salvador, Bahia, Brazil; Organized by: Brazilian Society of Animal Science, 2010.

7. **SANTOS, F. B. O.**, B. W. Sheldon, A. A. Santos, Jr, P. R. Ferket, M. D. Lee, A. Petroso, D. Smith

Determination of ileum microbial diversity by denaturing gradient gel electrophoresis analysis of 16S ribosomal DNA amplicons of broilers fed triticale- or corn-based diets and colonized by Salmonella, 2007.

Keywords: Salmonella, Broiler, Microbial Diversity, Triticale, Whole grain

Meeting: 2007 International Poultry Scientific Forum, 28th Southern Poultry Science Society Annual Meeting. Georgia World Congress Center, Atlanta, Georgia, USA; Organized by: Southern Poultry Science Society, 2007.

8. **SANTOS, F. B. O.**, B. W. Sheldon, P. R. Ferket

Impact of poultry age, season, litter quality, and nutritional intervention strategies on Salmonella prevalence and populations, serotypes, genotypes, and antibiotic resistance profiles, 2006.

Keywords: Salmonella, Poultry, Characterization

Meeting: 1st Annual North Carolina State University Graduate Student Research Symposium. McKimmon Center, Raleigh, North Carolina, USA; Organized by: North Carolina State University, 2006.

9. **SANTOS, F. B. O.**, A. A. Santos, Jr, P. R. Ferket, B. W. Sheldon

Influence of housing system, grain type and particle size on Salmonella colonization and shedding in broilers fed triticale- and corn- meal diets, 2006.

Keywords: Salmonella, Broilermatic, Triticale

Meeting: Poultry Science Association Annual Meeting. University of Alberta, Edmonton, Alberta, Canada; Organized by: Poultry Science Association, 2006.

10. **SANTOS, F. B. O.**, D. H. D'Souza, L. Jaykus, P. R. Ferket, B. W. Sheldon

Genotypes, serotypes and antibiotic resistance profiles of Salmonella isolated from commercial North Carolina turkey farms, 2005

Keywords: Salmonella, Turkey, Typing methods

Meeting: Poultry Science Association Annual Meeting. Auburn University, Auburn, Alabama, USA; Organized by: Poultry Science Association, 2005.

11. **SANTOS, F. B. O.**, A. A. Santos, Jr, P. R. Ferket, B. W. Sheldon

Influence of grain particle size and insoluble fiber content on Salmonella colonization and shedding in turkeys fed corn-soybean meal diet, 2005.

Keywords: Salmonella, Turkey, Gizzard, Whole grain, Wood

Meeting: 2005 International Poultry Scientific Forum, 26th Southern Poultry Science Society Annual Meeting. Georgia World Congress Center, Atlanta, Georgia, USA;

Organized by: Southern Poultry Science Society, 2005.

12. **SANTOS, F. B. O.**, A. A. Santos, Jr, P. R. Ferket, B. W. Sheldon
Salmonella colonization of broilers raised in cages and litter floor pens, 2005.

Keywords: Salmonella, MPN, Broilermatic, Litter

Meeting: 2005 Animal Waste Management Symposium. Sheraton Imperial Hotel & Conference Center, Raleigh, North Carolina, USA; Organized by: North Carolina State University, 2005.

13. **SANTOS, F. B. O.**, X. Li, J. B. Payne, B. W. Sheldon
Estimation of Salmonella populations from commercial North Carolina turkey farms, 2004.

Keywords: Turkey, Salmonella, Population

Meeting: 2004 International Poultry Scientific Forum, 25th Southern Poultry Science Society Annual Meeting. Georgia World Congress Center, Atlanta, Georgia, USA; Organized by: Southern Poultry Science Society, 2004.

Other presentations and Professional Service

1. **SANTOS, F. B. O.**

Microbes, Biotechnology and Foods – What’s the connection? 2020.

*Additional information: presentation given to middle school students from **Northwoods Park Middle School**.*

2. **SANTOS, F. B. O.**

Genetics and the Science of Foods, 2020.

*Additional information: presentation given to high school students from **Panther Creek High School**.*

3. **SANTOS, F. B. O.**

Genetic basis of evolution, 2009.

Topic: General biology

*Additional information: talk given at **Nacional High School** to junior students.*

4. **SANTOS, F. B. O.**

Genetic characterization, Antibiotic Resistance Profile and Serotyping of *Salmonella* sp., 2009.

Additional information: talk given during the Scientific Week of Veterinary Medicine at the Veterinary Medicine College of the Federal University of Uberlandia.

5. **SANTOS, F. B. O.**

Evolution: Ideas and Evidence, 2009.

Topic: General biology

*Additional information: talk given at **Nacional** High School, to sophomore year students.*

6. SANTOS, F. B. O.

Genetic material: Structure and Function, 2009.

Topic: General biology

*Additional information: talk given at **Nacional** High School to senior year students.*

7. SANTOS, F. B. O.

Life, science and citizenship, 2009.

Topic: General biology

*Additional information: talk given at **Nacional** High School to freshman year students.*

Meetings Attended

1. **Experimental Biology**, 2019. (Poster presentation – to be presented in April 2019)
2. **Experimental Biology**, 2018. (Poster presentation)
3. **Experimental Biology**, 2017. (Poster presentation)
4. **4th Annual Florida Hospital Research Forum**, 2017. (Poster presentation)
5. **ASMCUE**, 2016. (Oral presentation)
6. **ASM Microbe/ICAAC**, 2016. (Poster presentation)
7. **3rd Annual Florida Hospital Research Forum**, 2016. (Poster presentation)
8. **XXIV World Poultry Congress**, 2012. (Poster presentation)
9. **47th Brazilian Society of Animal Science Annual Meeting**, 2010. (Poster presentation)
10. **XXI Scientific Week of Veterinary Medicine and V Panel of Graduate Students of Veterinary Science**, 2009. (Lecture)
11. **International Poultry Scientific Forum**, 2007. (Poster presentation)
12. **1st Annual North Carolina State University Graduate Student Research Symposium**, 2006. (Poster presentation)

13. **Poultry Science Association Annual Meeting**, 2006. (Poster presentation)
14. **XII European Poultry Conference**, 2006.
15. **Poultry Science Association Annual Meeting**, 2005. (Oral presentation)
16. **International Poultry Scientific Forum**, 2005. (Oral presentation)
17. **Animal Waste Management Symposium**, 2005. (Poster presentation)
18. **International Poultry Scientific Forum**, 2004. (Oral presentation)
19. **Poultry Science Association Annual Meeting**, 2003. (Poster presentation)
20. **International Association for Food Protection Annual Meeting**, 2003. (Poster presentation)
21. **III International Poultry Science Meeting**, 1999.
22. **International Poultry Science Colloquium**, 1999.
23. **I Symposium of Veterinary Anesthesiology**, 1998.
24. **I Symposium about Advances in the Broiler Breeder Production**, 1998.
25. **III National Symposium Goiano of Poultry Science**, 1998.
26. **I Symposium on Nutrition and Management of Poultry and Swine of the Triangle**, 1998.
27. **IV Scientific Week of Agricultural Sciences – Topics on Broiler Productions Course**, 1997.
28. **II Scientific Week of Agricultural Sciences – Topics on Poultry Science**, 1995.
29. **Apinco – International Conference of Poultry Science and Technology**, 1995.

Meeting organized

1. A. A. Santos, Jr, **SANTOS, F. B. O.**

I Symposium on Nutrition and Management of Poultry and Swine of the Triangle,
1998. Veterinary Medicine School. Federal University of Uberlandia.

Associations

- 1** Veterinary Medicine Council of Minas Gerais State, Brazil (CRMV-MG # 6059, *Conselho Regional de Medicina Veterinária do Estado de Minas Gerais*)
- 2** American Society for Microbiology – ASM
- 3** International Association for Food Protection – IAFP
- 4** Institute of Food Technologists – IFT