M145 Impact of different doses of ractopamine in swine carcass and meat characteristics from Large White and Duroc breeds. E. F. Leonardo[1], I. L. Stella[1], A. C. M. S. Pedreira[2], G. B. Mourão[1], and E. F. Delgado*[1], [1]*Escola Superior de Agricultura "Luiz de Queiroz"*, *Piracicaba, SP, Brazil*, [2]*Agência Paulista de Tecnologia do Agronegócio*, *Piracicaba, SP, Brazil*.

Lean meat production has been an important issue for health and economical reasons in swine meat industry. Sixty animals (30 castrated males and 30 females) being 30 Large White (LW) and 30 Duroc (DU) were randomly assigned to different doses of ractopamine (RAC): 0 (control), 10 ppm and 20 ppm in the diet. The experiment started when animals reached 85 kg of live weight and ended after 4 weeks when animals were 110 kg. The *L. dorsi* muscle samples were collected 24 h postmortem (PM) from the left carcass side in a commercial abattoir. The WB shear force (WBS) was measured 24 h PM (d 1) and 5 d after slaughter (d 5). Rib eye area (REA) and fat thickness (FT) were measured 24 h PM. WBS on d 1 were higher (P≤0.01) for LW (7.58±0.32 kgf) than DU breed (6.09±0.38 kgf). Differences in WBS remained on day 5 (P≤0.01) for LW and DU breeds (4.83±0.21 and 3.86±0.25 kgf, respectively). The WBS for d 1 were not different between RAC doses but higher than control diet (0: 6.12±0.44; 10 ppm: 6.86±0.43; 20 ppm: 7.51±0.44 kgf; P≤0.05). On d 5, WBS was different between RAC doses and also compared to the control diet (0: 3.74±0.29; 10 ppm: 4.23±0.28; 20 ppm: 5.07±0.29 kgf; P≤0.05). LW animals had greater REA (P≤0.05) than DU breed (37.7±1.0 and 34.3±1.2 cm^2, respectively). Rib-eye area for females and males were different (37.7±1.1 and 34.3±1.2 cm^2, respectively). There was a FT interaction between breeds and sex condition (P=0.083). FT were different between RAC doses (P≤0.05) and also compared to the control diet (P=0.054) (0: 2.62±0.13 cm; 10 ppm: 2.53±0.12 cm; 20 ppm: 2.10±0.13 cm). The results confirmed the leaner carcass production when RAC is added to diet. However, in those pure breeds doses of RAC did not modified REA. The negative effect of increased RAC dose on swine meat tenderness was also observed.

Key Words: Warner-Bratzler Shear Force, Meat Tenderness, Swine Meat

Immunology - Livestock and Poultry I

M146 Pro-inflammatory response of chicken thrombocytes to lipopolysaccharide. T. R. Scott* and M. D. Owens, *Clemson University*, *Clemson, SC*.

Thrombocytes (10^7) from blood of SCWL chickens were cultured 1 hr in the presence of lipopolysaccharide (LPS). LPS concentrations of 0, 0.1, 1 and 10 µg/ml were used. Following culture, thrombocytes and culture media were separated by high speed centrifugation. Cell pellets were resuspended in RNA*later*™. RNA was extracted from cells for real-time PCR of GAPDH, Toll-like receptor 4 (TLR4), IL-1β, IL-6 and IL-12. Culture media supernatant histamine (H) and prostaglandin E2 (PGE2) concentrations were determined with homologous time-resolved fluorescence assays. GAPDH was used as the housekeeping gene, and the expression of this was unaffected by any concentration of LPS used in culture with the thrombocytes. TLR4 was found to be constitutively expressed by thrombocytes and its expression was not altered by any concentration of LPS. Expression of IL-1β, IL-6 and IL-12 were all increased by LPS stimulation of thrombocytes in culture. H release by thrombocytes in culture was not affected by LPS. PGE2 concentrations in culture supernatants were found to be increased following LPS treatment. Although different from the 0 µg/ml control, the expressions of cytokines and PGE2 concentrations were not different among 0.1, 1 and 10 µg/ml LPS used in culture. Chicken thrombocytes express TLR4 and respond to LPS stimulation with increased pro-inflammatory cytokine expression and PGE2 release.

Key Words: Thrombocyte TLR4, Pro-inflammatory Cytokines, Prostaglandin E2

M147 Pro-inflammatory response of broiler chick thrombocytes. F. Ferdous*, D. V. Maurice, and T. R. Scott, *Clemson University*, *Clemson, SC*.

Broiler chicks at 4 weeks of age were bled to obtain thrombocytes for in vitro stimulation with lipopolysacchardie (LPS). The chicks had been fed a chick starter diet or the same diet supplemented with either corticosterone (CS) or vitamin C plus corticosterone (VitC). The diets were fed to the chicks from 2 to 4 weeks of age in order to induce body conditions indicative of stress. After 2 weeks of feeding, the chicks exhibited differences in feathering and body weight with the control chicks being largest and well-feathered while the VitC chicks were intermediate in both features and the CS chicks were small and poorly feathered. Isolated thrombocytes (10^7) were cultured for 1 hour with 0 or 10 µg/mL LPS. Following culture the cells were separated from the supernatants by high speed centrifugation. The thrombocyte pellets were resuspended in RNA*later*™, and RNA was extracted with the RNeasy Kit. RNA samples were processed for real-time PCR of GAPDH, IL-1β, IL-6 and IL-12. GAPDH was used as the housekeeping gene, and its expression was not affected by any dietary treatment nor concentration of LPS. The thrombocyte pro-inflammatory cytokines were unaffected by the diets, but 10 µg/mL LPS significantly induced greater expression of these above 0 µg/mL LPS. Although dietary induced stress can affect other physiological parameters in broiler chicks, the LPS induced expression of thrombocyte IL-1β, IL-6 and IL-12 are not altered.

Key Words: Thrombocytes, Pro-inflammatory Cytokines, Stress

M148 Identification of antimicrobial peptides in avian heterophils using whole cell MALDI-TOF. L. Kannan*[1,2], N. C. Rath[1], R. Liyanage[2], and J. O. Lay[2], [1]*USDA/Agricultural Research Service*, *Fayetteville, AR*, [2]*University of Arkansas*, *Fayetteville*.

Mass spectrometry (MS) is a rapidly emerging tool not only to characterize specific biomolecules but also to characterize and identify prokaryotic cells using whole cell MALDI-TOF-MS (matrix assisted laser desorption ionization time of flight). In order to study the potential of this technique to explore the eukaryotic cell associated peptides we isolated heterophils from the peripheral blood of chickens and turkeys and subjected to whole cell MALDI-TOF in the mass range of 1-20kDa. The mass-spectrum obtained showed a prominent peak at m/z 3915 in chicken and at m/z 4132 in turkey heterophils. Since heterophils occur abundantly in bone marrow, we isolated these peptides from the bone marrow extracts of both the species using

reverse phase liquid chromatography. Edman sequencing and peptide mass fingerprinting followed by fragmentation data obtained for a couple of tryptic peptides using post source decay experiment were used in MASCOT database search and it yielded 3915 to be gallinacin-2. Similarity database search found a corresponding significant hit for turkey heterophil peptide-2 (THP-2) which is in agreement with the MALDI-TOF observed nominal mass 4132 Da. These are antimicrobial peptides which serve as natural defense mechanism in many species of animals. Peptide search indicate that gallinacin-2 and THP-2 consist of 36 amino acids and contain 6 invariant cysteines that form three disulfide bonds thereby sharing more than 90% of sequence homology. However with the sequence obtained we noticed that THP-2 consist more number of arginine which shows that THP-2 is more cationic compared to gallinacin-2. These results demonstrate that, development of a rapid method to prospect for cell associated factors or bioactive peptides using 'whole cell MALDI' may be a viable method to study their physiology.

Key Words: Heterophils, Antimicrobial Peptides, Mass Spectrometry

M149 Adjuvants containing diverse peptidoglycan structures modulate hen antibody response to immunization. D. L. Trott*, E. M. Hellestad, and M. E. Cook, *University of Wisconsin*, *Madison*.

Hen egg yolks are utilized as a commercial source of polyclonal antibody, and adjuvant modifications have been shown to modulate hen antibody response to vaccination. Previous work showed that the addition of killed gram-positive *Staphylococcus aureus* or *Clostridium perfingens* to Freund complete adjuvant (FCA) consistently increased egg antibody titers to a test antigen, phospholipase A_2 (PLA_2), as compared to unmodified FCA. We tested the hypothesis that the increased titer due to adjuvant modification was due to the presence of lipoteichoic acid (LTA). Eight hens per treatment were injected with either FCA plus PLA_2 (FCA) or FCA/LTA from S. aureus (modified FCA) plus PLA_2. The vaccine composed of FCA was prepared by emulsifying 0.5 ml phosphate buffer saline containing 6 mg PLA_2 with in 0.5 ml adjuvant. The FCA/LTA vaccine was the same composition plus 2 mg purified LTA. In each hen, the 1 ml vaccine was injected i.m. into 4 injection sites. All hens received a second vaccination 7 days later with 3 mg/ml PLA_2 emulsified in Freund incomplete adjuvant administered in same manner as described above. Egg yolk antibody titer to PLA_2 was determined by ELISA. Results showed that *S. aureus* LTA modification of FCA decreased antibody titer 45% as compared to unmodified FCA. To determine the importance of peptidoglycan structure (PGS) as an adjuvant, a second study was conducted to determine if modification of FCA with killed bacteria containing diverse PGSs had added adjuvant effects. The killed bacteria added to the adjuvant were based on the diamino acid at position 3 of the PGS within the muramyl dipeptide (the smallest unit in FCA known to have an adjuvant effect). Using *Corynebacterium*, *S. aureus*, and *Streptococcus suis* combinations with FCA it appeared that the addition of stem peptides different than found in FCA increased the adjuvant effect (as much as 1.7 fold). These results would suggest that the adjuvant effects of FCA can be improved, and that attention to the PGS may offer insight into successful modifications.

Key Words: Egg Yolk Antibody, Adjuvants

M150 Immunocytochemical demonstration of neuroendocrine cells in chicken Peyer's Patches. C. H. Chen* and L. R. Berghman, *Texas A&M University*, *College Station*.

Peyer's patches (Pp), the secondary gut-associated lymphoid organ of the mucosal immune system, was named after the Swiss anatomist Hans Conrad Peyer in 17th-century. Because the chicken gastrointestinal tract lumen is exposed to the external environment, much of it is populated with potentially pathogenic microorganisms. Thus, chicken Peyer's patches (C-Pp), characterized by aggregations of lymphoid tissues, serve an important site for monitoring immunological and inflammatory responses against enteric pathogens. The novel staining method developed by L. E. Vaughn et al. (Avian Dis. 2006) was used for accurate identification the C-Pp from fresh intestine tissue specimens of White Leghorn chickens (SCWL) (ages ranging from 3 weeks to 2 years) and 7-week old broilers. Typical C-Pp were found in 7-week old broilers and 3-4 week old SCWL. Macroscopically, C-Pp were observable as elongated thickenings of the intestinal epithelium measuring from 3 milimeters to 1 centimeter in length. Light microscopic evaluation of H&E stained C-Pp tissue slides revealed oval lymphoid follicles located in the mucosa and extending into the submucosa of the ileum. M-cells that were located in a unique pocket-like structure on the basolateral side of the lumen were also observed. Chromogranin A (CgA)-positive cells were found exclusively in C-Pp, but not in the intestinal segments adjacent to the C-Pp. C-Pp play an important role in the immunological surveillance of the intestinal lumen and in facilitating the generation of the immune response within the mucosa. Interestingly, our observations provide morphological evidence for the potential involvement of neuroendocrine cells in the immune function of the C-Pp. Future studies will focus on determining the nature of the neuropeptides produced locally by the diffuse neuroendocrine system in the C-Pp.

Key Words: Peyer's Patches, Neuroendocrine Cells, Chromogranin A

M151 Altered monocyte/macrophage numbers in blood and organs of chickens injected i.v. with LPS. O. T. Bowen*, R. F. Wideman, and G. F. Erf, *University of Arkansas*, *Fayetteville*.

We recently reported peak circulating levels of nitric oxide (NO) 5h post–lipopolysaccharide (LPS) injection (i.v.) in chickens. To examine the ability of monocytes from in vivo LPS injected (1 mg) chickens to produce NO in vitro, young adult male chickens were injected i.v. with LPS and peripheral blood mononuclear cells (PMNC) were collected 5h later. PMNC were cultured with and without LPS and NO in the culture supernates assessed by nitrite assay at 1, 6, 12, 18, and 24h of incubation. Exposure to LPS in vivo attenuated further LPS stimulation in vitro (24 h NO level: 9.1 ± 3.8 μM vs. 39.1 ± 6.5 μM, in vivo LPS vs. control; $P<0.001$). When NO production was examined in PMNC cultures established at 5h and 48h post–in vivo LPS injection, in vitro LPS stimulated NO production again was attenuated in cultures established 5h after in vivo LPS ($P=0.03$), but not in cultures established 48h after in vivo LPS (NO level: 26.6 ± 3.5 μM vs. 22.1 ± 3.7 μM, in vivo LPS vs. control; $P=0.46$). Cell population analyses of the PMNC cultures established 5h post–in vivo LPS revealed reduced monocytes levels compared to controls (KUL01+: 3.6 ± 0.9% vs. 9.3 ± 1.1%, respectively; $P<0.001$). Hence, the lower in vitro LPS–stimulated NO production observed in these PMNC cultures is likely due to a reduction in monocytes in the blood. To gain insight into the potential redistribution of monocytes from the blood into tissues, the presence

of macrophages in the lung, spleen, and liver collected 0, 1, 3, 6, and 48h after LPS injection was examined. Compared to controls, the % area occupied by KUL01+ cells in tissue sections of lung, spleen, and liver decreased 1 h post–in vivo LPS injection (lung: 7.7 ± 1.0% vs. 5.0 ± 0.7%, P=0.004; spleen: 9.2 ± 0.4% vs. 2.2 ± 0.3%, P<0.001; and liver: 5.4 ± 0.7% vs. 2.4 ± 0.5%, P=0.002, respectively) and returned to normal or above normal by 48h in all tissues but the lung. Further studies are needed to determine whether the observed decrease in monocytes/macrophages is due to death of cells and/or redistribution to other tissues or specific locations in tissues.

Key Words: LPS, Chicken, Macrophage

M152 Oxidative stress and immune response in the chicken. S. Bush*[1,2], K. Gyenai[1], X. Guan[1], and T. Geng[1], [1]*Virginia Polytechnic Institute and State University*, *Blacksburg*, [2]*University of North Dakota*, *Fargo*.

Oxidative Stress (OS) occurs when an organism has higher levels of oxidants than antioxidants. In this research, OS and Immune Response (IR) are analyzed in chickens. We are evaluating OS and IR to determine if a higher oxidative state would induce a higher or lower immune response in the birds. Oxidative stress occurs when there is an imbalance between an organism's free radicals and their antioxidants. When in excess, free radicals damage cellular macromolecules including DNA, lipid and protein. Here, we hypothesized that lowered immune response is one consequence of the macromolecular damage. Therefore the objective of this summer internship investigation was to evaluate the correlation between immune response and oxidative stress. Biomarkers used as indicators for OS were Thio Barbiturate Acid Reactive Substances (TBARS) and Malondialdehyde (MDA). Chickens were classified as either high or low immune response based on antibody titers produced in response to a challenge with sheep red blood cells. Based on both TBARS and MDA, high immune response birds had a significantly higher level of oxidative stress than low antibody producing chickens. The results appear to support earlier reports in the mouse that immune response was associated with immune response. The work provides a foundation for further investigating the role of oxidative stress in the general well-being of chickens.

Key Words: Chickens, Oxidative Stress, Immune Response

M153 Effects of immunoglobulin binding on signal transduction in bovine polymorphonuclear neutrophils. M. J. Paape* and Y. Wang, *Bovine Functional Genomics Laboratory, USDA-ARS*, *Beltsville, MD*.

Immunoglobulins are major molecules that mediate humoral immune responses. Their functional effects on leukocytes are mediated by the cell surface receptors for the Fc domain of immunoglobulins (FcR). Ligation of FcR on human polymorphonuclear neutrophils (PMN) is capable of triggering a wide range of biological activities, including phagocytosis, secretion of granules, generation of respiratory burst, antibody-dependent cellular cytotoxicity (ADCC), and production of proinflammatory mediators and cytokines. Bovine immunoglobulins IgG_2 and IgM but not IgG_1 bind to bovine PMN. The immunoglobulin binding pattern of bovine PMN is consistent with the major opsonic roles of IgG_2 and IgM for phagocytosis by bovine PMN. In this study, changes in intracellular free calcium concentrations ($[Ca^{2+}]_i$) and protein tyrosine phosphorylation (PTP) induced by immunoglobulin binding to bovine PMN were investigated. Purified bovine IgG, IgG_1, IgG_2, IgM and heat aggregated IgG (aIgG) were used. IgG_1 alone or crosslinked with a second antibody did not induce changes in $[Ca^{2+}]_i$ and PTP. IgG_2 alone or crosslinked with a second antibody and aIgG induced a strong PTP response without changes in $[Ca^{2+}]_i$. Crosslinking of IgG caused a rapid $[Ca^{2+}]_i$ increase of 91 nM without a PTP response. IgM did not induce $[Ca^{2+}]_i$ influx or PTP responses. However, crosslinking IgM with anti-bovine-IgM resulted in an increase of 115 nM in $[Ca^{2+}]_i$ and a strong PTP response on 45, 55, 100 and 115 kD proteins. Anti-bovine-IgM antibody alone induced a similar $[Ca^{2+}]_i$ influx and PTP response, indicating a high occupancy of IgM on bovine PMN surfaces. The immunoglobulin binding pattern of bovine PMN is consistent with the major opsonic roles of IgG_2 and IgM for phagocytosis by bovine PMN. Binding of these opsonic antibodies may trigger pathways for effective PMN phagocytosis and oxidative burst activity.

Key Words: Neutrophil, Bovine, Immunoglobulin

M154 Evaluation of a bovine respiratory pathogen exposure model on immune response and short-term performance of finishing cattle. B. McLaughlin*[1], L. O. Burciaga-Robles[1], D. L. Step[2], C. R. Krehbiel[1], M. Montelongo[2], A. W. Confer[2], R. W. Fulton[2], C. J. Richards[1], U. DeSilva[1], and G. Zhang[1], [1]*Department of Animal Science, Oklahoma State University*, *Stillwater*, [2]*Center for Veterinary Health Sciences, Oklahoma State University*, *Stillwater*.

The objective was to determine effects of an intratracheal *Mannheimia haemolytica* (Mh) challenge following short-term exposure (72 h) to Bovine Viral Diarrhea (BVD) persistently infected calves on white blood cell (WBC) count and differentials, DMI and performance in feedlot steers (BW = 305±20 kg). Treatments included: 1) steers not challenged with BVD or Mh (CON); 2) steers intratracheally challenged with Mh only (MH); 3) steers challenged with BVD, no Mh (BVD); and 4) steers challenged with BVD and Mh (BVD+MH). Feed, total urine and feces were collected during the first 2 wk post challenge. In addition, blood samples were collected at -72, 0, 7, 18, 36, 72, 96, 168, 336, and 672 h post challenge. Rectal temperature was greater ($P < 0.001$) for BVD+MH and MH during the first 24 h after the Mh challenge. For BVD+MH and MH, total WBC count was greater ($P < 0.01$) at 36 h post *M. haemolytica* challenge compared with CON, whereas in BVD steers, WBC count was lower ($P < 0.01$). Total lymphocyte count was lower ($P = 0.004$) during the first 72 h post BVD exposure for both the BVD and BVD+MH groups compared with MH and CON, and this difference remained at 96 h post *M. haemolytica* challenge. An increased ($P < 0.001$) total neutrophil count was observed during the first 36 h for the MH group and for 72 h for the BVD+MH challenge group. Although data were not significant ($P > 0.10$), ADG was 1.29, 1.04, 0.88 and 0.75 kg/d and G:F was 0.180, 0.122, 0.110 and 0.092 kg/kg for CON, BVD, BVD+MH, and MH steers, respectively, during the first 17 d post challenge. We conclude that the challenge model was successful at inducing bovine respiratory disease (BRD) associated with BVD and *M. haemolytica*. Understanding the physiological changes in morbid animals will lead to improved strategies for decreasing severity and economic losses associated with BRD.

Key Words: Bovine Viral Diarrhea, *Mannheimia haemolytica*, Steers

M155 ***In vivo*** **characterization of the recall response to antigen in chickens vaccinated with attenuated** ***Salmonella*** **mutants expressing M2e protein.** S. E. Higgins*, S. L. Layton, A. D. Wolfenden, K. Cole, B. M. Hargis, and G. F. Erf, *University of Arkansas*, *Fayetteville*.

We recently developed attenuated Δ*aro*A *Salmonella enteritidis* strains (ΔSE) that express the Influenzavirus epitope M2e, with or without a 10 aa CD154 (CD40 ligand) sequence. These mutants were orally administered to broiler chicks (10^7cfu/chick day-of-hatch, boosted with 10^8cfu at 32d). Mutants evaluated were ΔSE, ΔSE expressing M2e, ΔSEM2e and CD154, or ΔSE expressing multiple copies of M2e with CD154. Serum antibodies against M2e were detectable by 11d post-vaccination and steadily increased to day 20. To evaluate cell-mediated immune activity, we injected antigen on day 44 into the pulp of small growing feathers of five chickens per vaccination group. Three different antigen injections (sterile saline, M2e peptide conjugated with BSA (M2e-BSA), and ΔSE constructs homologous to the initial vaccine strain)(10μL) were made into separate feathers on each chicken. Feathers were collected 24h post-injection, and hematoxylin and eosin stained sections were prepared. Each sample was evaluated for the extent of leukocyte infiltration into the feather pulp (score 0-3; none to high level, respectively). Mean leukocyte-infiltration (MLI) scores following saline injection were ≤1 in all vaccination groups. The MLI score in response homologous ΔSE constructs was higher ($P<0.05$; 2.00-2.50) than that of saline controls in all groups. However, MLI scores following M2e injection in birds vaccinated with ΔSE expressing M2e were not different from those of saline controls. M2e-BSA injection into feathers of ΔSE (without M2e) vaccinated chickens (not M2e-sensitized) resulted in a MLI score of 2.6, which was higher than MLI scores observed in response to saline or M2e-BSA injection in birds vaccinated with ΔSE expressing M2e ($P<0.05$). Considering the low recall response to M2e-BSA in M2E sensitized birds, together with the observed antibody response to M2e in serum, it appears that the M2e-containing ΔSE constructs favor initiation of a humoral response over a cell-mediated immune response.

Key Words: Salmonella, M2e, Leukocyte

M156 Immune responses of dairy calves vaccinated at 2 versus 6 weeks of age. J. J. R. Patlola* and J. M. Smith, *University of Vermont*, *Burlington*.

Dairy calf raisers are implementing vaccine protocols with little documented evidence of efficacy in young calves. In this project, immune responses of calves vaccinated at different ages (2 wk vs. 6 wk) were determined. Twenty Holstein heifer calves on a custom replacement raising operation were enrolled. Calves were assigned to 1 of 2 groups based on their age. Of 10 age-matched calves in Group 1, 7 were vaccinated at 6 wk of age and 3 (unvaccinated controls) were not. Of 10 age-matched calves in Group 2, 7 were vaccinated at 2 wk of age and 3 were not. Vaccinated calves received 2 ml of a modified-live virus vaccine against infectious bovine rhinotracheitis (IBR), bovine viral diarrhea 1 and 2, parainfluenza-3, and bovine respiratory syncytial virus (BRSV). Blood was collected immediately before and 3 wk after vaccination. Calves were sampled at 6 and 9 wk of age in Group 1, and at 2 and 5 wk of age in Group 2. Lymphocyte proliferation was measured by thymidine incorporation after stimulation with various antigens (Vista 5 vaccine, IBR and BRSV antigens). Total serum IgG and Vista 5-specific IgG were measured by ELISA. Proliferative responses in 6-wk-old calves were greater than in 2-wk-old calves. The intensity of proliferation with Vista 5 was more pronounced than with other antigens. Three wk after vaccination, Vista 5-specific IgG were higher in calves vaccinated at 6 wk of age. There was no effect of vaccination on body weights and total serum IgG. The results of this study demonstrated that vaccination produces greater cell mediated and humoral responses in 6-wk-old calves as compared to 2-wk-old calves. Elucidation of the type of cells responding to early vaccination and demonstration of efficacy against challenge are needed to fully evaluate the usefulness of vaccinating calves at 2 wk of age.

Key Words: Dairy Calf, Vaccination, Lymphocyte Proliferation

M157 Campylobacter infection in day-old chickens. K. J. Genovese*, H. He, D. J. Nisbet, and M. H. Kogut, *USDA-ARS, FFSRU*, *College Station, TX*.

Intra-abdominal *Campylobacter* infection facilitates the characterization of peripheral blood leukocyte dynamics and abdominal cell infiltrates. Day-of-hatch leghorn chickens were injected intra-abdominally with *Campylobacter jejuni* [(CJ) 10^8 colony-forming units (CFUs)]. Peripheral blood leukocyte numbers were monitored at 0, 2, 4, 8, and 24 hours post-injection. In mortality studies, birds were injected intra-abdominally with 1 x10^8 CFUs CJ and mortalities were recorded for 72 hours post-injection. In CJ-injected chicks, total white blood cell (WBC) numbers began increasing by 2 hours post-injection, peaking at 4 hours post-injection, with the predominant cell type being polymorphonuclear leukocytes (heterophils). Total WBCs declined after 8 hours and this decline continued, with total WBC numbers approaching control values at 24 hr. Injection of CJ into the abdominal cavity caused a rapid rise in abdominal cell infiltrates, with the predominant infiltrating leukocytes being heterophils. Peak abdominal heterophil infiltrates were observed at 8 hours post-injection, declining only slightly by 24 hours post-injection. Chick mortality in the CJ challenge groups reached 30%. Mortality in the *Salmonella enteritidis* positive control groups was greater than 50%. The data suggest that *Campylobacter* infection does stimulate the innate immune response in chickens, however the response and infection is not characterized with the high levels of pathogenesis observed with a Salmonella infection. The present studies provide a foundation for the study and characterization of the avian immune response to *Campylobacter* and for the study of intervention strategies to prevent infection and colonization of poultry.

Key Words: Campylobacter, Heterophil, Innate Immunity