



## Department of Poultry Science

*College of Agricultural & Environmental Sciences*

**UNIVERSITY OF GEORGIA**



# UGA Poultry Nutrition Newsletter

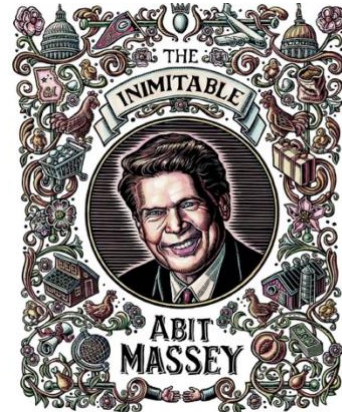
June 2024

## Poultry News

### Poultry Industry Pioneer, Abit Massey, dies at 96

- Poultry industry icon Abit Massey, president emeritus of the Georgia Poultry Federation, has passed away following a recent cancer battle.

- To learn more about The Inimitable Abit Massey, please click [here](#)



### May 2024 Business Update: What's new in the world of poultry? (Poultry World)

- The summary of the latest business updates from the global poultry industry

### The ongoing bird flu outbreak in the United States (The Poultry Site)

- Since 2022, bird flu in the US has infected over 90 million chickens, more than 9,000 wild birds, 67 dairy herds, one person exposed to poultry, and three people in close contact with an infected cattle. Check out the timeline of the whole story.

### EU, US ordering human avian influenza vaccines (WATT Poultry)

- Vaccines are for use in poultry farm workers and veterinarians as needed.

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## UGA Poultry Researcher Highlight

**Dr. Anthony Pokoo-Aikins** is a **Research Biologist (Poultry Nutrition)** at the USDA ARS National Poultry Research Center in Athens, Georgia. He is also an **Adjunct Assistant Professor** in the University of Georgia's poultry science department. Before joining the USDA ARS, Dr. Pokoo-Aikins held various roles in the U.S. poultry industry. His research primarily focuses on feed safety and quality. In his lab, they are actively exploring ways to reduce post-harvest mycotoxin contamination in corn and feed storage. Additionally, they aim to enhance mycotoxin detection methods. Dr. Pokoo-Aikins investigates the relationship between mycotoxin contamination and nutrient degradation in feed and feed ingredients. Furthermore, he explores mycotoxin mitigation strategies using organic acids and essential oils. His lab collaborates closely with grain and poultry industry stakeholders to address mycotoxin-related challenges, particularly in feed ingredients such as corn, soybean meal, and complete poultry feed. Reach out to the team with your mycotoxin-related questions.



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[Contact Pokoo-Aikins Lab](#)

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# Eggsplore Poultry Events

## June

FSMA PCQI Training | Nashville TN | **4-6**  
Feed Industry Institute | Minneapolis MN | **17-20**  
Avian Academy Teacher Education Program | Athens GA | **17-20**   
Southeast Egg Industry Regional Conference | Asheville NC | **18-20**  
European Poultry Conference | Valencia Spain | **24-28**  
Financial Management Seminar | Marco Island FL | **26-28**

## July

Hatchery Breeder Clinic | Nashville TN | **9-10**  
AAAP Annual Meeting | St Louis MO | **9-11**  
SC Poultry Federation Annual Conference | Isle of Palms SC | **11-14**  
14th International Symposium on Mavk's Disease and Avian Herpesviruses | St Louis MO | **12-14**  
Poultry Science Association Annual Meeting | Louisville KY | **15-18**  
Texas Poultry Federation Annual Convention | San Antonio TX | **18-20**  
Chicken Marketing Summit | Birmingham AL | **29-31**

## August

National Safety Conference for the Poultry Industry | Destin FL | **19-21**  
Women's Leadership Conference | Destin FL | **22-23**  
Arkansas Nutrition Conference | Rogers AR | **27-29**

## September

Poultry Sustainability and Welfare Summit | Atlanta GA | **3-6**  
Liquid Feed Symposium | Salt Lake City UT | **10-12**  
Shell Egg Academy | West Lafayette IN | **10-12**  
California Poultry Federation Annual Conference | Monterey CA | **12-13**  
NPFDA 2024 Fall Meeting | Tucson AR | **15-18**  
NTF Leadership Conference | Washington DC | **16-18**  
Environmental Management Seminar | Destin FL | **19-20**  
UGA Layers Conference | Athens GA | **23**   
UGA Broiler Conference | Athens GA | **25**   
59th National Meeting on Poultry Health, Processing, and Live Production | Ocean City MD | **30-2**  
International Avian Influenza and One Health Emerging Issues Summit | Fayetteville AR | **30-3**

## October

Live Production, Welfare & Biosecurity Seminar | Nashville TN | **3-4**  
Georgia National Fair | Perry GA | **3-13**  
Poultry Symposium for Production & Processing | Rogers AR | **7-10**  
Poultry Protein & Fat Seminar | Nashville TN | **16-17**  
International Conference on Poultry Science | Lisbon Portugal | **28-29**

## November

National Breeders Roundtable | Nashville TN | **5-7**  
Symposium on Gut Health in Production of Food Animals | St Louis MO | **10 - 13**  
Cold Weather workshop | Athens GA | **18-20** 

## 2025 - January

International Production and Processing Expo | Atlanta GA | **28-30**

International Poultry Short Course | Athens GA | **TBD** 

AFIA Feed Education Program | Atlanta GA | **TBD**

Feed Your ESG: How Will Help Hit Sustainability Targets | Atlanta GA | **TBD**

NPFDA Annual Convention and Showcase | Atlanta GA | **27-30**

## February

NTF Annual Convection | Scottsdale AR | **19-22**

## March

Annual Meat Conference | Orlando FL | **24-26**

Alumni & Friends Reception | Tifon GA | **TBD** 

Deep South Poultry Conference | Tifon GA | **TBD** 

## April

UGA Hatchery Workshop | Athens GA | **TBD** 

UGA Hot Weather Workshop | Athens GA | **TBD** 

West Poultry Disease Conference | **TBD** | **TBD**

North Central Avian Disease Conferences | **TBD** | **TBD**

Workforce Success and Engagement Conference | Destin FL | **16-18**

PEAK | Minneapolis MN | **8-10**

8th International Conference on Poultry Intestinal Health | **TBD** | **TBD**

AFGA Nutrition Seminar | Huntsville AL | **22-24**

## May

Precision Poultry Seminar | Virtual | **TBD** 

Stakeholders Summit | **TBD** | **TBD**

International Poultry Congress | **TBD** | **TBD**

International Avian Respiratory Disease Conference | **TBD** | **TBD** 

Poultry Health Management School | Ames IA | **TBD**

Poultry Processor Workshop | Nashville TN | **13-14**

## TBD

Poultry Tech Summit | **TBD** | **TBD (2025)**

Food Animal Innovation Summit | Raleigh NC | **TBD**

European Symposium on Poultry Nutrition | **TBD** | **TBD (2025)**



Check [www.poultrynutritionhub.com](http://www.poultrynutritionhub.com) for more.



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 **CHEN Lab**

**Edited by** Nicolás Mejia-Abaunza, DVM. Master's Student  
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**Updated on** May 2024

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2024 JUNE

In this issue, you will read research summaries from  
7 Broilers studies  
4 Layers, 1 Turkey studies  
3 Literature reviews  
from 11 research institutes in 8 countries



# POULTRY NUTRITION RESEARCH SUMMARY

Chongxiao (Sean) Chen\*, Xixi Chen #, Catherine Fudge\*, Muhammad Ali\*, Nicolás Mejía-Abaunza\*, and Lily Xu #

\* Department of Poultry Science, University of Georgia  
# Nutribins LLC

# LATEST NUTRITION RESEARCH AT A GLANCE

## POULTRY

In broilers, adding  **$\alpha$ -galactoside and xylanase** (300-500 ppm) in diets based on corn-SBM-RSM improved the feed conversion, AME and AMEn in diets with standard and restricted levels of energy and crude protein.

*Spain Industrial Technology Pecuaria SA | [Link](#)*

In broilers, 4% **defatted silkworm** (*Bombyx mori*) pupal meal supplementation in the starter phase only (0-10 d) increased meat juiciness, tenderness, and off-flavor intensity at D42, while 11-42 d supplementation increased the alpha-linolenic fatty acid and reduced the omega-6/omega-3 ratio in breast and leg meat. No effect was observed on oxidative status and amino acid content of meat.

*University of Padua | [Link](#)*

In broilers, feeding 1 mg/kg of **1,25(OH)2D3-glycosides** for the first 28 days, the last 28 days, or the entire 56 days can alleviate lameness incidence. However, early supplementation had the same protection against lameness as using it for the entire production period.

*University of Arkansas | [Link](#)*

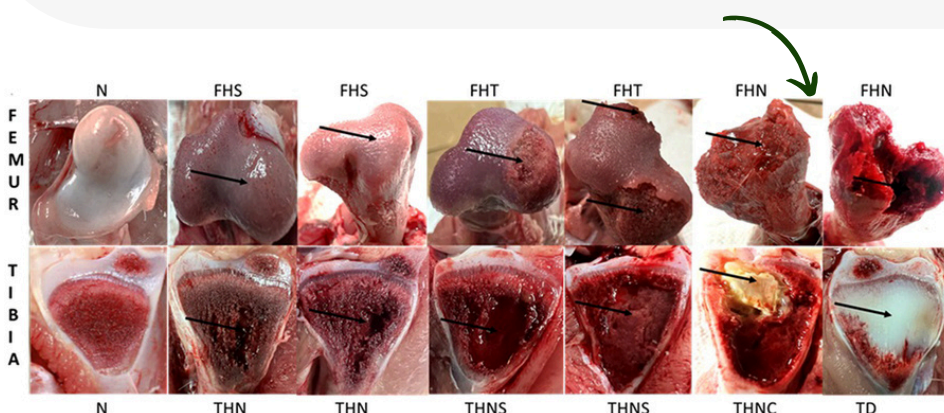


Fig. Femoral and tibial lesions correspond to the progression of osteomyelitis lameness

In broilers, supplementation (50% more) with **Arg or BCAA** in a low crude protein diet (16.5%) during the grower phase (D11-27) increased the respective supplemented AAs on d21. Arg shows a constant impact on improving weight gain and FCR from d12-21, regardless of the *Eimeria* challenges.

*University of Georgia | [Link](#)*

In necrotic enteritis-challenged broilers, 125% and 135% **arginine** diets did not reverse the effect of the NE challenge on the growth performance. However, the 125% arginine diet significantly increased the cellular and humoral immune response to the challenge; the 135% arginine showed better feed intake and FCR at d 35, with a higher spleen 8+:CD4+ ratio and cecal tonsil CD8+:CD4+ ratio.

*University of Georgia | [ink](#)*

In broilers under heat stress and high stocking density, **double the threonine or tryptophan** in the diet from D22-35 improved FCR, reduced the stress markers (H:L Ratio). Double doses of threonine, tryptophan, or glycine also reduced corticosterone and improved permeability at different degrees.

*Chung-Ang University | [Link](#)*

In broilers, **in ovo injection of nicotinamide riboside** (NR) with 250 mM at incubation D10 improved bodyweight and bodyweight gain on days 28, 42, and 47. Injection of 250, 500, or 1000 mM NR also shows different levels of improvement in carcass yield, including live, hot carcass, cold carcass, and parts weight.

*University of Arkansas | [Link](#)*



In broilers, the interactions of **dietary energy** during starter (D0-18) and **coccidiosis control programs** (in feed diclazuril vs. vaccination) were studied. In general, the interaction effects showed that vaccinated broilers had different levels of reduction in growth performance and carcass yields than diclazuril treatments, which were mainly in medium and high-energy diets. It might be due to Eimeria-induced reductions in lipid digestibility.

University of Arkansas/ [Link](#)

In pullets, supplementing **boron** (150 mg/kg) increased tibia cortical cross-sectional area, bone mineral density, pectoralis and leg muscle mass, tibia ash percentage, failure load, stiffness, maximum bending moment and bone mineralization, at 17 weeks, without negatively affecting performance parameters.

Clemson University/ [Link](#)

In layers, 2% **black soldier fly larvae oil calcium salt** supplementation improved the hen day average, egg mass and weight, FCR, and jejunal histomorphology while upregulating the tight junction and anti-inflammatory gene expression and downregulating the pro-inflammatory cytokine gene expressions during 41 to 48 weeks.

Gadjah Mada University/ [Link](#)

In turkeys, replacing corn and **soybean meal with 15% sunflower meal** improved body weight and bodyweight gain for up to 4 weeks. It had no adverse effects on nutrient digestibility, growth performance, and carcass yield for up to 6 weeks, except for reducing liver weight.

South Dakota State University/ [Link](#)

Review#1

Phytogetic feed additives as natural antibiotic alternatives in animal health and production: A review of the literature of the last decade

This review explores **phytogetic feed additives**, their various modes of action, and their potential as antibiotic alternatives in animals. Phytogetic feed additives have well demonstrated beneficial effects on growth, performance, health, production, reproduction, emission reduction, and toxicity reduction in monogastric animals and ruminants. However, more research on purified monomers and extracted products and evaluation of batch-to-batch differences are needed. Moreover, the mechanisms of photogenic products in epigenetic regulation, TRP channel activation, and quorum sensing are still in an early investigation stage and, therefore, still need to be fully understood.

Beijing Academy of Agriculture and Forestry Sciences/ [Link](#)

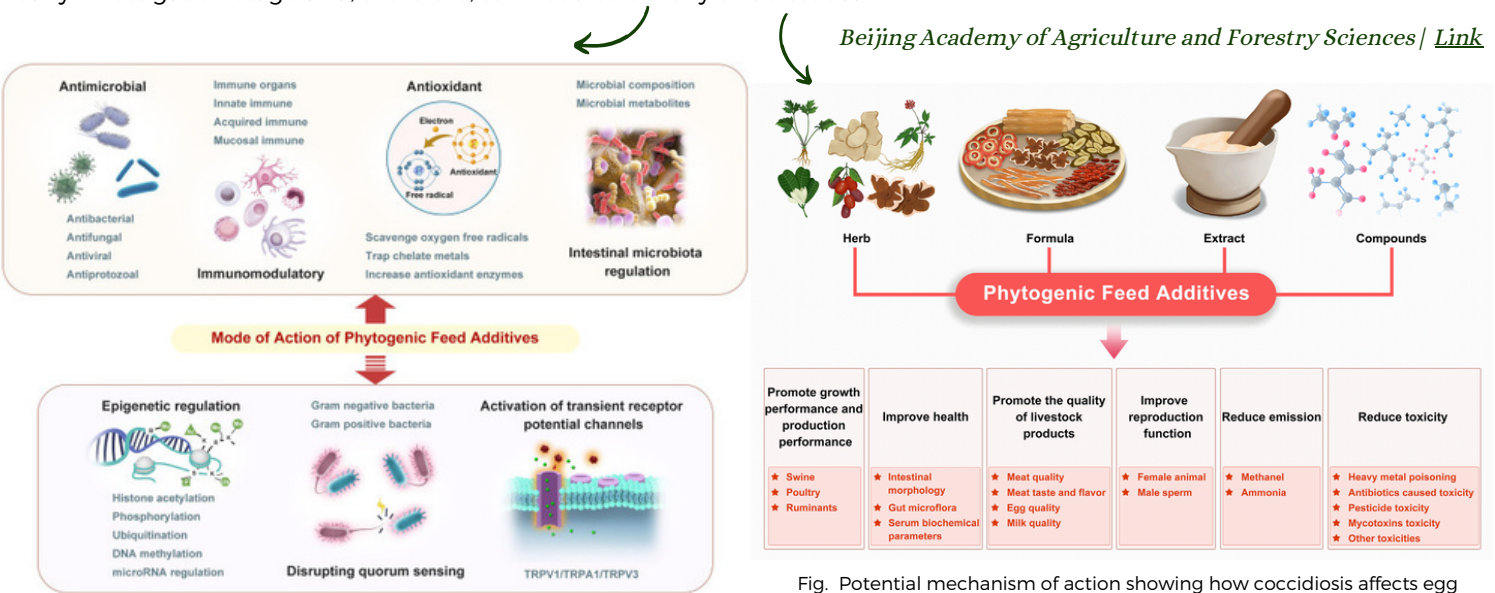


Fig. Potential modes of action of phytogetic feed additives.

Fig. Potential mechanism of action showing how coccidiosis affects egg production in laying hens.

# LATEST NUTRITION RESEARCH AT A GLANCE

# POULTRY

## Review#2

### The potential of glutamine supplementation in reduced-crude protein diets for chicken-meat production

Low crude protein diets in chickens may result in less nitrogen and ammonia emissions, but maintaining a chicken's optimal performance on such diets is challenging, especially when diets are formulated using wheat instead of corn. **Glutamine** is considered a non-essential amino acid in broiler diets because it can be synthesized by broilers endogenously but may play important roles in low crude protein diets. This review explains the importance of glutamine, its physiological role, its importance in low crude protein diets, and its impacts during high temperature and coccidiosis challenges.

University of Sydney/ [Link](#)

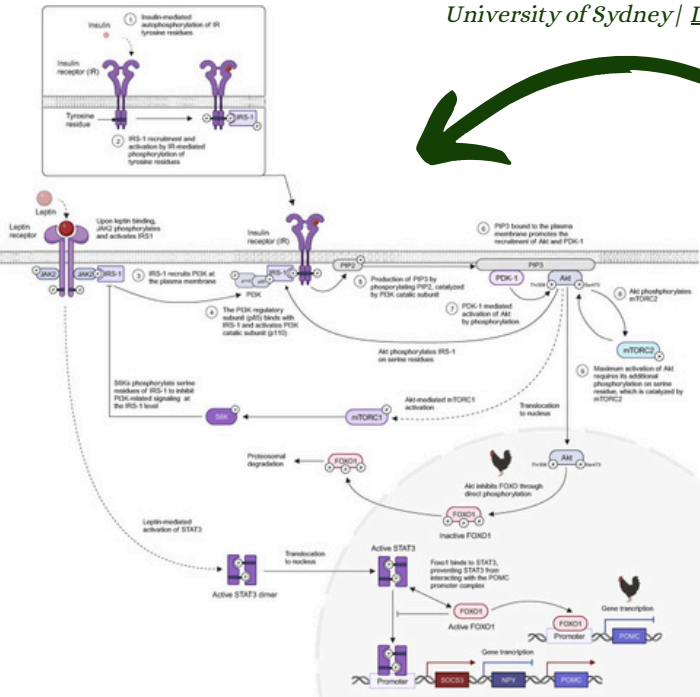


Fig. Overview of leptin and insulin signaling pathways in the hypothalamus of chickens regulating neuropeptide genes

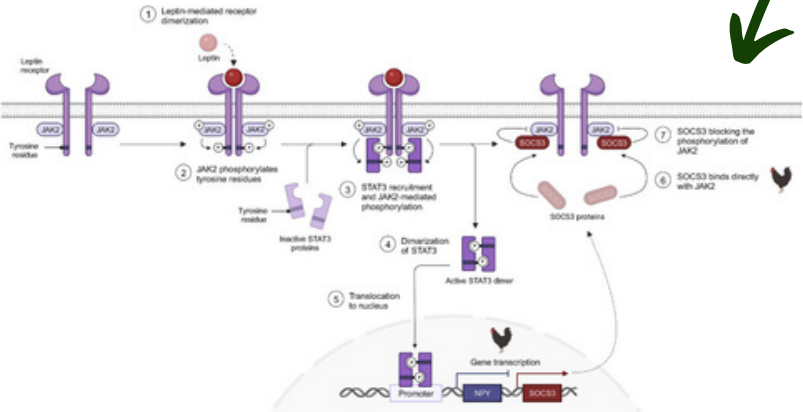


Fig. Detailed leptin signaling pathway in the hypothalamus of chickens (adapted from "Cytokine Signaling through the JAK-STAT Pathway")

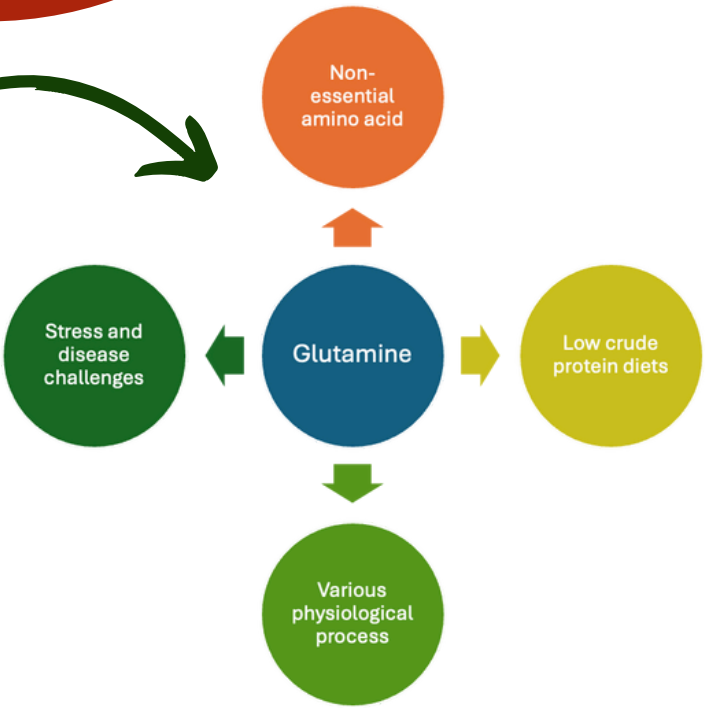


Fig. Importance of Glutamine

## Review#3

### A bird's-eye overview of molecular mechanisms regulating feed intake in chickens—with mammalian comparisons

Birds, like all creatures, must eat to live, but what drives this behavior? Many factors affect feed consumption, the amount consumed, and feeding efficiency. This review takes a closer look at **hormonal regulations associated with these behaviors**, especially in the hypothalamus and neuropeptides that may be connected to this regulation. Furthermore, this review looks at genes involved in signaling pathways that lead to hunger or satiety signals.

Novosibirsk State University/ [Link](#)

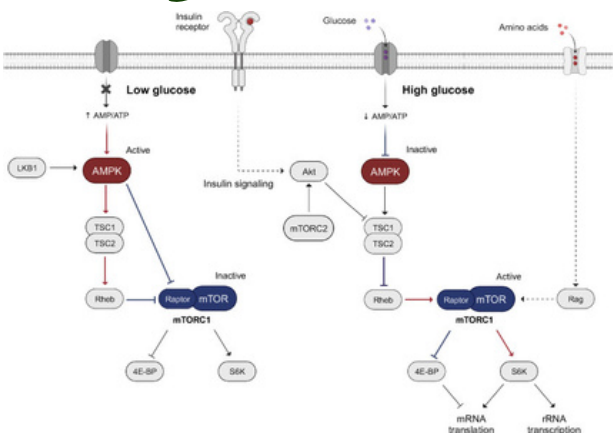


Fig. AMPK/mTOR signaling pathway involved in regulation of feed intake in chickens