

What's happening in poultry?

Tamsyn Crowley



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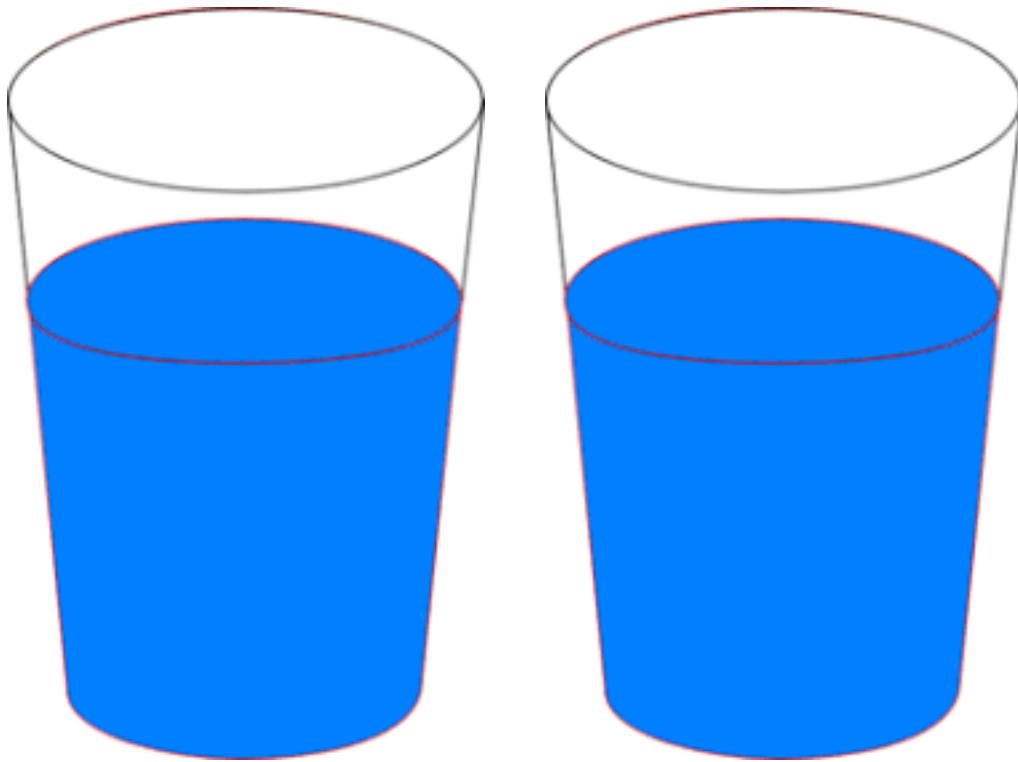
Who am I?



Where it all started



Where it all started





Impact!



What is PHA?



“a formula in which the relationship with PHA will work so that the best bits of the CRC are retained for the benefit of the industry.” Pat Blackall.

POULTRYHUB AUSTRALIA - WHAT WE DO



SHARING KNOWLEDGE

Through investing in research PHA will generate new ideas and knowledge that will be disseminated to industry. Targeted workshops and training will also facilitate knowledge sharing.



BUILDING CAPACITY

PHA will support industry internships and promote the poultry industry in high schools and universities with the intention to build industry capacity for the future.



CREATING CONNECTIONS

PHA will provide the opportunity for industry and researchers to connect through the annual IE conference, PoultryGrad and facilitated workshops, with the aim to develop ideas for future projects.







Poultry Grad 2017



eChook



Employing Nonessential Amino Acids to Fortify Low Protein Diets

By Matthew Hilliar

G'day! My name is Matthew Hilliar, I'm 23 and I'm in the second year of my PhD at the University of New England (UNE). I grew up in a town on the Mid North Coast NSW called Kempsey, but don't hold that against me. I spent a lot of time with animals, working on the 'blended' family dairy farm and as a 'chicken enthusiast' with the Wauchope Poultry Club. With my background and love of animals and in particular chickens, I have to say that my career choice wasn't necessarily by chance. I completed my Bachelor of Science at UNE in 2014 and didn't hold back, jumping immediately into an Honours project with Prof Bob Swick, Associate Prof Shubiao Wu and Associate Prof Julie Roberts. The project involved comparing calorimetry methods with laying hens, to help develop the layer net energy project here at UNE and was funded with the Jeff Fairbrother scholarship from the Poultry CRC in 2015.



Matt Hilliar

2016 where I met Girish Channarayapatna from Evonik and Greg Hargreave of Baladi who helped come up with my PhD project: Employing nonessential amino acids to fortify low protein diets, which is funded by Evonik. My supervisors are Prof Bob Swick, Associate Prof Shubiao Wu, Dr Reza Barekattain and Mr Greg Hargreave.

With encouragement from Prof Mingan Choct, I began applying for different PhD projects relevant to the poultry industry, as this is the path I wanted to pursue following the submission of my Honours thesis. Thankfully I attended PoultryGrad 2015, which gave me the opportunity to meet Dr Kylie Hewson, who later stepped into the Chicken Meat Program Development role at RIRDC, now AgriFutures. Meeting Kylie beforehand made the whole process of applying for the AgriFutures scholarship a lot easier. I also attended APSS in

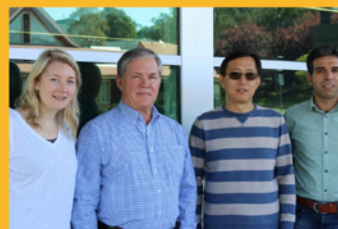
Are your AME matrix values of ingredients accurate?

By Shubiao Wu



AME Project Leader Assoc Prof Shubiao Wu

Dietary energy is the most important factor accounting for approximately 70% of the cost of production. Energy is required for growth and maintenance. Thus, it is imperative that energy values are known by nutritionists to provide appropriate energy and nutrient levels. In poultry, apparent metabolisable energy (AME) is the preferred measure for assessing feed. AME is defined as gross energy minus the gross energy contained in the excreta, often corrected to zero nitrogen retention, defined as AMEn, to improve accuracy in feed formulation. However, the concept of net energy (NE) has recently become more readily utilised in livestock animals in particular swine and dairy cattle. Poultry feed will soon be formulated based on using an NE based system instead of AMEn. Accurate measurement of AME is however paramount for use of the concept and required to calculate NE.



Dr Natalie Morgan, Prof Bob Swick, Assoc Prof Shubiao Wu & Dr Medhi Khorasgani

The accuracy of measurement through bioassay or by *in vitro* methods is questionable. This is due to the nature of AME between different ingredients, such as wheat and maize, and between values produced by different methods and methodologies. Also, the age and sex of birds used, and the error resulting from mistakes in calculation are widely prevalent, as identified in a recent study.

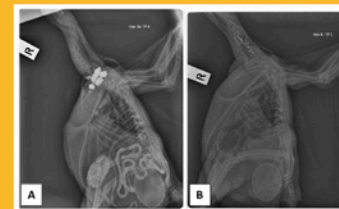
Uncovering the secrets of high performing free range layers.

By Dr Isabelle Ruhnke and Manisha Kolakshyapati

We know that birds are able to use their crops to store large amounts of feed. Not only the crops, but gizzards are also highly flexible regarding their holding. Interestingly, the size of gizzards can increase even over 100% of its original size as a response to fibre/pasture and the necessity to grind coarse feed particles. The well-developed crop and gizzard can function as a regulator of feed intake, retention time and nutrient turnover. Although there are various factors that affect the retention time of feed in the gastrointestinal tract, crop and gizzard are considered to be the most important organs.

As much as we know about the effect of fibre and particle size on gut holding capacity in broilers and layers, we still have no idea about the successful feeding strategies of high performing free range laying hens. Bringing light into the dark, PhD student Manisha Kolakshyapati and Dr. Isabelle Ruhnke from the University of New England are working on a refined technique to evaluate the gastrointestinal transit time.

The retention time of feed at different sites in the gastrointestinal tract is important in regulating the impact of digestive enzymes as well as the absorption capacity from the villi in the intestine. The digestive tract of avian species is particularly short compared to other species which results in faster passage rate in growing chicken and laying hens. Less retention time may affect the degradation facilitated by enzymes and hence, the efficacy of those. Thus, it is logical to hypothesize that hens housed in free range systems may benefit more from the well-developed crop and gizzard function which would potentially improve the efficacy of digestion process, nutrient utilization and gut health.

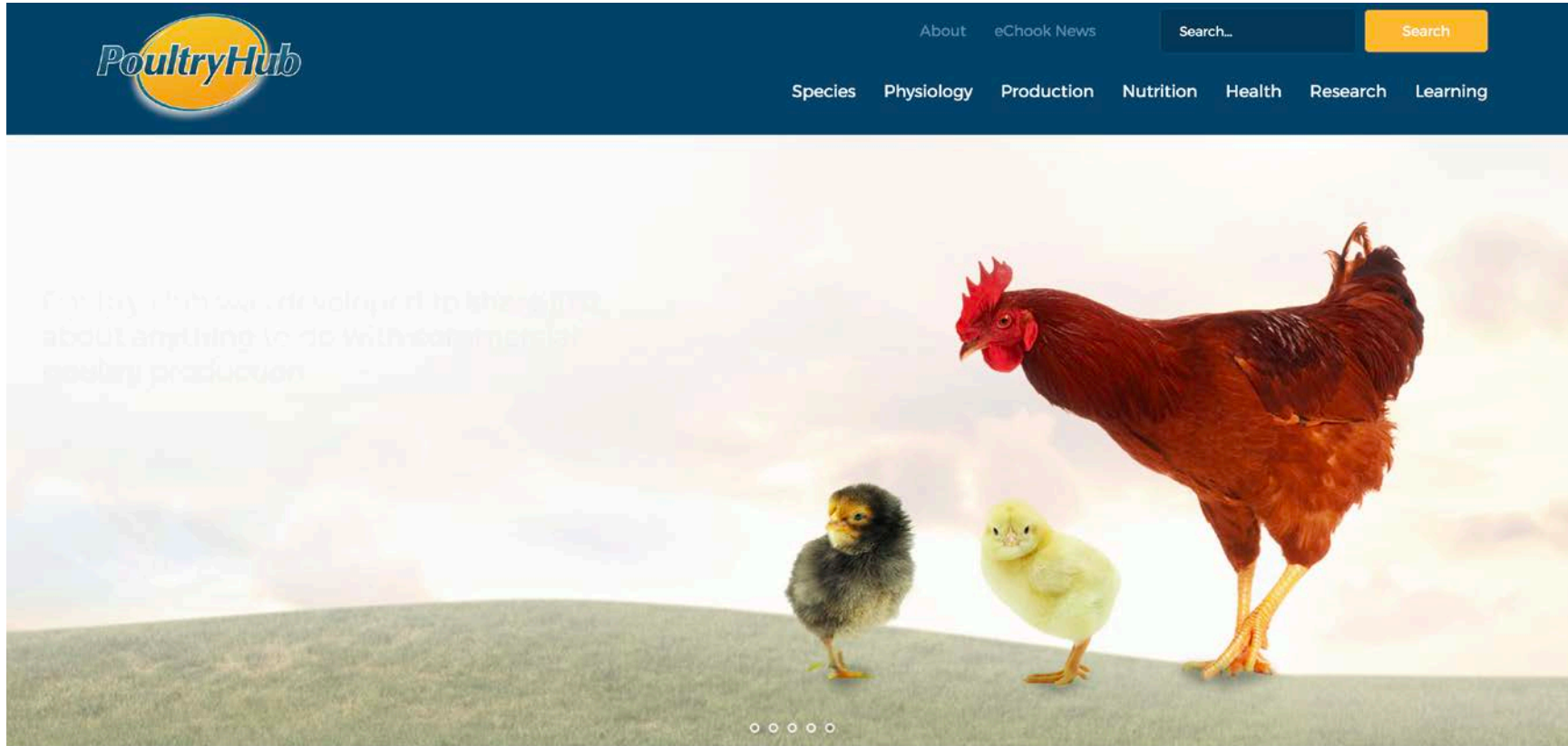


Radiographic images of laying hens investigating the gastrointestinal transit time using Barium Sulphate (a) and Barium impregnated Polyethylene Spheres (b)

Although studies have been carried out adding Titanium dioxide (TiO_2) marker to the feed and calculating them in the excreta to determine the whole tract passage rate, significant effect of retention time on performance and digestion still needs to be demonstrated. While most of the studies have used the whole gut transit time and rely on slaughter technique, very few studies have used comparative marker excretion pattern to determine the passage rate in different segments of the digestive tract to determine the passage rate.

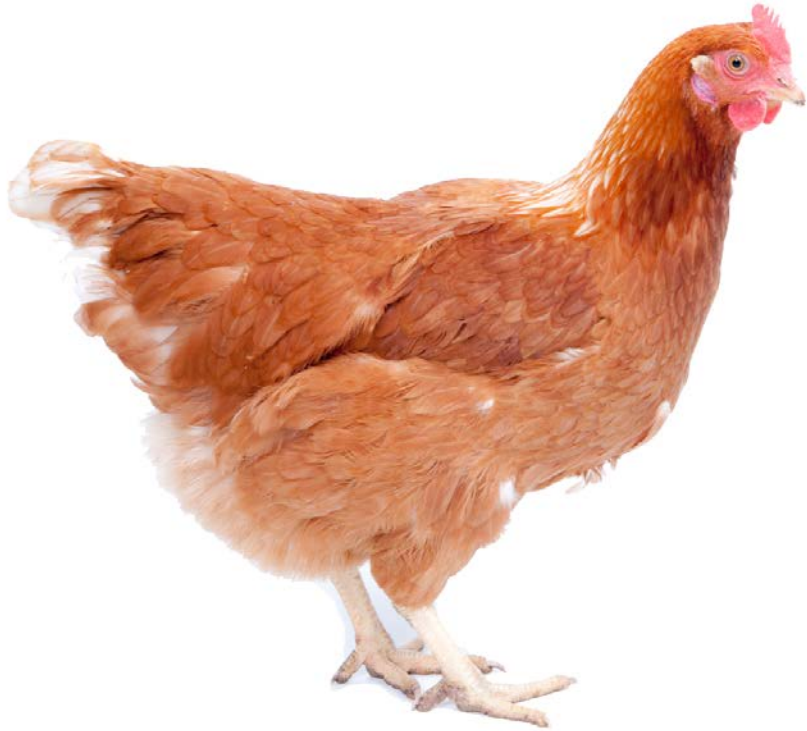
The team at UNE aims to determine, optimize and validate an easier, handy, less laborious and less time consuming method and most importantly a method that requires only few birds compared to the common slaughter technique. Currently, the researchers are

Poultry Hub Website



www.poultryhub.org





What's
next?

Acknowledgements

- Poultry CRC
- Mingan Choct
- David Crowley
- My boys

