

Christmas turkeys to improve their health, thanks to Manchester scientists

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(PhysOrg.com) -- University of Manchester researchers are investigating the breathing mechanics of birds to help farmers breed fit, healthy turkeys with bigger, juicier breast meat.

Dr Jonathan Codd and Peter Tickle at the University's Faculty of Life Sciences are researching how changes in breathing mechanics in developing birds may be able to be used to ensure that turkeys stay healthy, while being bred to grow more efficiently, to take their top billing in the Christmas dinner.

Dr Codd said: "The poultry industry is interested in producing birds that not only grow fast to meet consumer demands but that are also healthy. Our research focuses on the respiratory system and in particular developmental changes in the uncinat processes (bony levers which extend off the ribs) that help the birds to breathe". Interestingly, these levers are a key adaptation to different forms of locomotion in birds.

The team, who worked in collaboration with Aviagen Turkeys Ltd (ATL) and whose findings are published in the leading avian biology journal *Poultry Science* (Tickle & Codd 2009 *Poult. Sci.* Vol 88: pg 179-184), have found that the levers are

essential to the breathing mechanism of birds as they facilitate movements of the ribs and sternum. PhD student Peter Tickle examined one hundred turkeys from eggs to adulthood. Using a simple chemical staining technique and sophisticated biomechanical (nano-indentation) testing he determined the hardening of the levers from cartilage to bone was linked to the onset of air breathing and increases in muscle mass.

Dr Nick French, from ATL, said: "Understanding the changes that occur during development in birds is an essential component to allow the selection of larger turkeys without compromising their health".

Turkey breast meat is among the most popular portion of this traditional staple food at Christmas. However the way birds breathe means this mass of muscle must be moved up and down during ventilation. The significance of this research, put simply, is that selecting animals with larger muscles will have an obvious effect on the work it takes to breathe and this must be done without impacting the overall health of the animal.

The research by Codd and Tickle, funded by The Leverhulme Trust and the BBSRC, is one of new initiatives in whole animal biology at the University of Manchester.

Provided by University of Manchester

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