

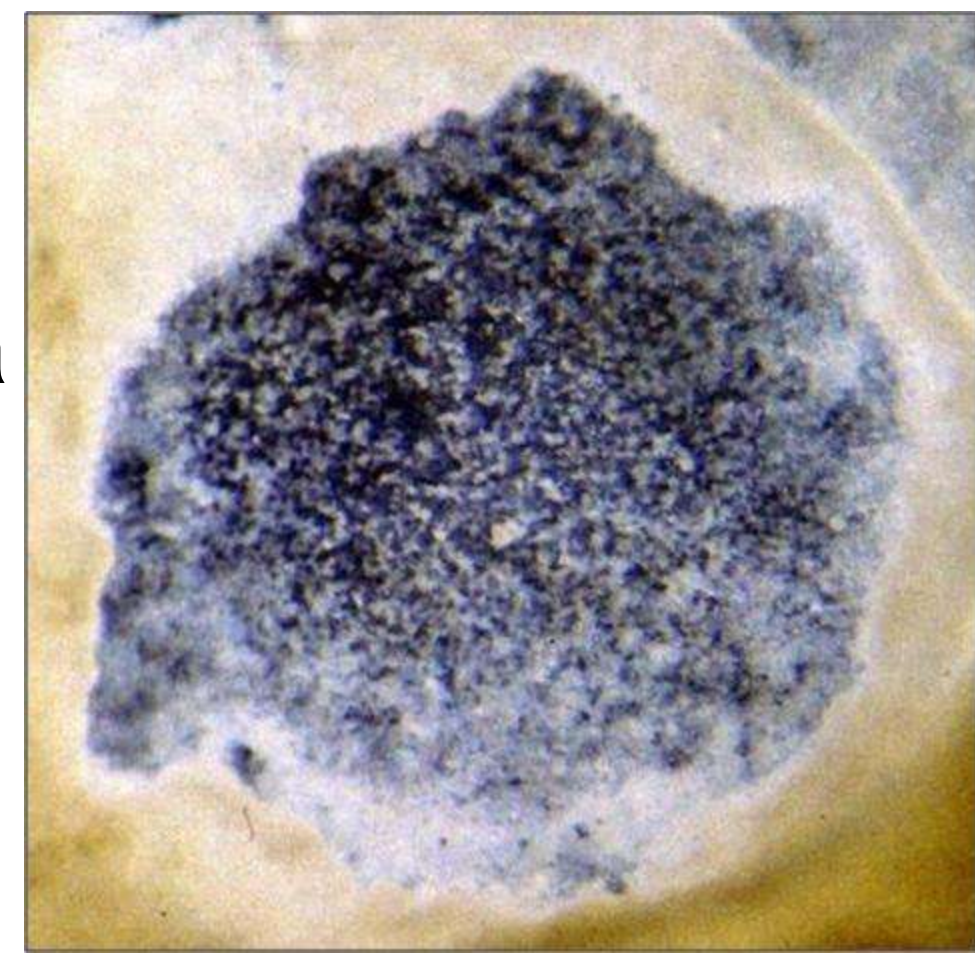


# Fundamental difference between broilers & turkeys

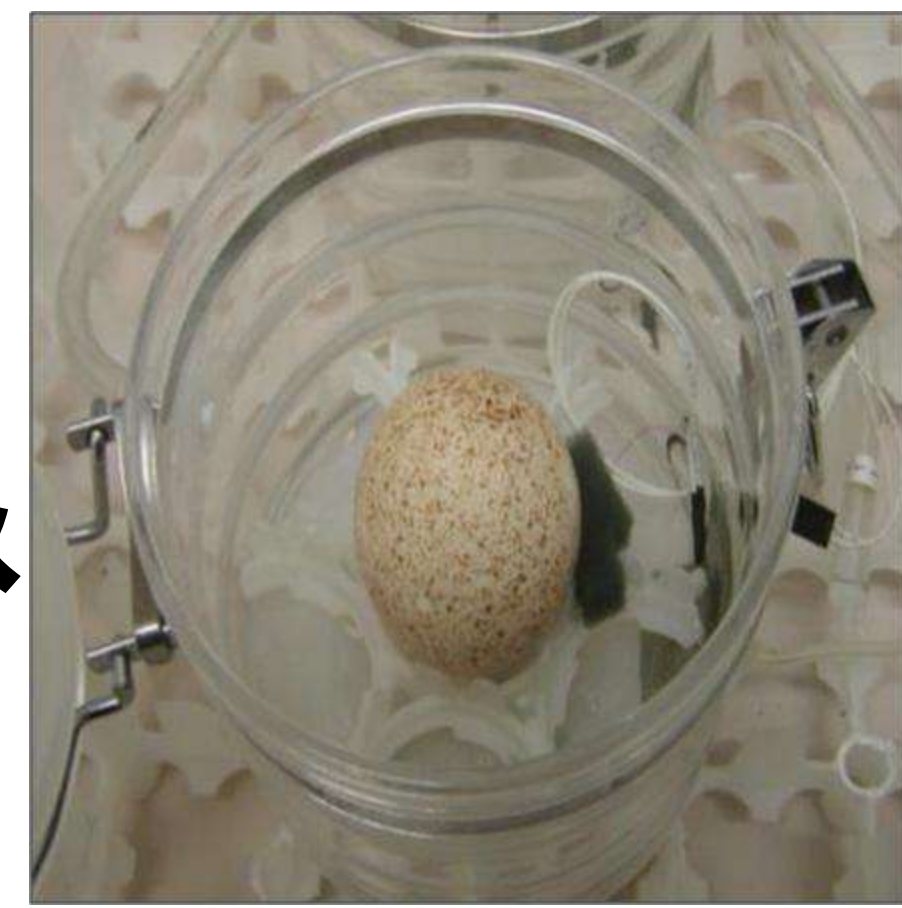


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## THE PROBLEM



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### WHY ?

- Embryonic metabolic patterns in chicken and turkeys are affected differently by genetic strain & maternal flock age (1, 2).
- Different cell survival & cell death rates (3, 4).

### OBJECTIVES

- Illustrate the fundamental reason turkey embryos should be treated differently from chicken embryos .
- Determine the molecular pathways of cell death (apoptosis or programmed cell death) in chicken and turkey embryos.
- Establish apoptosis rates using gene expression in stored eggs.

- 1) Blastoterm (embryo) development: matures at
  - stage X in broilers
  - stage VI in turkes
- 2) Incubation period:
  - 21 days in broilers
  - 28 days in turkeys

## OUR APPROACH

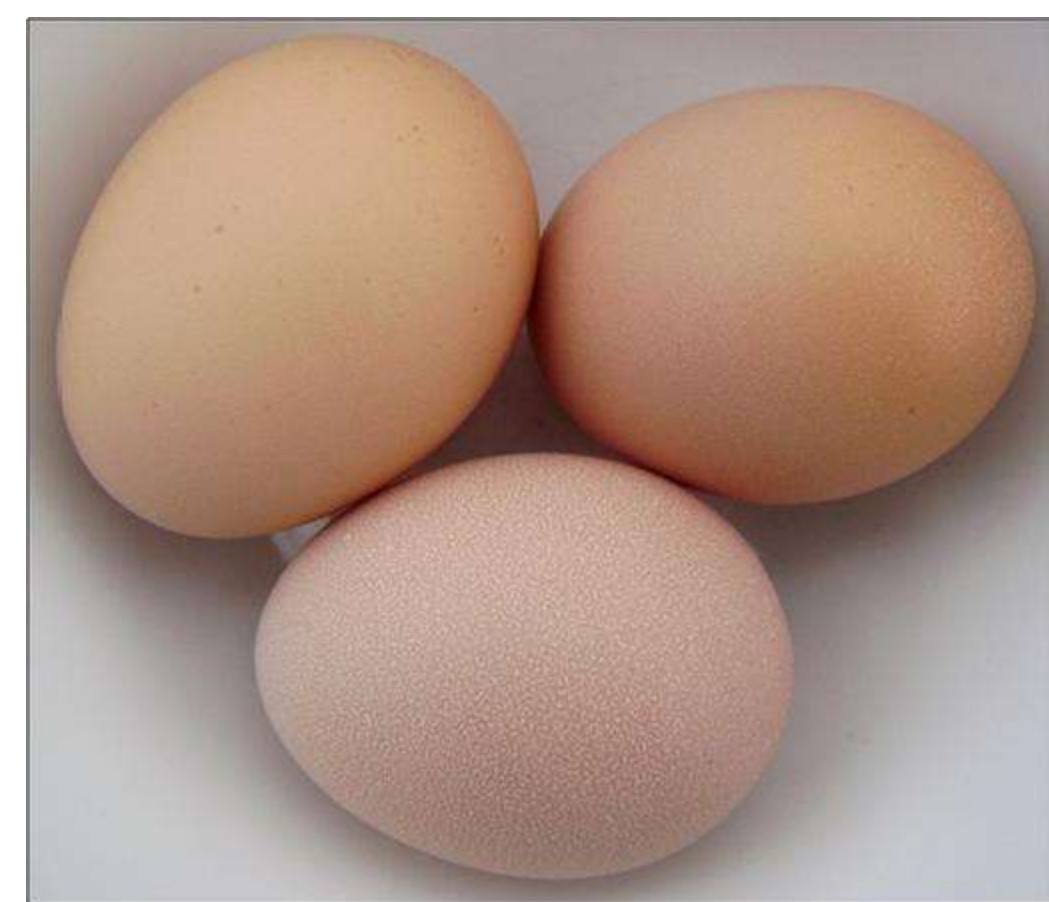


Fig. 1: Collect eggs from broiler breeder chicken s& turkeys  
 • Eggs grouped into 2  
 • Stores eggs for 4 days and 14 days  
 • Incubate eggs up to 6 days

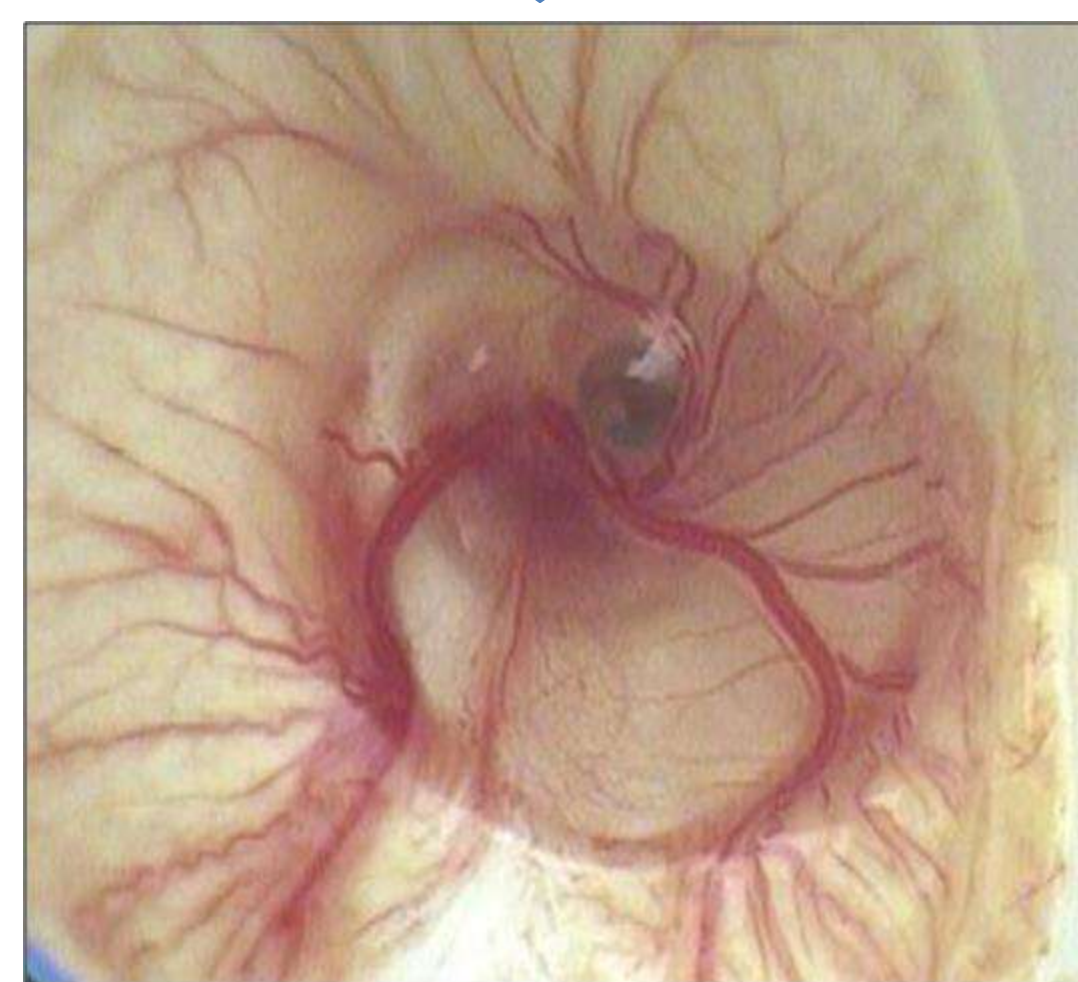


Fig. 2: Harvest live embryos, euthanize, store in sterile 1.5 litre micro tubes & freeze in dry ice



Fig. 3: DNA extracted to Determine relative amount or abundance of DNA present in chicken or turkey embryos at 6 days of incubation  
 (www.aurorabiomed.com)

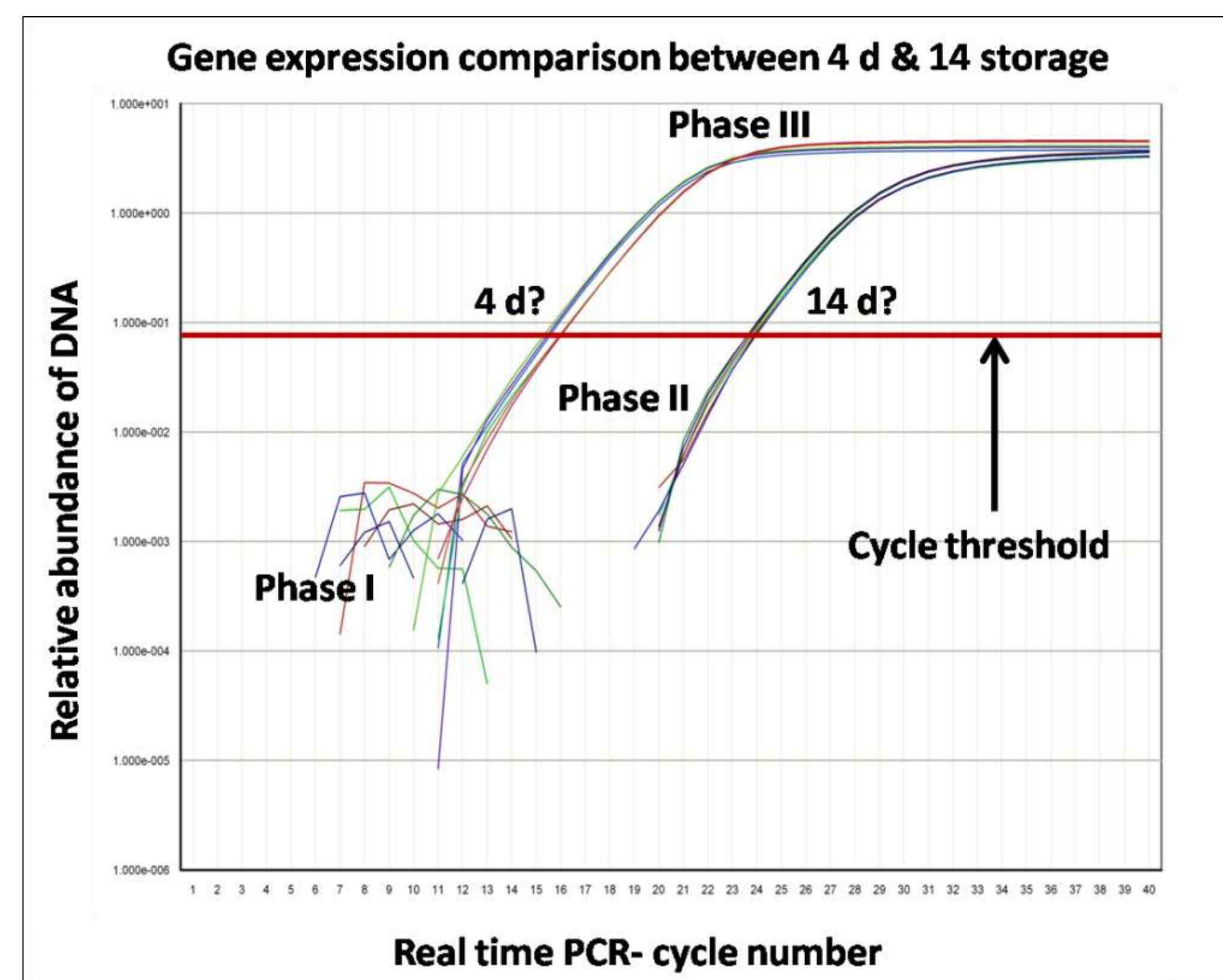


Fig. 4: Determine relative amount of DNA present in chicken or turkey embryos using RT-QPCR. Gene expression ( $\Delta\Delta Ct$ ) =  $\Delta Ct$  (14 days) –  $\Delta Ct$  (4 days). Where  $\Delta Ct$  = actual gene – housekeeping gene

## OUR OBSERVATIONS

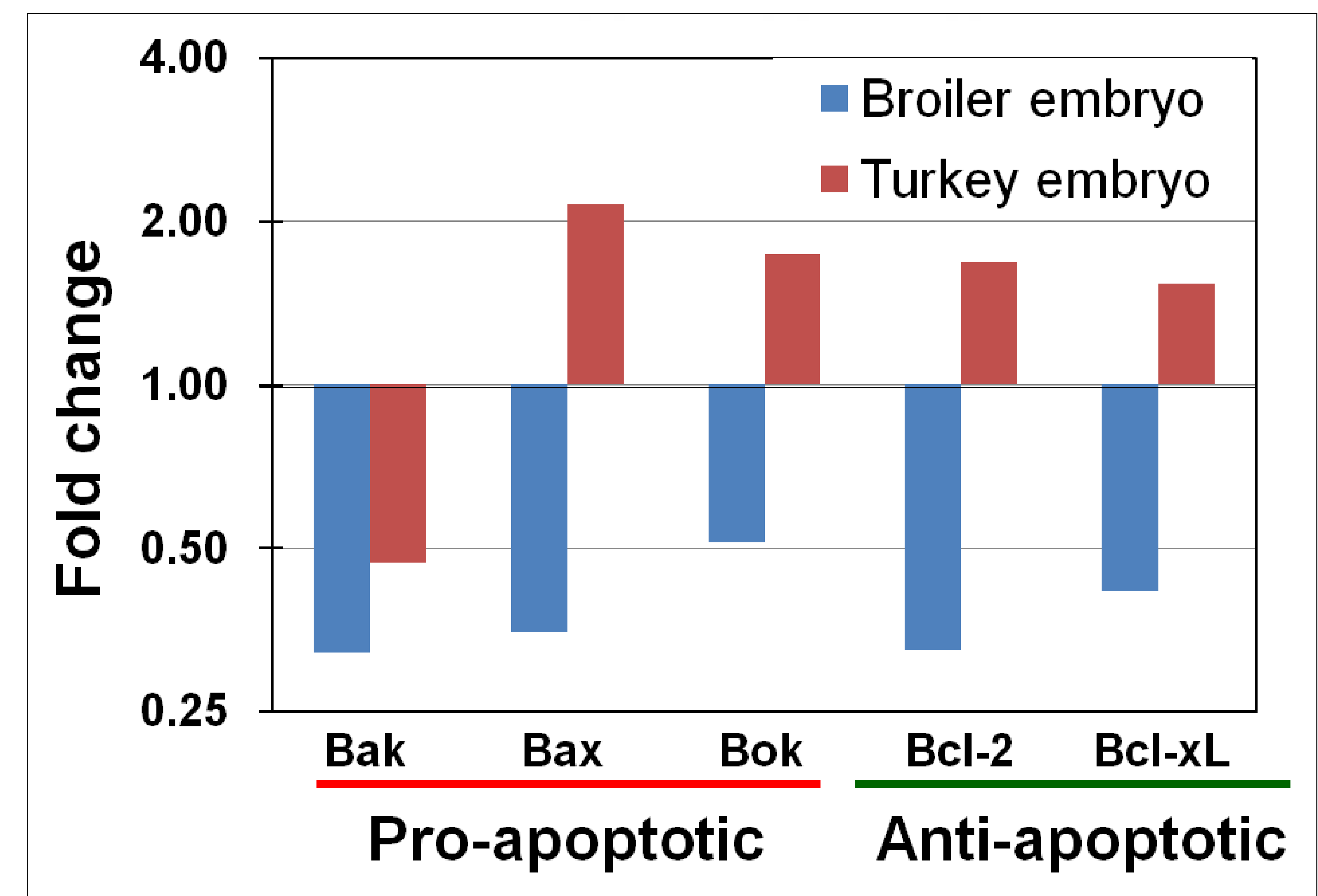


Fig. 5: Effect of egg storage on relative abundance of apoptotic genes (DNA) in 6 day old chickens (broilers) and turkey embryos

## WHAT DO THE RESULTS MEAN?

- Differences between chickens and turkey may be due to different gene expression patterns.
- Both may have different mechanisms of cell survival.
- Egg storage impacts cell death in both species.
- Turkeys and chicken need different incubation techniques.

References: 1, 2, 3: Hamidu et al. 2007, 2011, 2010; 4: Bakst& Akuffo 1999

### Acknowledgements

