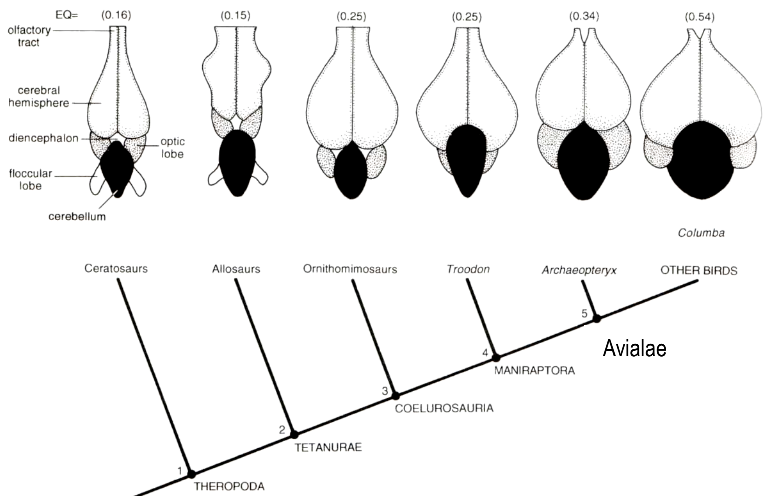
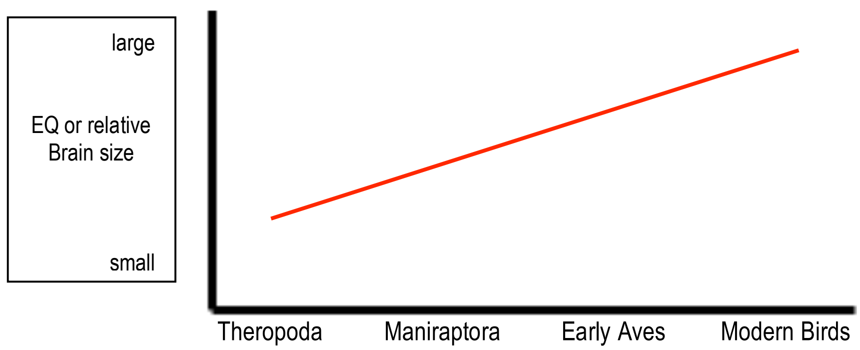
Biology 452, Summer 2009
Worksheet for Bird Evolution (5 pt)
(Drawings from Chatterjee, 1997)

1. How do the pelvic modifications of Ornithischian & Saurischian dinosaurs aid their locomotion, compared to other early tetrapods?

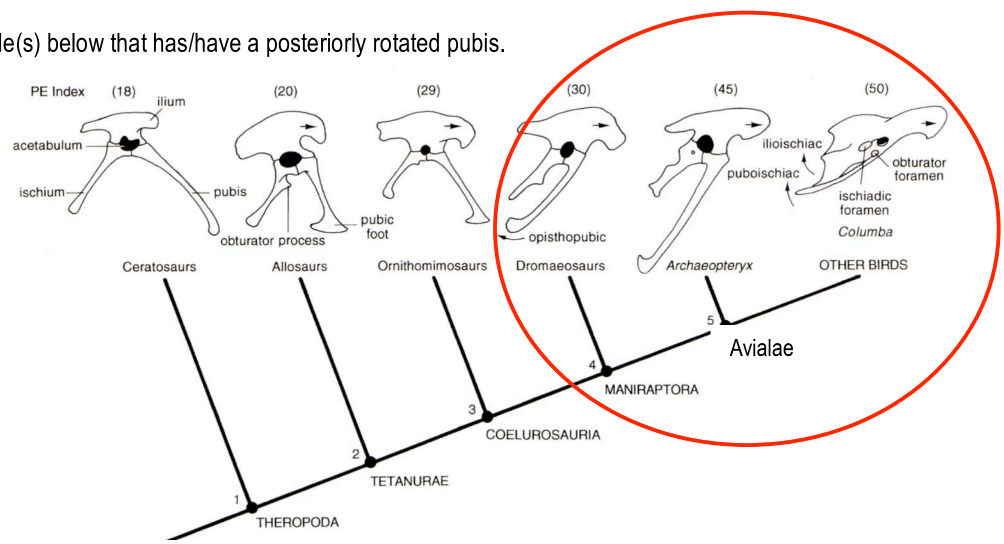
Dinosaurs have upright posture with their legs held directly underneath the body because of the altered positions of the ischium (posteriorly) and pubis (anteriorly in Saurischians & posteriorly in Ornithischians). Ancestral tetrapods have a “straddle” posture with large pubic & ischium bones that were directly in the midline between the legs.

2. Use this illustration to draw an approximate line for graph A (EQ = encephalization quotient, an estimate of relative brain size):

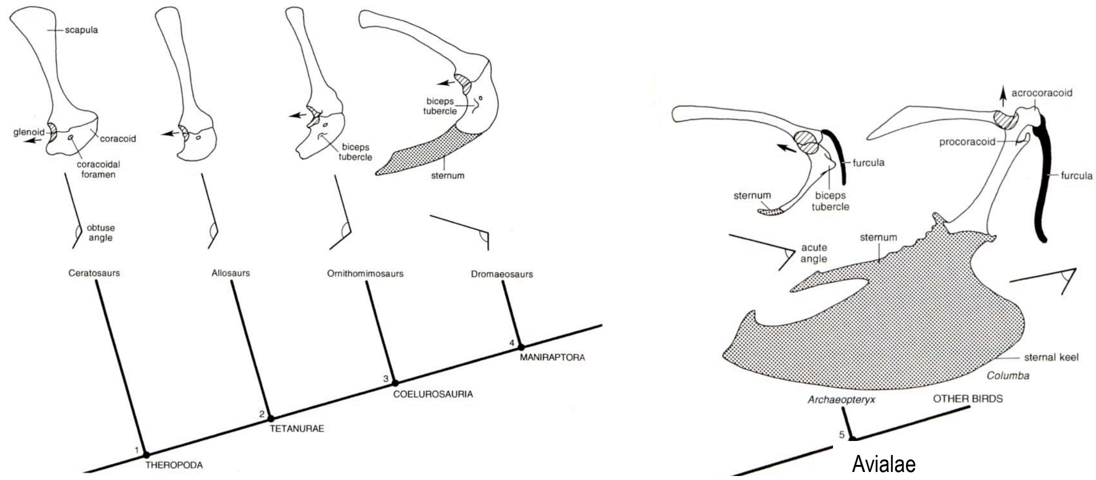


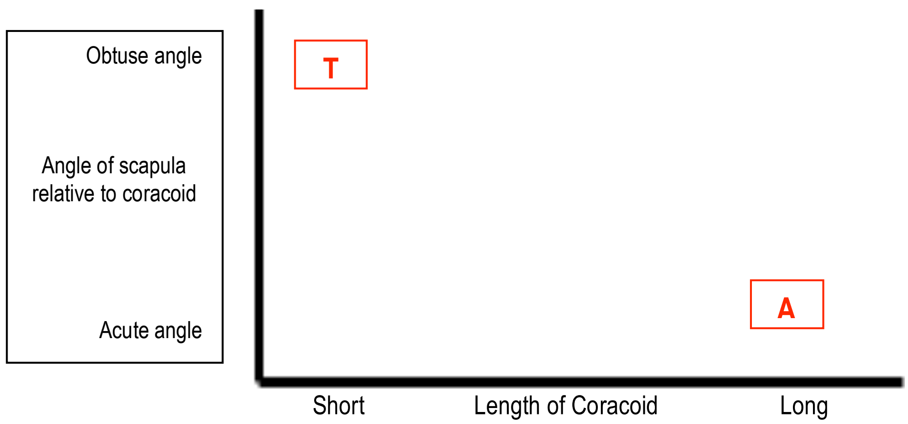


3. Circle the clade(s) below that has/have a posteriorly rotated pubis.



4. Draw & label two points on the graph below to show the relative position or size of the structures for A - aves, & T - theropoda





5. Circle the clade(s) that have a semilunate carpal in their wrist. How is the hand of the modern birds different from the rest?

Modern birds (eg. Gallus in the graph) have fused carpal & metacarpal bones & reduced the # of phalanges in the fingers.