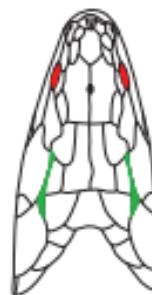


# Early tetrapod paleontology

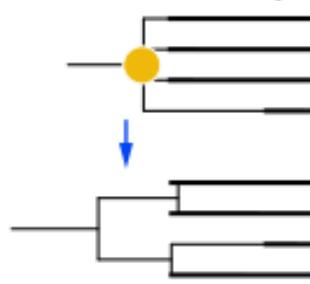
Assemble time-calibrated phylogeny of 59 taxa with skull and orbit preservation that bracket water-land transition



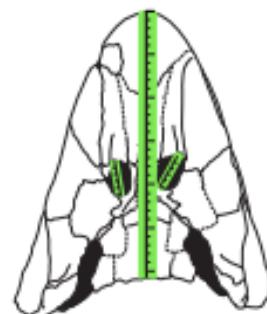
1 ... 59



Create distribution of 1,000 phylogenetic trees to account for phylogenetic uncertainty



Measure eye socket and skull length



Use computational trait evolution to identify locations of selective regime change across all 1,000 trees (Fig. 2)

## Computational visual ecology

Compute light fields for visual environments



Group socket lengths by trait evolution results (Fig. 3)

1. finned
2. finned-transitional
3. digitized
4. digitized-aquatic

Estimate pupil size for finned & digitized groups

Compute range, volume and derivatives for viewing object across conditions using pupil estimates (Fig. 4)

