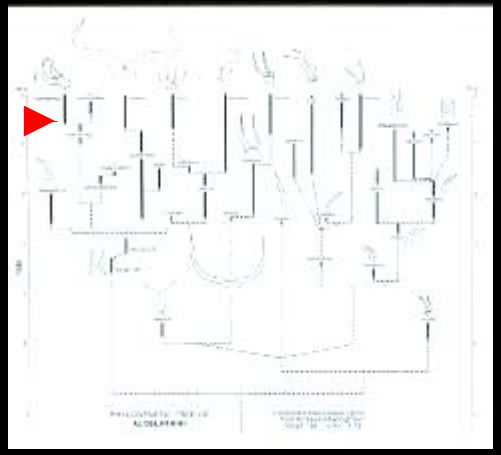
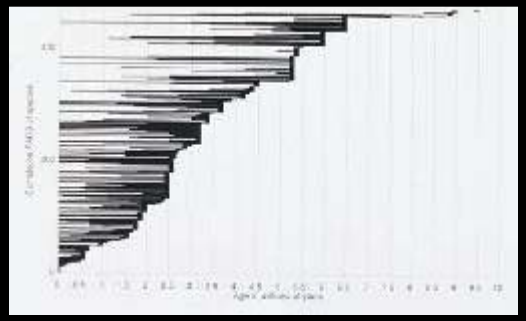
A. Fossil study in Addis Ababa,
→ points to earliest known hartebeest

B. The source of the fossils: Late Neogene strata, Middle Awash Afar Rift, Ethiopia

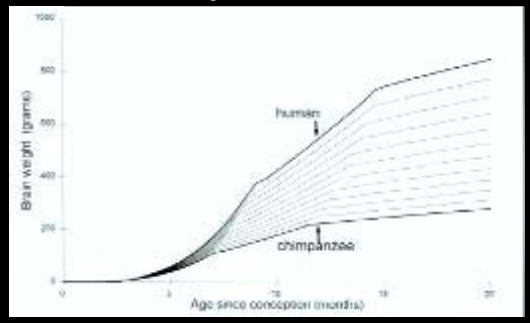
C. Phylogenetic analysis: the Hartebeest group



D. Macroevolutionary analysis of Speciation/Extinction patterns: larger African mammals, 10-0 my



E. Analysis of Growth in relation to Evolution



E1.The case of human brain growth +evolution: solutions obtained for human and Chimpanzee data

$$y = \frac{a_1 x^{\left(\beta_1 + \sum_{i=2}^{n} I_i \beta_i\right)}}{\prod_{i=2}^{n} x_{P(i-1)}^{I_i \beta_i}}$$

MULTIPHASIC GROWTH EQUATION.
P_i = i'th growth phase; y = character size; x = age since conception; x_{P_i} = age at end of P_i; I_i is an indicator variable so that $I_i = 0$ if $x < x_{P(i-1)}$ and $I_i = 1$ if $x > x_{P(i-1)}$; the β_i are components of the growth rates of P_1 to P_n; a_1 is a constant. (Vrba, 1998)

E2. The equation fitted to the data

EXAMPLES OF ELISABETH VRBA'S RESEARCH IN MAMMALIAN PALEONTOLOGY AND EVOLUTION