Molecular genetics of manuscripts

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As species get separated in evolution, differences accumulate between their DNA sequences.

We use these differences between the equivalent gene in a set of species to work out their evolutionary relationship.
Dinoflagellates

Figure courtesy of Giselle Walker

Apicomplexa
The first Stemma?
Collin & Schlyter 1827
Swedish legal texts

Collin & Schlyter 1827

Karl Lachmann 1793-1851
Buryed at Caane thus seythe the Croniculer
Beryed att Cane & thus says the cronyclere
Beryed at caene so seyth the cronyclere
Buried at cane this saith the croneclere
And is buried at Cane as the Cronycle sayes
And buryed at cane as the Cronycle sayes
SplitsTree analysis of the Prologue to the 
*Wife of Bath’s Tale*

‘Hengwr Chaucer’
National Library of Wales
(MS Penarth 392D) Around 1400

Barbrook et al. (1998)
*Nature* 394 839
Relationship of Hengwrt and Ellesmere manuscripts

1st quarter

Last quarter

Prologue to the Wife of Bath’s Tale
• Contamination - scribe used more than one exemplar in making a copy

• Can be successive (changes at a point) or simultaneous/incidental

• Analogous to lateral (horizontal) gene transfer or genetic recombination

With successive contamination, trees constructed from different sections of the text should be different.
Maximum chi-squared analysis for Wife of Bath’s Prologue indicates breakpoint at character 3384 (line 404) in Hengwrt/Ellesmere comparison.
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‘After line 400, El changes character dramatically… It is possible that for lines 420 onwards, El is actually based on the same exemplar as Hg’

(Robinson, 1997)