

**Supplementary Table: Flagellar transformation in eukaryotic groups.** Historically it has been reported that the location of the oldest flagellum (anterior or posterior) is of phylogenetic value. While the strength of evidence is variable in different studies, the information available in the published literature suggests that nearly all eukaryotes studied have the “bikont” pattern, and relatively few have the “unikont” pattern. In cases where there are more than two flagella, or anterior/ posterior is not an obvious distinction between the two flagella, it is not really possible to judge whether the pattern is bikont or unikont. Ultimately, it will be necessary to examine the ontogeny of flagella at a molecular genetic level to understand which flagella are homologous.

Supergroup	Group	Subgroup	Organism	Reference	Transformation
Opisthokonta	Holozoa	Choanoflagellates	<i>Monosiga ovata</i>	(Karpov and Leadbeater 1997) (Gely and Wright 1985; Wright <i>et al.</i> 1988; Wright <i>et al.</i> 1980a;	a->p = Bikont
Amoebozoa	“Eumycetozoa”	Myxogastrids	<i>Physarum polycephalum</i>	Wright <i>et al.</i> 1980b)	p->a = Unikont
Excavata	Discoba	Euglenozoa	<i>Euglena mutabilis</i>	(Melkonian <i>et al.</i> 1987)	a->p = Bikont
Excavata	Discoba	Euglenozoa	<i>Ploeotia costata</i>	(Farmer and Triemer 1988)	a->p = Bikont
Excavata	Discoba	Euglenozoa	<i>Entosiphon sulcatum</i>	(Brugerolle 1992)	a->p = Bikont
Excavata	Discoba	Heterolobosea	<i>Percolomonas decissus</i>	(Brugerolle and Simpson 2004)	aa->pp = double bikont
Excavata	Discoba	Heterolobosea	<i>Percolomonas sulcatus</i>	(Brugerolle and Simpson 2004)	aa->pp = double bikont
Excavata	Discoba	Heterolobosea	<i>Tetramitus rostratus</i>	(Brugerolle and Simpson 2004)	aa->pp = double bikont
Excavata	Discoba	Heterolobosea	<i>Naegleria gruberi</i>	(Brugerolle and Simpson 2004)	aa->pp = double bikont
Excavata	Metamonada	Diplomonads	<i>Giardia intestinalis</i>	(Nohynkova <i>et al.</i> 2006)	8 flagella
Archaeplastida	Chlorophyta	“Prasinophytes”	<i>Nephroselmis olivacea</i>	(Melkonian <i>et al.</i> 1987)	p->a = Unikont
Archaeplastida	Chlorophyta	“Prasinophytes”	<i>Pyramimonas octopus</i>	(Moestrup and Hori 1989)	8 flagella
Archaeplastida	Chlorophyta	Chlorophyceae	<i>Spermatozopsis exsultans</i>	(Beech <i>et al.</i> 1991) (Lechtreck and Bornens 2001;	4 flagella
Archaeplastida	Chlorophyta	Chlorophyceae	<i>Spermatozopsis similis</i>	Lechtreck <i>et al.</i> 1997)	p->a = Unikont isokont/ apical flagella. non eyespot-> eyespot side
Archaeplastida	Chlorophyta	Chlorophyceae	<i>Chlamydomonas reinhardtii</i>	(Holmes and Dutcher 1989)	
Archaeplastida	Chlorophyta	“Prasinophytes”	<i>Pedinomonas tuberculata</i>	(Heimann <i>et al.</i> 1989a)	a->p = Bikont
Archaeplastida	Chlorophyta	“Prasinophytes”	<i>Monomastix sp.</i>	(Heimann <i>et al.</i> 1989a)	a->p = Bikont
Archaeplastida	Glaucophyta	~	<i>Cyanophora paradoxa</i>	(Heimann <i>et al.</i> 1989b)	a->p = Bikont
SAR	Stramenopiles	Chrysophytes	<i>Epipyxis pulchra</i>	(Wetherbee <i>et al.</i> 1988)	a->p = Bikont

SAR	Stramenopiles	Synurophytes	<i>Mallomonas splendens</i>	(Beech and Wetherbee 1990b; Beech and Wetherbee 1990a)	a->p = Bikont
SAR	Stramenopiles	Synurophytes	<i>Mallomonas papillosa</i>	(Beech and Wetherbee 1990b)	a->p = Bikont
SAR	Stramenopiles	Pedinellids	<i>Apedinella radians</i>	(Koutoulis <i>et al.</i> 1988; Koutoulis and Wetherbee 1993a, 1993b, 1993c)	a->p = Bikont
SAR	Stramenopiles	Pedinellids	<i>Pseudopedinella elastica</i>	(Heimann <i>et al.</i> 1989a)	a->p = Bikont
SAR	Stramenopiles	Pelagophytes	<i>Pelagomonas calceolata</i>	(Heimann <i>et al.</i> 1995a)	a->p = Bikont
SAR	Alveolates	Dinoflagellates	<i>Prorocentrum micans</i>	(Heimann <i>et al.</i> 1995b)	transverse-> longitudinal
SAR	Alveolates	Dinoflagellates	<i>Prorocentrum minima</i>	(Heimann <i>et al.</i> 1995b)	transverse-> longitudinal
SAR	Rhizaria	Cercomonads	<i>Cercomonas clade A1</i>	(Karpov <i>et al.</i> 2006)	a->p = Bikont
SAR	Rhizaria	Cercomonads	<i>Eocercomonas</i>	(Karpov <i>et al.</i> 2006)	a->p = Bikont
SAR	Rhizaria	Cercomonads	<i>Paracercomonas</i>	(Karpov <i>et al.</i> 2006)	a->p = Bikont
SAR	Rhizaria	Sainouroidea	<i>Sainoureon acronematica</i>	(Cavalier-Smith <i>et al.</i> 2008b)	a->p = Bikont
SAR	Rhizaria	Sainouroidea	<i>Helkesimastix</i>	(Cavalier-Smith <i>et al.</i> 2009)	a->p = Bikont
SAR	Rhizaria	Pansomonads	<i>Aurigamonas solis</i>	(Vickerman <i>et al.</i> 2005)	a->p = Bikont
SAR	Rhizaria	Chlorarachniophytes	<i>Bigelowiella natans</i>	(Moestrup and Sengco 2001)	a->p = Bikont
CCTH	Haptophytes	Prymnesiophytes	<i>Pleurochrysis carterae</i>	(Beech <i>et al.</i> 1988)	p->a = Unikont
CCTH	Haptophytes	Pavlovophyceae	<i>Pavlova aff salina</i>	(Green 1980)	a->p = Bikont
CCTH	Cryptomonads	~	<i>Cryptomonas ovata</i>	(Perasso <i>et al.</i> 1992)	a->p = Bikont
<i>incertae sedis</i>	Apusozoa	Apusomonads	<i>Apusomonas proboscidea</i>	(Vickerman <i>et al.</i> 1974)	a->p = Bikont
<i>incertae sedis</i>	Apusozoa	Apusomonads	<i>Thecamonas mutabilis</i>	Griessmann 1913, in (Cavalier-Smith and Chao 2010)	a->p = Bikont
<i>incertae sedis</i>	Apusozoa	Ancyromonads	<i>Planomonas mylnikovi</i>	(Cavalier-Smith <i>et al.</i> 2008a)	a->p = Bikont

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