

LILIANA M. GIUSSANI, J. HUGO COTA-SÁNCHEZ, FERNANDO O. ZULOAGA, AND ELIZABETH A. KELLOGG. 2001. A molecular phylogeny of the grass subfamily Panicoideae (Poaceae) shows multiple origins of C4 photosynthesis. *American Journal of Botany* 88(11): 1993-2012.

List of taxa and vouchers for ndhF sequences used in this study.<sup>a</sup>

Taxon	Voucher	GenBank accession number <sup>b</sup>
<b>Tribe Paniceae (Panicoideae)</b>		
<u>Acroceras zizanioides</u> (Kunth) Dandy	CB et al., 144 (RNG)	AY029618
<u>Altoparadisium chapadense</u> Filg., Davidse, Zuloaga and Morrone	Filgueiras & Fonseca 2987 (136E)	AY029619
<u>Anthaenantiopsis rojasiana</u> Parodi	FZ, 6747 (SI)	AY029620
<u>Arthropogon</u> Nees		
<u>A. lanceolatus</u> Filg.	Filgueiras & Rodriguez 3588 (MO)	AY029621
<u>A. villosus</u> Nees	TF, 3504 (SI)	AY029622
<u>Axonopus</u> P. Beauv.		
<u>A. anceps</u> (Mez) Hitchc.	RGM, 954	AY029623
<u>A. fissifolius</u> (Raddi) Kuhlm.	RGM, 961	AY029624
<u>Cenchrus ciliaris</u> L.	EC and TR, TX91/14009 (RNG)	AY029625
<u>Chaetium bromoides</u> (J.Presl) Benth. ex Hemsl.	LGC, s.n.(ISC)	AY029626
<u>Digitaria</u> Haller		
<u>D. ciliaris</u> (Retz.) Koeler	CM, 1126	AY029630
<u>D. radicata</u> (J. Presl) Miq.	CM, 1169	AY029628
<u>D. setigera</u> Roth ex Roem. and Schult.	CM, 1187	AY029629
<u>Echinochloa</u> P. Beauv.		
<u>E. colona</u> (L.) Link	FZ, 6769 (SI)	AY029631
<u>E. frumentacea</u> (Roxb.) Link	JJO and RGM, 15K (UK)	AY029632
<u>Echinolaena inflexa</u> (Poir.) Chase	FZ, 6943 (SI)	AY029633
<u>Eriochloa punctata</u> (L.) Desv.	Barnard, Jones and Crane, 280 (RNG)	AY029634
<u>Homolepis</u> Chase		
<u>H. glutinosa</u> (Sw.) Zuloaga and Soderstr.	FZ, 6799 (SI)	AY029637
<u>H. isocalycia</u> (G. Mey.) Chase	FZ, 6938 (SI)	AY029636
<u>Hymenachne donacifolia</u> (Raddi) Chase	OM, s.n. (SI)	AY029635
<u>Ichnanthus pallens</u> (Sw.) Munro ex	EC and TR TB93/33625	AY029638

Benth.	(RNG)	
<u>Lasiacis sorghoidea</u> (Desv.) Hitchc. and Chase	FZ, 6762 (SI)	AY029639
<u>Leptocoryphium lanatum</u> (Kunth) Nees	FZ, 6813 (SI)	AY029640
<u>Melinis repens</u> (Willd.) Zizka	FZ, 6764 (SI)	AY029675
<u>Mesosetum chaseae</u> Luces	FZ, 6945 (SI)	AY029641
<u>Ophiochloa hydrolithica</u> Filg., Davidse and Zuloaga	TF, s.n. (SI)	AY029642
<u>Oplismenus hirtellus</u> (L.) P. Beauv.	LGC, s.n. (ISC)	AY029644
<u>Otachyrium versicolor</u> (Döll) Henrard	FZ and OM, 7027 (SI)	AY029643
<u>Panicum</u> L.		
<b>Subg. <u>Agrostoides</u> Zuloaga</b>		
Section <u>Bulbosa</u> Zuloaga		
<u>P. bulbosum</u> Kunth	JJO and RGM, 15K (RNG)	AY029648
Sect. <u>Obtusa</u> Pilg.		
<u>P. obtusum</u> Kunth	JJO and RGM, 16K (RNG)	AY029659
Sect. <u>Prionitia</u> Zuloaga		
<u>P. prionitis</u> Nees	FZ, 6794 (SI)	AY029652
<b>Subg. <u>Dichantherium</u> Hitchc. &amp; Chase</b>		
Sect. <u>Cordovensia</u> (Hitchc. & Chase) Parodi		
<u>P. ovuliferum</u> Trin.	FZ, 6803 (SI)	AY029653
Sect. <u>Dichantherium</u>		
<u>P. koolauense</u> H. St. John and Hosaka	CM, 1244	AY029627
<u>P. sabulorum</u> Lam.	Hatschbach 43411 (K)	AY029654
<b>Subg. <u>Panicum</u></b>		
Sect. <u>Dichotomiflora</u> (Hitchc. and Chase) Honda		
<u>P. aquaticum</u> Poir.	FZ, 6967 (SI)	AY029658
<u>P. elephantipes</u> Nees ex Trin.	FZ, s/n	AY029647
Sect. <u>Panicum</u>		
<u>P. fauriei</u> Hitchc.	CM, 1275	AY029650
<u>P. nephelophilum</u> Gaudich.	CM, 1544	AY029645
Sect. <u>Rudgeana</u> Zuloaga		
<u>P. rudgei</u> Roem. & Schult.	FZ, 6985 (SI)	AY029661
Sect. <u>Virgata</u> (Hitchc. & Chase)		

Pilg.		
<u>P. pedersenii</u> Zuloaga	FZ, 6926 (SI)	AY029646
<u>P. repens</u> L.	PI366816	AY029651
<u>P. virgatum</u> L.	LGC, 1164	U21986*
<b>Subg. <u>Phanopyrum</u> (Hitchc.)</b>		
<b>Zuloaga</b>		
Sect. <u>Laxa</u> (Hitchc. & Chase) Pilg.		
<u>P. laxum</u> Sw.	FZ, 6756 (SI)	AY029655
Sect. <u>Lorea</u> Zuloaga		
<u>P. euprepes</u> Renvoize	FZ, s.n. (SI)	AY029657
Sect. <u>Monticola</u> Stapf		
<u>P. millegrana</u> Poir.	FZ, 6766 (SI)	AY029660
Sect. <u>Stolonifera</u> (Hitchc. & Chase)		
Pilg.		
<u>P. piauiense</u> Swallen	FZ, s.n. (SI)	AY029656
<u>Paspalidium geminatum</u> (Forssk.) Stapf	FZ, 6929 (SI)	AY029662
<u>Paspalum</u> L.		
Group Anachyris		
<u>P. malacophyllum</u> Trin.	OM, 3400 (SI)	AY029671
Group Conjugata		
<u>P. conjugatum</u> Bergius	OM, 3339 (SI)	AY029669
Group Disticha		
<u>P. vaginatum</u> Sw.	OM, 3393 (SI)	AY029665
Group Livida		
<u>P. remotum</u> J. Remy	OM, 3551 (SI)	AY029668
Group Paniculata		
<u>P. paniculatum</u> L.	OM, 3354 (SI)	AY029667
Group Quadrifaria		
<u>P. arundinellum</u> Mez	FZ, 6810 (SI)	AY029663
<u>P. haumanii</u> Parodi	OM, s.n. (SI)	AY029664
Group Virgata		
<u>P. conspersum</u> Schrad. ex Schult.	FZ, 6748 (SI)	AY029666
<u>P. wettsteinii</u> Hack.	OM, 3367	AY029670
<u>Pennisetum</u> Rich.		
<u>P. alopecuroides</u> (L.) Spreng.	Park Seed, 3650 (MO)	AY029672
<u>P. setaceum</u> (Forssk.) Chiov.	CM, 1101	AY029673
<u>Plagiantha tenella</u> Renvoize	FZ, 6953 (SI)	AY029674
<u>Pseudechinolaena polystachya</u> (Kunth) Stapf	FZ, 6798 (SI)	AY029676
<u>Sacciolepis indica</u> (L.) Chase	H.J.M. Bowen 3875 (RNG)	AY029677
<u>Setaria</u> P. Beauv.		
<u>S. lachnea</u> (Nees) Kunth	FZ, 6758 (SI)	AY029683
<u>S. macrostachya</u> Kunth	PI216573	AY029678
<u>S. palmifolia</u> (J. König) Stapf	MBG, 801593-2	AY029680

<u>S. parviflora</u> (Poir.) Kerguélen	PI316422	AY029682
<u>S. sphacelata</u> (Schumach.) M.B. Moss ex Stapf & C.E. Hubb.	PI268145	AY029681
<u>S. geniculata</u> P. Beauv.	PI202407	AY029679
<u>S. viridis</u> (L.) P. Beauv.	LGC, 1155	U21976 <sup>b</sup>
<u>Steinchisma hians</u> (Elliott) Nash	FZ, 6773 (SI)	AY029685
<u>Stenotaphrum secundatum</u> (Walter) Kuntze	OM, 3397 (SI)	AY029684
<u>Streptostachys</u> Desv.		
<u>S. asperifolia</u> Desv.	FZ, 6941 (SI)	AY029687
<u>S. ramosa</u> Zuloaga & Soderstr.	FZ, 6960 (SI)	AY029686
<u>Tatianyxa arnaces</u> (Trin.) Zuloaga & Soderstr.	FZ, 6965 (SI)	AY029688
<u>Thrasya</u> Kunth		
<u>T. glaziovii</u> A.G.Burm.	TF, 3482 (SI)	AY029689
<u>T. petrosa</u> (Trin.) Chase	TF, 3496 (SI)	AY029690
<u>Urochloa</u> P. Beauv.		
<u>U. acuminata</u> (Renvoize) Morrone & Zuloaga	FZ, s.n.	AY029692
<u>U. plantaginea</u> (Link) R.D. Webster	FZ, 6767	AY029693
<u>U. maxima</u> (Jacq.) R.D. Webster	OM, 3343 (SI)	AY029649
<u>U. mutica</u> (Forssk.) T.Q. Nguyen	CF, 1166	AY029691

**Tribe Andropogoneae**  
**(Panicoidae)**

<u>Andropogon gerardii</u> Vitman	AF117391 <sup>c</sup>
<u>Apluda mutica</u> L.	AF117392 <sup>c</sup>
<u>Bothriochloa bladhii</u> (Retz.) S. T. Blake	AF117395 <sup>c</sup>
<u>Capillipedium parviflorum</u> (R. Br.) Stapf	AF117396 <sup>c</sup>
<u>Chionachne koenigii</u> (Spreng.) Thwaites	AF117397 <sup>c</sup>
<u>Chrysopogon fulvus</u> (Spreng.) Chiov.	AF117398 <sup>c</sup>
<u>Cleistachne sorghoides</u> Benth.	
<u>Coelorachis seloana</u> (Hack.) A. Camus	AF117401 <sup>c</sup>
<u>Coix aquatica</u> Roxb.	AF117402 <sup>c</sup>
<u>Cymbopogon flexuosus</u> (Nees ex Steud.) J.F. Watson	AF117404 <sup>c</sup>
<u>Dichanthium aristatum</u> (Poir.) C.E. Hubb.	AF117409 <sup>c</sup>
<u>Elionurus muticus</u> Kuntze (Spreng.) Kuntze	AF117410 <sup>c</sup>
<u>Heteropogon contortus</u> (L.) P. Beauv.	AF117411 <sup>c</sup>

ex Roem. & Schult.	
<u>Hyparrhenia hirta</u> (L.) Stapf	AF117412 <sup>c</sup>
<u>Ischaemum afrum</u> (J.F. Gmel.) Dandy	AF117413 <sup>c</sup>
<u>Microstegium nudum</u> (Trin.) A. Camus	AF117415 <sup>c</sup>
<u>Miscanthus japonicus</u> (Trin.) Andersson	AF117417 <sup>c</sup>
Anderss.	
<u>Phacelurus digitatus</u> (Sibth. & Sm.) Griseb.	AF117418 <sup>c</sup>
<u>Schizachyrium scoparium</u> (Michx.) Nash	AF117420 <sup>c</sup>
<u>Sorghum bicolor</u> (L.) Moench	U21981*
<u>Tripsacum dactyloides</u> (L.) L.	AF117433 <sup>c</sup>
<u>Zea mays</u> L.	U21985 <sup>b</sup>
<b>Tribe Arundinelleae (Panicoideae)</b>	
<u>Danthoniopsis petiolata</u> (J.B. Phipps) Clayton	U22008 <sup>b</sup>
<u>Danthoniopsis dinteri</u> (Pilg.) C.E. Hubb.	AY029695
<u>Arundinella hirta</u> (Thunb.) Tanaka	AF117393 <sup>c</sup>
<b>Tribe Centothecaeae (Centothecoideae)</b>	
<u>Chasmanthium laxum</u> (L.) H.O. Yates subsp. <u>sessiliflorum</u> (Poir.) L. G. Clark	U27296 <sup>b</sup>
<u>Chasmanthium latifolium</u> (Michx.) H.O. Yates	AY029694
<u>Zeugites pittieri</u> Hack.	U21987 <sup>b</sup>
<b>Tribe Thysanolaeneae (Arundinoideae)</b>	
<u>Thysanolaena maxima</u> (Roxb.) Kuntze	U21984 <sup>b</sup>

<sup>a</sup>Taxonomic arrangement follows Clayton and Renvoize (1986). Abbreviations for plant or sequence voucher are as follows: CB = C. Barnard; CM = C. Morden; EAK = E. A. Kellogg; EC and TR = E. Clemens and T. Ryves; FZ = F. Zuloaga; GD = G. Davidse; JJO = J. J. Ortíz; LGC = L. G. Clark; OM = O. Morrone; PI = USDA Plant Introduction number; RGM = R. Gómez-Martínez; TF = T. Filgueiras. Voucher specimens are deposited in the herbaria indicated in the acronyms in parentheses (ISC = Ada Hayden Herbarium; RNG = University of Reading; SI = Instituto de Botánica Darwinion).

<sup>b</sup> = published GenBank sequence from Clark, Zhang and Wendel (1995).

<sup>c</sup> = published GenBank sequence from Spangler et al. (1999).