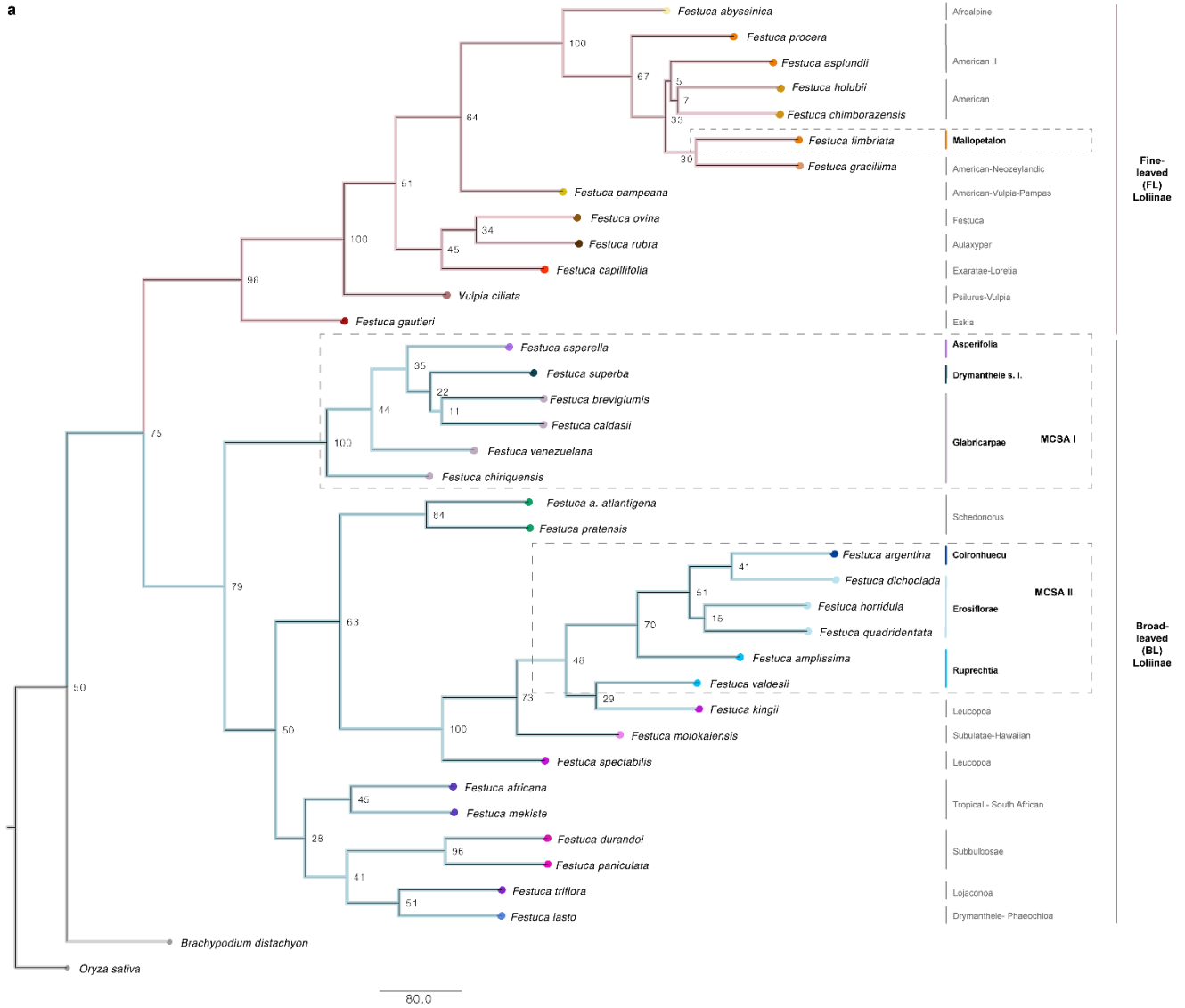
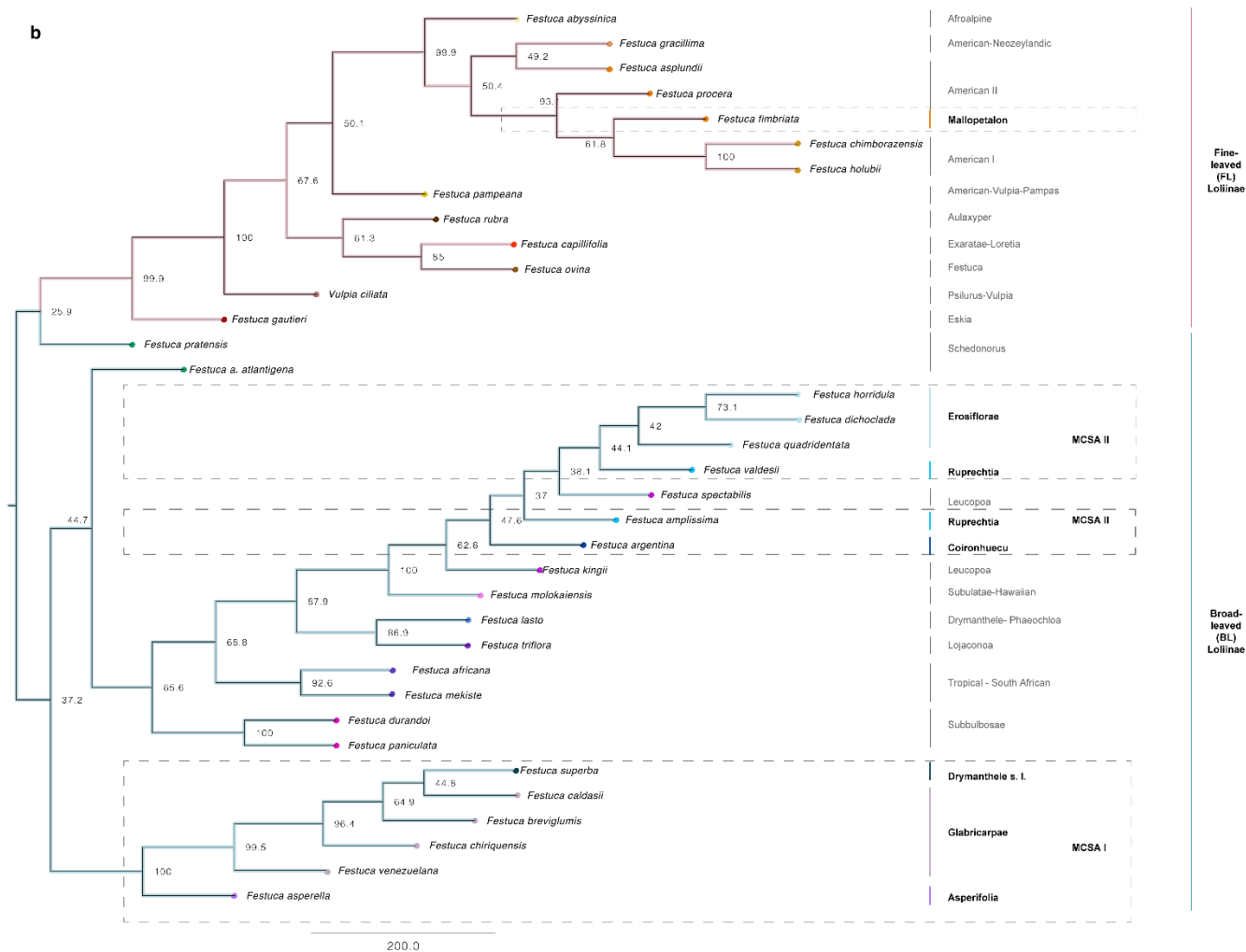
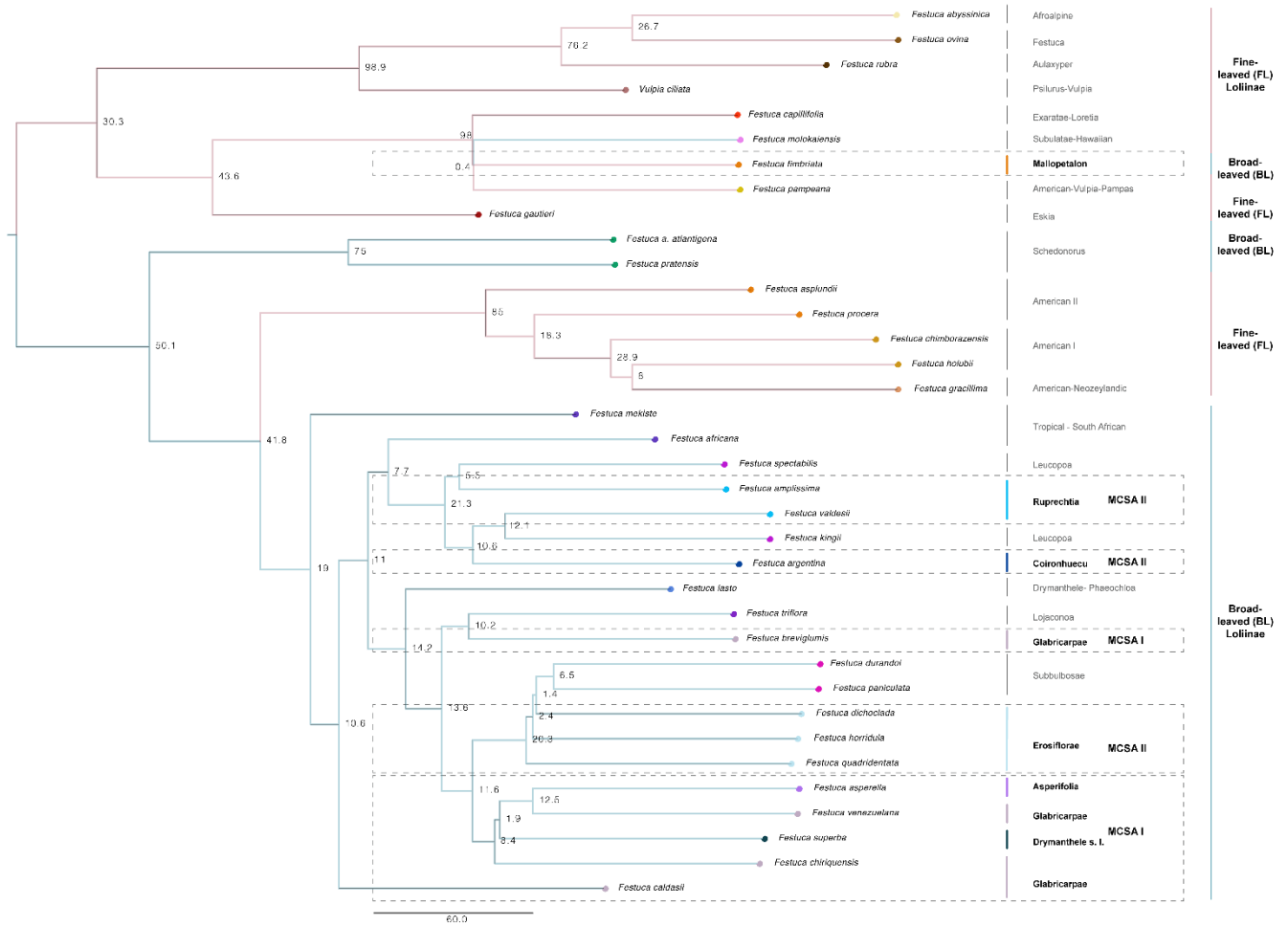


Figure S1. Anatomical leaf blade section of representative species of Mesoamerican and South-American broad-leaved *Festuca* taxa analyzed morphologically in this study. *F.* subgen. *Subulatae* sect. *Glabricarpae*: *F. venezuelana* (a); *F.* subgen. *Drymanthele* s. l.: *F. superba* (b); *F.* subgen. *Subulatae* sect. *Glabricarpae*: *F. breviglumis* (c); *F.* subgen. *Asperifolia*: *F. asperella* (d); *F.* subgen. *Erosiflorae*: *F. quadridentata* (e), *F. dichoclada* (f); *F.* subgen. *Drymanthele* sect. *Ruprechtia*: *F. amplissima* (g); *F.* subgen. *Coironhuecu* (subgen. nov.): *F. argentina* (h); *F.* subgen. *Mallopetalon*: *F. fimbriata* (i). Drawings by José Alfredo Hidalgo-Salazar (a-h) and María Fernanda Moreno-Aguilar (i). [a: modified from Stančik & Peterson [31]; b: modified from Türpe [74]; c: Peterson PM. & Rosales O. 16117, US- 3524155; d: modified from Alexeev [38]; e: modified from St. Yves [46] ; f: Smith et al. 10782, AAU; g: modified from Stančik & Peterson [31] ; h: modified from Catalán & Muller [32]; i: Kostling M. 44, UZ 498.08].





C



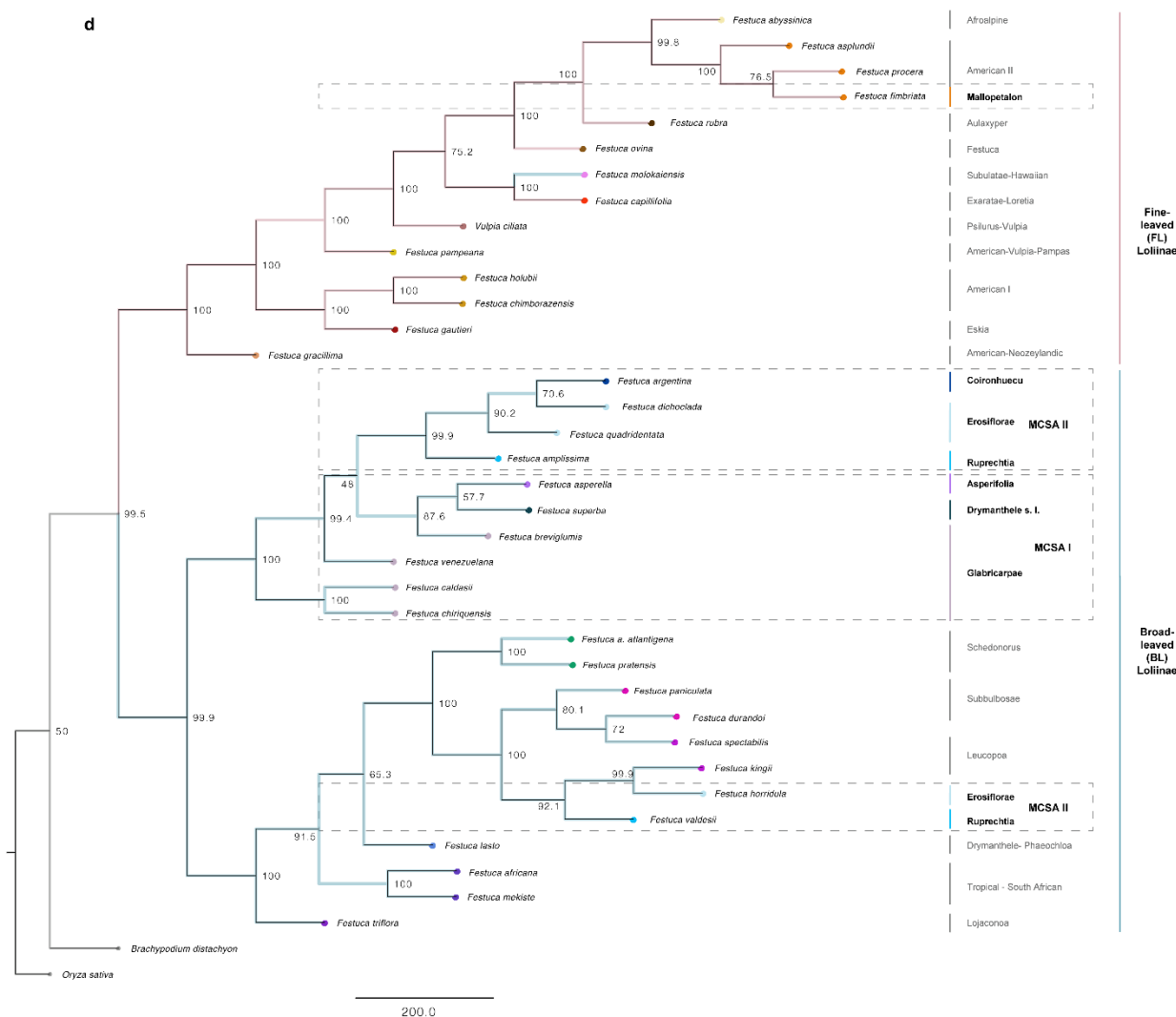


Figure S2. Lolinae coalescent species trees computed through Singular Value Decomposition quartets (SVDq) analysis showing bootstrap support values on branches. (a) nuclear rDNA 35S tree; (b) nuclear rDNA (45S) IGS tree; (c) nuclear rDNA 5S tree; (d) plastome tree. *Oryza sativa* and *Brachypodium distachyon* outgroups were used to root some trees. Color codes of Lolinae lineages correspond to those indicated in the chart in Figure 2a. Scale bar: number of mutations per site.

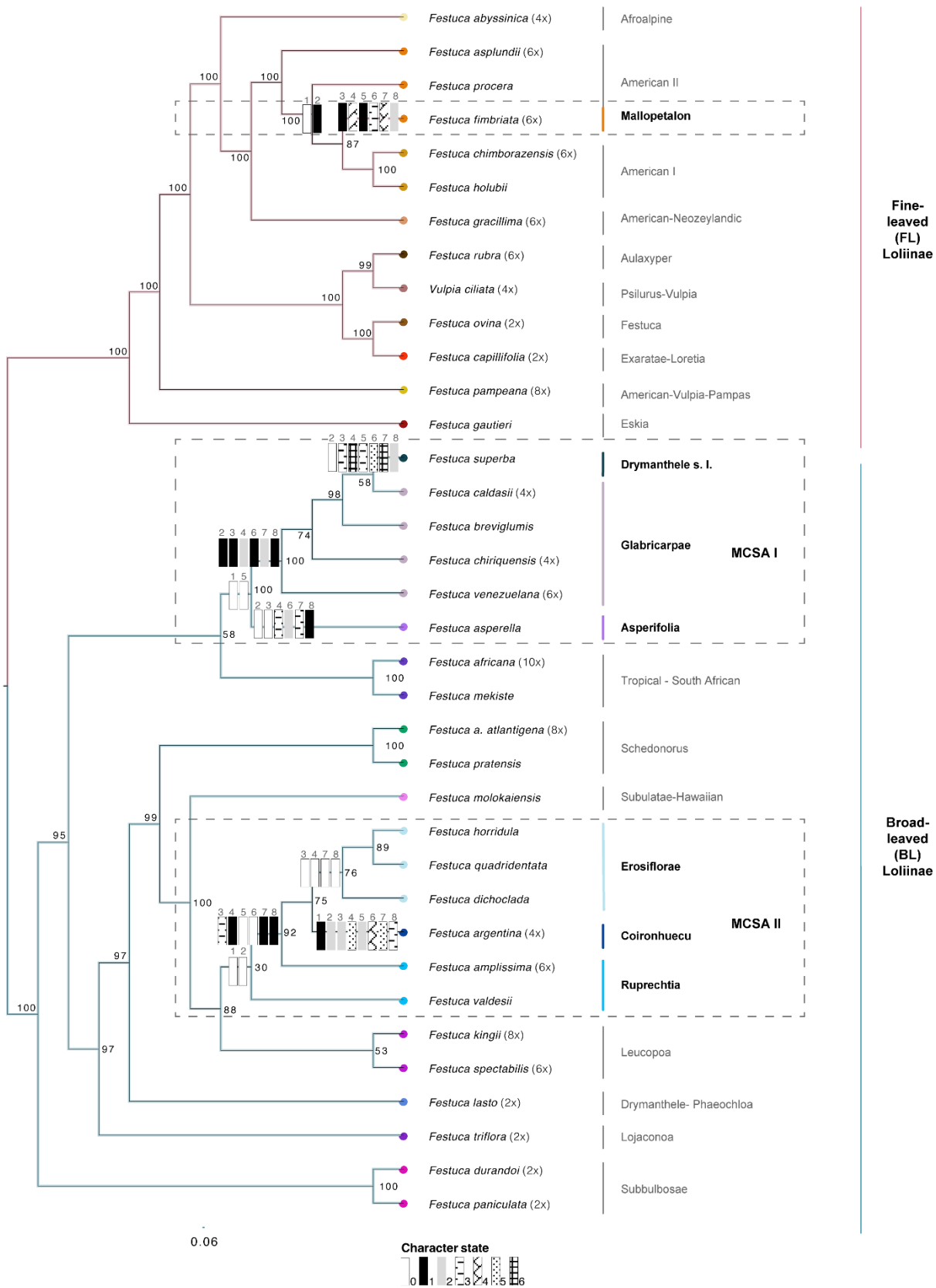


Figure S3. Morphological diagnostic traits mapped onto a Maximum Likelihood IGS cladogram tree of the Mesoamerican and South-American broad-leaved *Festuca* taxa studied and other representative species of the broad-leaved (BL) and fine-leaved (FL) Loliinae lineages. Traits codes: 1. Reproduction: monoecious (0), dioecious (1); 2. Habit: rhizomatous or caespitose or mixed (0), rhizomatose (1), caespitose (2); 3. Innovations: Extravaginal or intravaginal (0), intravaginal (2), extravaginal or/and intravaginal (3); 4. Ligule: membranaceous, apex acute, erose or lacerate, long (0), non- membranaceous, apex truncate shortly ciliate, or short membranaceous, apex truncate and ciliate, short (1), membranaceous or hyaline, apex truncate or rounded, lacerate or dentate, or shortly ciliate, medium (2); membranaceous, apex truncate or slightly rounded and lacerate or dentate, medium-long (3); membranaceous, apex truncate, erose and ciliate, short (4); membranaceous, apex truncate and densely ciliate, short (5); 5. Leaf-blade: Flat, involute in the middle and subconvolute at the apex (0), largely flat (1), plicate, junciform (2), largely flat, subconvolute (3); 6. Inflorescence: erect (0), nutant or erect with nutant branches (1), erect or scarcely nutant (2), erect, laxe (3), erect, contracted (4), erect, branches flexuous (5); 7. Lemma apex: dentate or entire, unawned (0), entire, unawned (1), entire or bifid, awned (2), bifid, shortly awned or unawned (3), entire, scariose, rolled and fimbriate, unawned, muticous (4), entire, unawned, muticous or mucronulate (5), entire, unawned, muticous (6); 8. Ovary tip: glabrescent (0), glabrous or hispid (1), densely hairy (2), sparsely hispid (3).