**Table S2.\_** Loliinae samples used in the repeatome analysis. Genome skimming PE-reads per sample and PE-reads selected by Repeat Explorer2 per sample in each of the four comparative group analyses: Loliinae, BL, FL, Schedonorus.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Taxon** | **Code** | **Group** | ***Genome skimming* million reads** | **Insert size** | **Loliinae** | | **Schenodorus** | | **Broad\_leaved** | | **Fine\_leaved** | |
| **Repeat Explorer million reads** | **Repeat Explorer**  **Genome coverage** | **Repeat Explorer**  **million reads** | **Repeat Explorer**  **Genome coverage** | **Repeat Explorer million reads** | **Repeat Explorer**  **Genome coverage** | **Repeat**  **Explorer million reads** | **Repeat**  **Explorer Genome coverage** |
| *Festuca africana* (Hack.) Clayton | FF | Broad-Leaved | 13 549 | 195 | 93068 | --- | --- | --- | 231344 | --- | --- | --- |
| *Festuca amplissima* Rupr. | GG | Broad-Leaved | 12 058 | 220 | 83358 | --- | --- | --- | 204494 | --- | --- | --- |
| *Festuca caldasii* (Kunth) Kunth | NN | Broad-Leaved | 9 863 | 248 | 68088 | 0.094452353 | --- | --- | 168162 | 0.08957966 |  | --- |
| *Festuca durandoi* Clauson | PP | Broad-Leaved | 12 688 | 217 | 87702 | 0.131176665 | --- | --- | 215648 | --- | --- | --- |
| *Festuca lasto* Boiss. | HH | Broad-Leaved | 21 581 | 300 | 148516 | --- | --- | --- | 367034 | --- | --- | --- |
| *Festuca mekiste* Clayton | AM | Broad-Leaved | 16 245 | 201 | 111228 | --- | --- | --- | 276810 | --- | --- | --- |
| *Festuca molokaiensis* Soreng, P.M. Peterson & Catalán | II | Broad-Leaved | 12 188 | 219 | 83800 | --- | --- | --- | 206804 | --- | --- | --- |
| *Festuca paniculata* (L.) Schinz & Thell | QQ | Broad-Leaved | 35 808 | 300 | 246446 | 0.125689537 | --- | --- | 609220 | 0.11920535 | --- | --- |
| *Festuca parvigluma* Steud. | JJ | Broad-Leaved | 15 872 | 190 | 108708 | --- | --- | --- | 270022 | --- | --- | --- |
| *Festuca scabra* Vahl | AP | Broad-Leaved | 21 174 | 211 | 145346 | --- | --- | --- | 359062 | --- | --- | --- |
| *Festuca spectabilis* Jan | LL | Broad-Leaved | 12 960 | 221 | 89008 | --- | --- | --- | 220088 | --- | --- | --- |
| *Festuca superba* Parodi ex Türpe | RR | Broad-Leaved | 12 193 | 221 | 83988 | --- | --- | --- | 207694 | --- | --- | --- |
| *Festuca triflora* J.F. Gmel. | MM | Broad-Leaved | 24 472 | 300 | 168142 | 0.122643489 | --- | --- | 416196 | 0.11631645 | --- | --- |
| *Festuca abyssinica* Hochst. ex A. Rich. | AB | Fine-Leaved | 12 041 | 166 | 82794 | --- | --- | --- | --- | --- | 158960 | --- |
| *Festuca asplundii* E.B. Alexeev | AC | Fine-Leaved | 25 088 | 300 | 172022 | 0.13587258 | --- | --- | --- | --- | 331124 | 0.114396833 |
| *Festuca capillifolia* Dufour ex Roem. & Schult. | SS | Fine-Leaved | 13 430 | 228 | 92674 | --- | --- | --- | --- | --- | 177206 | --- |
| *Festuca chimborazensis* E.B. Alexeev | AD | Fine-Leaved | 10 913 | 254 | 75418 | 0.213989234 | --- | --- | --- | --- | 143276 | 0.180166525 |
| *Festuca eskia* Ramondex DC. | OO | Fine-Leaved | 24 041 | 300 | 164798 | 0.168688589 | --- | --- | --- | --- | 317762 | 0.142026009 |
| *Festuca fimbriata* Nees | AE | Fine-Leaved | 15 741 | 173 | 107956 | --- | --- | --- | --- | --- | 207162 | --- |
| *Festuca francoi* Fern. Prieto, C. Aguiar, E. Días & M.I. Gut | TT | Fine-Leaved | 17 592 | 186 | 120860 | --- | --- | --- | --- | --- | 231806 | --- |
| *Festuca gracillima* Hook. F. | AF | Fine-Leaved | 13 888 | 224 | 95164 | --- | --- | --- | --- | --- | 183168 | --- |
| *Festuca holubii* Stančík | AG | Fine-Leaved | 10 264 | 249 | 70992 | --- | --- | --- | --- | --- | 135198 | --- |
| *Festuca ovina* L. | UU | Fine-Leaved | 11 364 | 215 | 78084 | 0.199486506 | --- | --- | --- | --- | 149724 | 0.167956069 |
| *Festuca pampeana* Speg. | VV | Fine-Leaved | 14 862 | 223 | 102358 | --- | --- | --- | --- | --- | 196018 | --- |
| *Festuca procera* Kunth | AH | Fine-Leaved | 40 669 | 263 | 280040 | 0.129237225 | --- | --- | --- | --- | 536736 | 0.108810249 |
| *Festuca pyrenaica* Reut. | WW | Fine-Leaved | 30 021 | 300 | 205996 | --- | --- | --- | --- | --- | 395608 | --- |
| *Festuca pyrogea* Speg. | XX | Fine-Leaved | 16 835 | 193 | 115054 | --- | --- | --- | --- | --- | 221512 | --- |
| *Festuca rubra* L. | AN | Fine-Leaved | 25 260 | 220 | 174248 | 0.210860736 | --- | --- | --- | --- | 333992 | 0.177532512 |
| *Megalachne masafuerana* (Skottsb. & Pilg. ex. Pilg.) Matthei | AJ | Fine-Leaved | 6 134 | 184 | 43824 | --- | --- | --- | --- | --- | 82838 | --- |
| *Vulpia ciliata* Dumort. | YY | Fine-Leaved | 11 801 | 220 | 81058 | 0.348378608 | --- | --- | --- | --- | 155632 | 0.293314585 |
| *Festuca arundinacea* Schreb *arundinacea* | AX | Schedonorus | 15 556 | 206 | --- | --- | 136784 | 0.09663341 | --- | --- | --- | --- |
| *Festuca arundinacea* Schreb. subsp. *arundinacea* var. *letourneuxiana* (St.-Yves) Torrecilla & Catalán | CC | Schedonorus | 16 839 | 250 | 116320 | 0.244041867 | 151754 | 0.14274275 | --- | --- | --- | --- |
| *Festuca arundinacea subsp. atlantigena* (St.-Yves) Auquier | AY | Schedonorus | 15 091 | 224 | --- | --- | 140518 | 0.13869455 | --- | --- | --- | --- |
| *Festuca dracomontana* H.P. Linder | AQ | Schedonorus | 15 835 | 139 | --- | --- | 142276 | --- | --- | --- | --- | --- |
| *Festuca fenas* Lag. | AA | Schedonorus | 16 112 | 271 | 109944 | 0.183497129 | 145146 | 0.10732947 | --- | --- | --- | --- |
| *Festuca fontqueri* St.-Yves | BB | Schedonorus | 22 187 | 300 | 152486 | 0.173560462 | 200066 | 0.1015174 | --- | --- | --- | --- |
| *Festuca gigantea* (L.) Vill. | AO | Schedonorus | 20 914 | 223 | 143564 | 0.139015656 | 188600 | 0.08131177 | --- | --- | --- | --- |
| *Festuca gudoschnikovii* Stepanov | AR | Schedonorus | 13 994 | 208.75 | --- | --- | 126240 | --- | --- | --- | --- | --- |
| *Festuca mairei* St.-Yves | DD | Schedonorus | 19 134 | 254 | 131436 | 0.191538836 | 172776 | 0.11203315 | --- | --- | --- | --- |
| *Festuca pratensis* Huds. | EE | Schedonorus | 12 189 | 271 | 83958 | 0.147926916 | 109432 | 0.08652406 | 207212 | 0.14029553 | --- | --- |
| *Festuca simensis* Hochst. ex A. Rich. | AS | Schedonorus | 14 159 | 192.5 | --- | --- | 127318 | --- | --- | --- | --- | --- |
| *Lolium canariense* Steud | AT | Schedonorus | 16 359 | 231.5 | --- | --- | 147858 | 0.13079219 | --- | --- | --- | --- |
| *Lolium perenne* L | AL | Schedonorus | 28 103 | 244 | 192992 | 0.174505437 | 253800 | 0.10207013 | 478612 | 0.16550289 | --- | --- |
| *Lolium persicum* Boiss. & Hohen | AK | Schedonorus | 25 523 | 241 | 175334 | 0.150238275 | 229658 | 0.087876 | --- | --- | --- | --- |
| *Lolium rigidum* Gaudin | AV | Schedonorus | 16 730 | 201.5 | --- | --- | 150880 | 0.10244197 | --- | --- | --- | --- |
| *Lolium saxatile* H. Scholz & S. Scholz | AW | Schedonorus | 16 001 | 236 | --- | --- | 144232 | --- | --- | --- | --- | --- |
| *Micropyropsis tuberosa* Romero-Zarco & Cabezudo | AU | Schedonorus | 19 803 | NA | --- | --- | 178422 | --- | --- | --- | --- | --- |