

Description of Additional Supplementary Files

File Name: Supplementary Data 1

Description: BUSCO assessments of genome annotations using both (a) transcriptome, and (b) protein model evidence.

File Name: Supplementary Data 2

Description: Metadata information, genome assembly statistics and quality control of the 112 genomes investigated in this study.

File Name: Supplementary Data 3

Description: Summary of inversions identified across the 75-genome dataset.

File Name: Supplementary Data 4

Description: Pan-genome inversions across the 75 high-quality genomes, by comparing 74 *O. sativa* accessions, and 2 close relative genomes to the IRGSP-1.0. RefSeq.

File Name: Supplementary Data 5

Description: Kolmogorov-Smirnov (KS) distribution tests for all inversions, and inversions length subsets: < 1 Kb, 1 - 5 Kb, 5 - 10 Kb, and > 10 Kb.

File Name: Supplementary Data 6

Description: Inversion hotspots in Asian rice.

File Name: Supplementary Data 7

Description: The distribution of 631 *O. sativa* inversions across the 3K-RGP dataset.

File Name: Supplementary Data 8

Description: Analysis of *O. sativa* specific inversions at the population level.

File Name: Supplementary Data 9

Description: TE annotation of 16 *Oryza sativa* genomes.

File Name: Supplementary Data 10

Description: 17 TEs from 4 superfamilies were observed at inversion breakpoints of 16 Asian genomes in higher amounts (> 10 in this study) relative to their presence genome-wide.

File Name: Supplementary Data 11

Description: Repeat sequence analysis at 100 randomly selected inversions.

File Name: Supplementary Data 12

Description: Comparison of transcript abundance levels for genes that were located within inversions, or at inversion breakpoints.

File Name: Supplementary Data 13

Description: Seventy-eight inversions identified between XI-adm: MH63 and XI1A: ZS97 genomes, the parents of a RIL-10 population.

Note: To identify recombination rates, we only focused on inversions > 1 Kb.

File Name: Supplementary Data 14

Description: Clusters for inversions larger than 100 Kb.

File Name: Supplementary Data 15

Description: A list of 6 inversions that were identified from the 3K-RGP data set, but were missed in the Asian rice pan-genome inversion index.