

## **Description of Additional Supplementary Files**

File Name: Supplementary Data 1

Description: Statistics of raw reads collected from the three medaka inbred strains

File Name: Supplementary Data 2

Description: Statistics of assembled contigs for the three medaka inbred strains

File Name: Supplementary Data 3

Description: Quality of three assembled genomes in terms of coverage of genes in CEGMA

File Name: Supplementary Data 4

Description: Statistics of contig lengths of the assembled genomes for the three medaka inbred strains

File Name: Supplementary Data 5

Description: Statistics of scaffold lengths of the assembled genomes for Hd-rR strain

File Name: Supplementary Data 6

Description: Alignments of the Tol2 sequence ([gi|6070336|dbj|D84375.2](http://gi|6070336|dbj|D84375.2)) to the Hd-rR/HNI/HSOK chromosomes

File Name: Supplementary Data 7

Description: Analysis of Y-specific regions in the assembled genomes for the three medaka inbred strains

File Name: Supplementary Data 8

Description: Statistics of SNP and indel rates among the assembled genomes for the three medaka inbred strains

File Name: Supplementary Data 9

Description: Statistics of RNA-seq data collected from 57 tissue types

File Name: Supplementary Data 10

Description: Supplementary Table 10: Statistics of genes predicted from RNA-seq data

File Name: Supplementary Data 11

Description: Estimated genomic abundance of centromeric repeats in SMRT subreads

File Name: Supplementary Data 12

Description: Statistics of centromeric regions identified in the chromosomes of the assembled genomes for the three medaka inbred strains

File Name: Supplementary Data 13

Description: Positions and lengths of centromeric regions identified in the chromosomes of the assembled genomes for the three medaka inbred strains

File Name: Supplementary Data 14

Description: Positions and lengths of NHEJ structural variants that were identified between Hd-rR and HNI in the assembled contigs

File Name: Supplementary Data 15

Description: Positions and lengths of NAHR structural variants that were identified between Hd-rR and HNI in the assembled contigs

File Name: Supplementary Data 16

Description: Positions and lengths of inversions that were identified between Hd-rR and HNI in the assembled contigs

File Name: Supplementary Data 17

Description: Statistics of telomere repeats detected in the assembled genomes for the three medaka inbred strains

File Name: Supplementary Data 18

Description: Numbers of bases in the assembled genomes that were corrected from Illumina short reads using Pilon

File Name: Supplementary Data 19

Description: Regions that had error rates of  $> 0.1\%$

File Name: Supplementary Data 20

Description: Positions of centromeric repeats in the regions that had error rates of  $> 0.1\%$  in Supplementary Data 19

File Name: Supplementary Data 21

Description: Strain, chromosome, and number of monomers in each monomer group (cluster), and the similarities of all pairs of representative monomers