

**Figure S1 Base distribution for whole-genome resequencing data.**



**Figure S2 Base quality distribution for whole-genome resequencing data.**



**Figure S3 GC content and average sequencing depth of the genome data of *Gp. lemaneiformis*(Zhou et al. 2013).**

Zhou, W., Hu, Y. Y., Sui, Z. H., Fu, F., Wang, J. G., Chang, L. P., Guo, W. H., Li, B. B. 2013. Genome Survey Sequencing and Genetic Background Characterization of *Gracilariopsis lemaneiformis* (Rhodophyta) Based on Next-Generation Sequencing. *PloS One* **8**:e69909.



**Figure S4 Single cell of gametophyte selected by capillary glass tube (Scale bar: 15 μm)**