Transcriptome Sequencing of 100 Fishes from the Yangtze River
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Figure 1. The Yangtze River Basin and sample collection sites in this study.

Sample Collection (Figure 1 & 2)
- Dissection: multiple types of tissues (muscle, gill, eye, liver, heart and brain)
- Species identification: morphology and DNA barcoding
- Shipping: snap frozen in liquid nitrogen
- Stored: ultra-low refrigerator (-80°C)

Transcriptome Sequencing

Our Collection: 92 Fishes, 12 Collection Sites

W: Tibetan Plateau
E: East China Sea

6,300 km long, covering 1,800,000 km²

Figure 2. Classification of the collected samples

Cypriniformes
- Siluriformes
- Gymnotiformes
- Characiformes
- Gymnocheilidae
- Catostomidae
- Loaches
- Paedocyprididae
- Cyprinidae
- Danionidae
- Sundanionidae
- Xenocyprididae
- Acheilognathidae
- Gobionidae
- Tanichthyidae
- Leuciscidae

Figure 3. Phylogeny of Cypriniformes (Stout, et al. 2016).

Questions to be Addressed

- Test those ambiguous hypothesis and unsettled nodes in the current phylogeny [1]
- Distinguish orthologs vs. paralogs (lineage-specific WGD in several taxa of Cypriniformes [2,3])
- The origin of Cypriniformes (historical biogeography)

RESOLVING CYPRINIFORMES PHYLOGENY

Fish-T1K PROJECT

Fish-T1K® is an collaborative and non-profit initiative to
- generate transcriptome sequences for 1,000 diverse fish species
- establish a large-scale fish transcriptome database
- establish SOPs for genome quality sampling of fishes
- develop new tools for data analysis and management
- foster extensive global collaboration of fishes omics study

Current Progress
- ~8,000 genome-level frozen fish tissues (stored in -80°C) available for genome and transcriptome sequencing
- ~400 transcriptomes (average data size > 3.5 Gb) deposited in www.fisht1k.org (provide with a BLAST tool)
- Ep: Our data has helped to construct the comprehensive phylogeny of ray-finned fishes [4]

Acknowledgements

REFERENCES
5. Ying Shi, Yu Huang, Xiaofeng Tan, et al.: Fish-T1K (Transcriptomes of 1,000 Fish Species): Large-scale transcriptome data for fish evolution studies. Gigascience. 2016;5:16