Abstract Submitted
for the DFD19 Meeting of
The American Physical Society

Mixing and pumping functions in a zebrafish larval intestine[1]
KENJI KIKUCHI, Department of Finemechanics, Graduate School of Engineering, Tohoku University, HYEONGTAK NOH, KEIKO NUMAYAMA-TSURUTA, Graduate School of Biomedical Engineering, Tohoku University, TAKUJI ISHIKAWA, Department of Finemechanics, Graduate School of Engineering, Tohoku University — Transportation phenomena in the gut are extremely important for digestive, metabolism and absorption in nutrient uptake. The function of mixing and pumping in the intestine, which is a relatively larger vessel in the tracts of the body, has been partially understood in the physiological and medical fields, but not been fully clarified in the physical and mechanical aspects. The flow in the intestine has been recently focused on a distribution of gut flora concerning inflammably bowel disease, diabetes, and cancer. Even though quasi-static distribution analysis of the gut flora has been developed using a next-generation sequencer for medical diagnostics, but mechanical reasons for medical and surgical therapies have not been approached due to invisibility in the body. Here, we proposed *in vivo* real-time intestinal flow measurement in the larval zebrafish intestine, which has justified similar constriction anatomically and genetically, using a fluorescent particle tracking velocimetry for analysis of mixing and pumping functions of the posterior and interior intestines. Pclet number in the intestines led us to our mechanical understanding; the mixing and pumping functions were crossing over after meal in the zebrafish larva.

[1]JSPS KAKENHI (Grant No. 17H00853 and 19H02059)

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Date submitted: 02 Aug 2019 Electronic form version 1.4