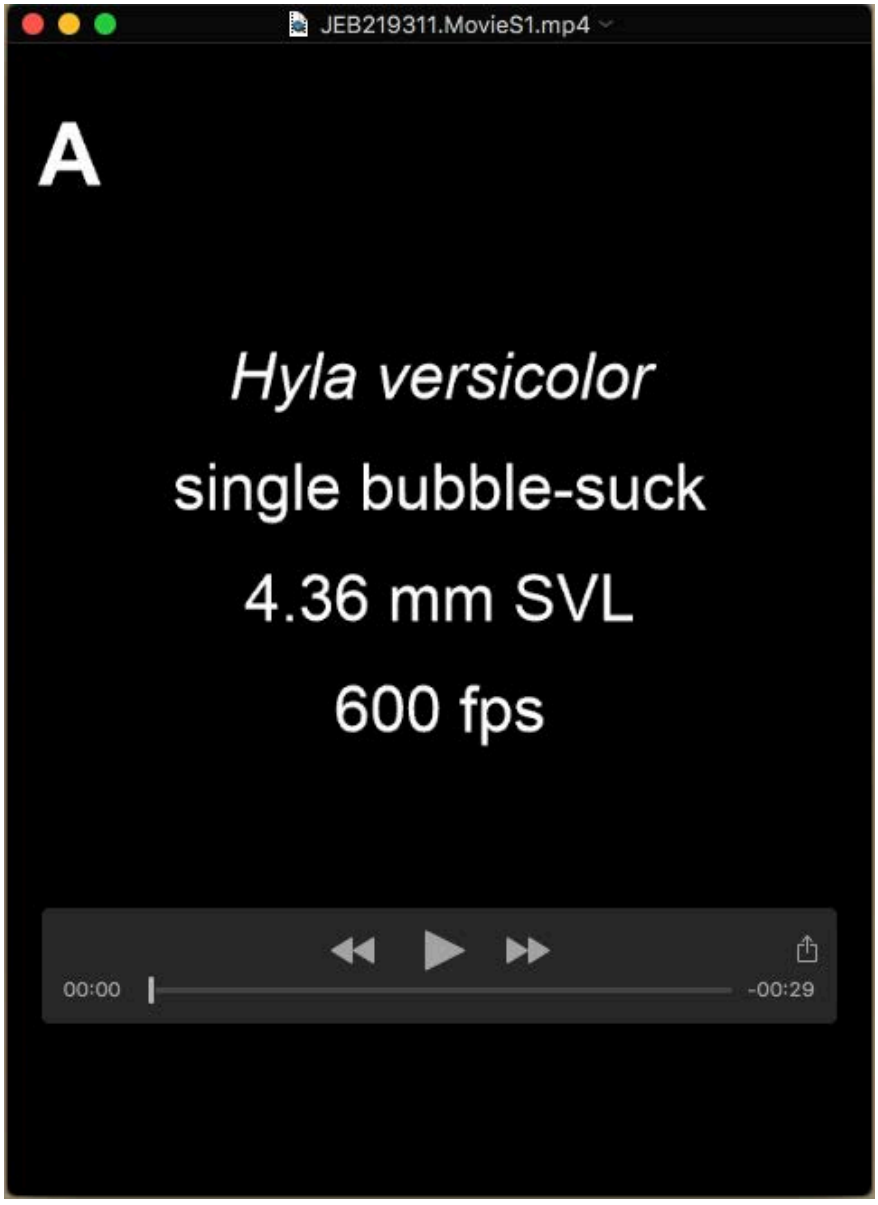
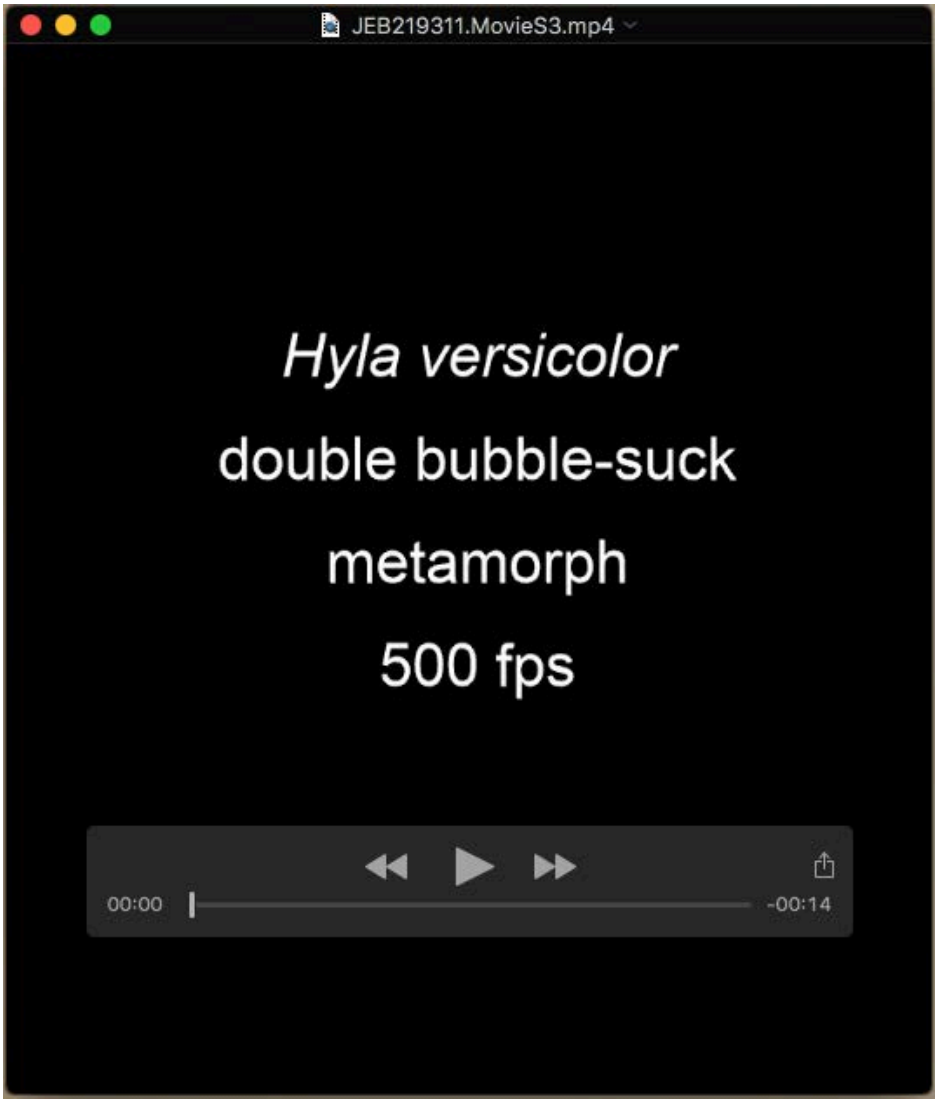
Supplemental Materials



Movie 1: Single bubble-sucking in *Hyla versicolor*. (A) Single bubble-suck breath taken from the ventral side, showing the bubble clearly in the mouth. (B) Breath taken from the dorsolateral view, showing the left lung fill during compression.

Movie 2: Double bubble-sucking in *Hyla versicolor*. (A) Double bubble-suck taken from the ventral side, showing the bubble clearly in the mouth. (B) Breath taken from the dorsolateral view, showing the lungs empty during suction I and fill during compression. (C) Breath as seen from directly above the water, showing the movement of air in and out during breathing.



Movie 3: A late stage metamorph performing double bubble-sucking. Even at this late developmental stage, metamorphic *Hyla versicolor* tadpoles continue to perform double bubble-sucking.

Table S1. Raw data for blood vessel counts in *Hyla versicolor*.

specimen number*	SVL (mm)	Count 1	Count 2	Count 3	Average Count
S-277	6.17	8	8	7	7.67
S-278	5.7	3	3	2	2.67
S-279	6.65	11	10	-	10.50
S-280	7	-	7	15	11.00
S-281	7.7	5	8	8	7.00
S-282	8	5	10	11	8.67
S-285	3.3	1	2	1	1.33
S-286	4	2	1	3	2.00
S-283	9.2	6	13	12	10.33
S-287	4.9	2	1	3	2.00
S-289	5.9	2	2	6	3.33
S-290	5.9	2	1	2	1.67
S-291	12	8	14	13	11.67
S-292	8	6	7	14	9.00
S-293	8.5	9	8	10	9.00
S-294	8	7	9	15	10.33
S-295	9	9	9	12	10.00
S-296	5	4	4	3	3.67
S-297	6	6	10	10	8.67

* Specimen numbers refer to the histology collection of KS

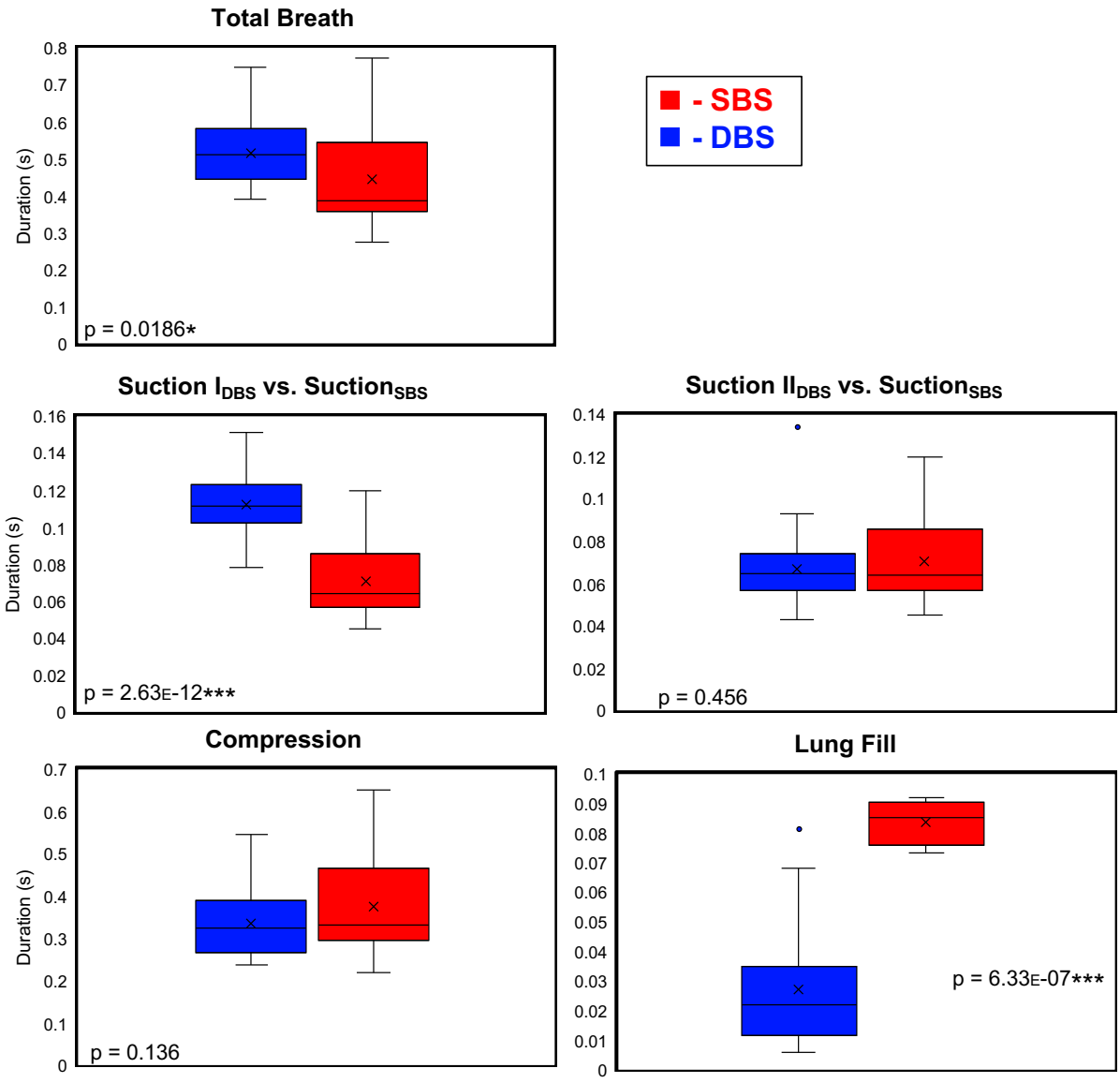


Fig. S1: Comparisons of the kinematic events between single and double bubble-sucking. P-values derived from paired t-tests. N_{SBS} = 28, N_{DBS} = 41.

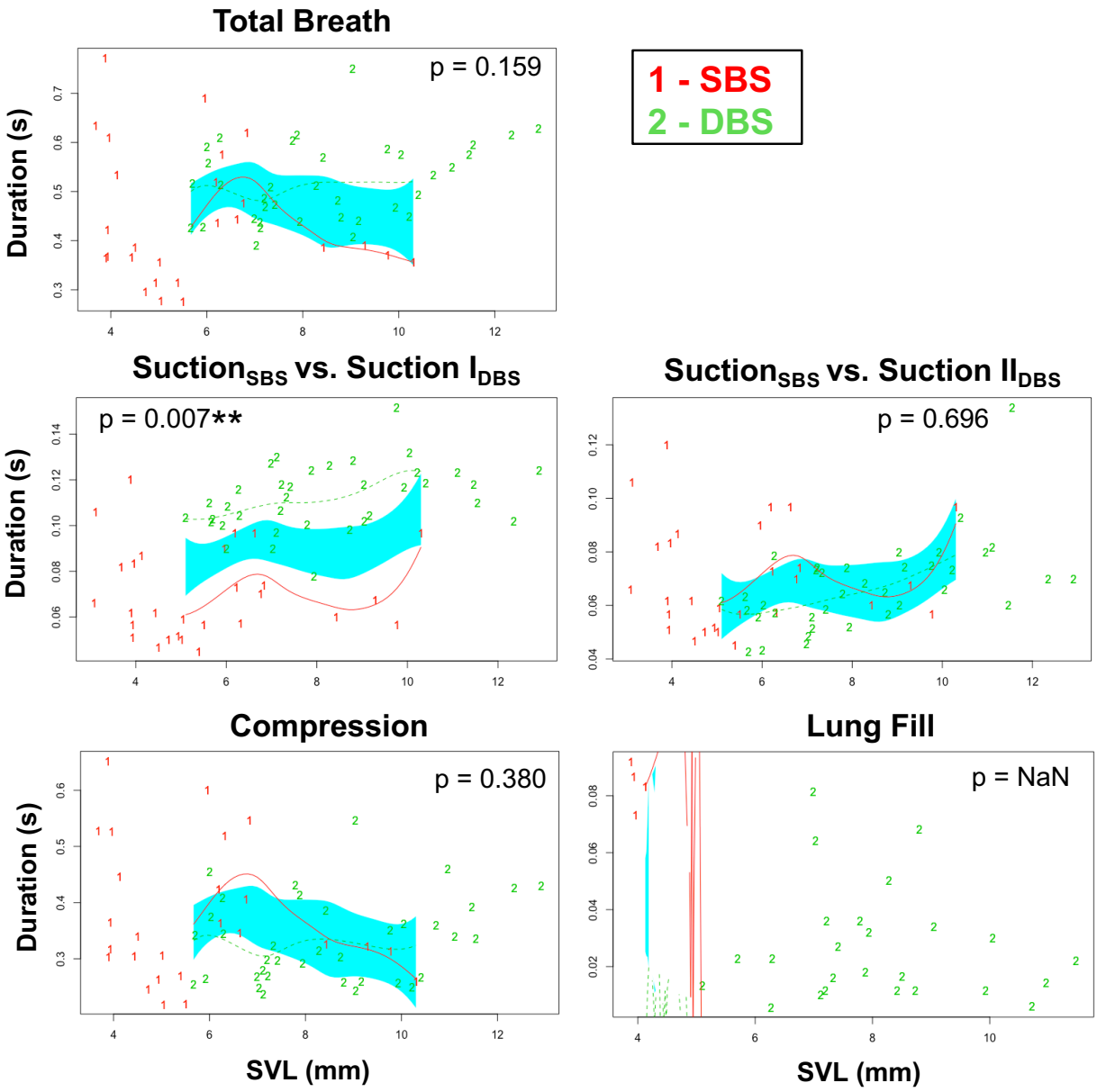


Fig. S2: Covariance analysis comparing the kinematics of single bubble-sucking and double bubble-sucking while also taking body length into account. N_{SBS} = 28, N_{DBS} = 41. These plots are generated by the function “sm.ancova” in the R-package “sm”. The red line shows a smoothed function of SBS duration as a function of SVL, and the green line does the same for DBS. The blue polygon attempts to fit each of these functions into the same model, which should be possible if the data do not differ significantly across modes.

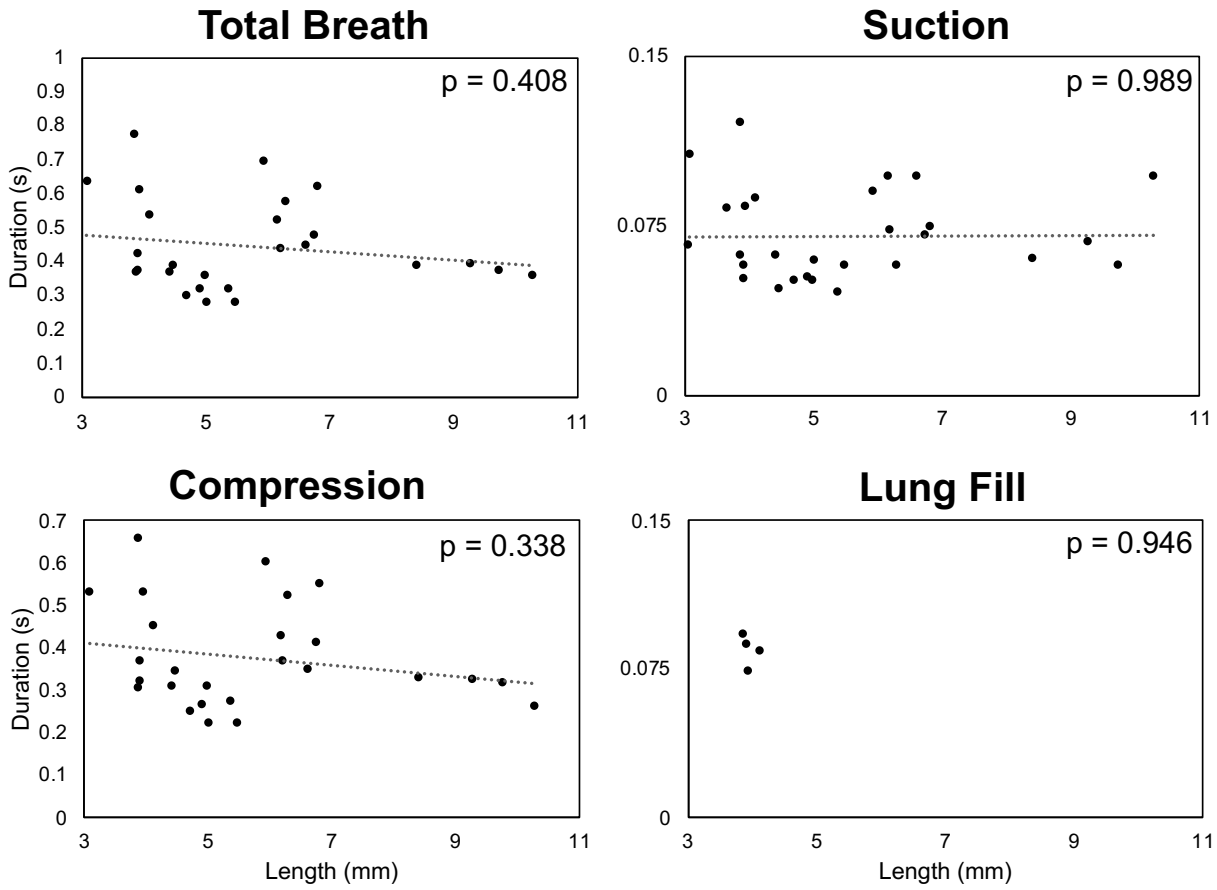


Fig. S3: Ontogenetic trends in the durations of kinematic phases of single bubble-sucking.

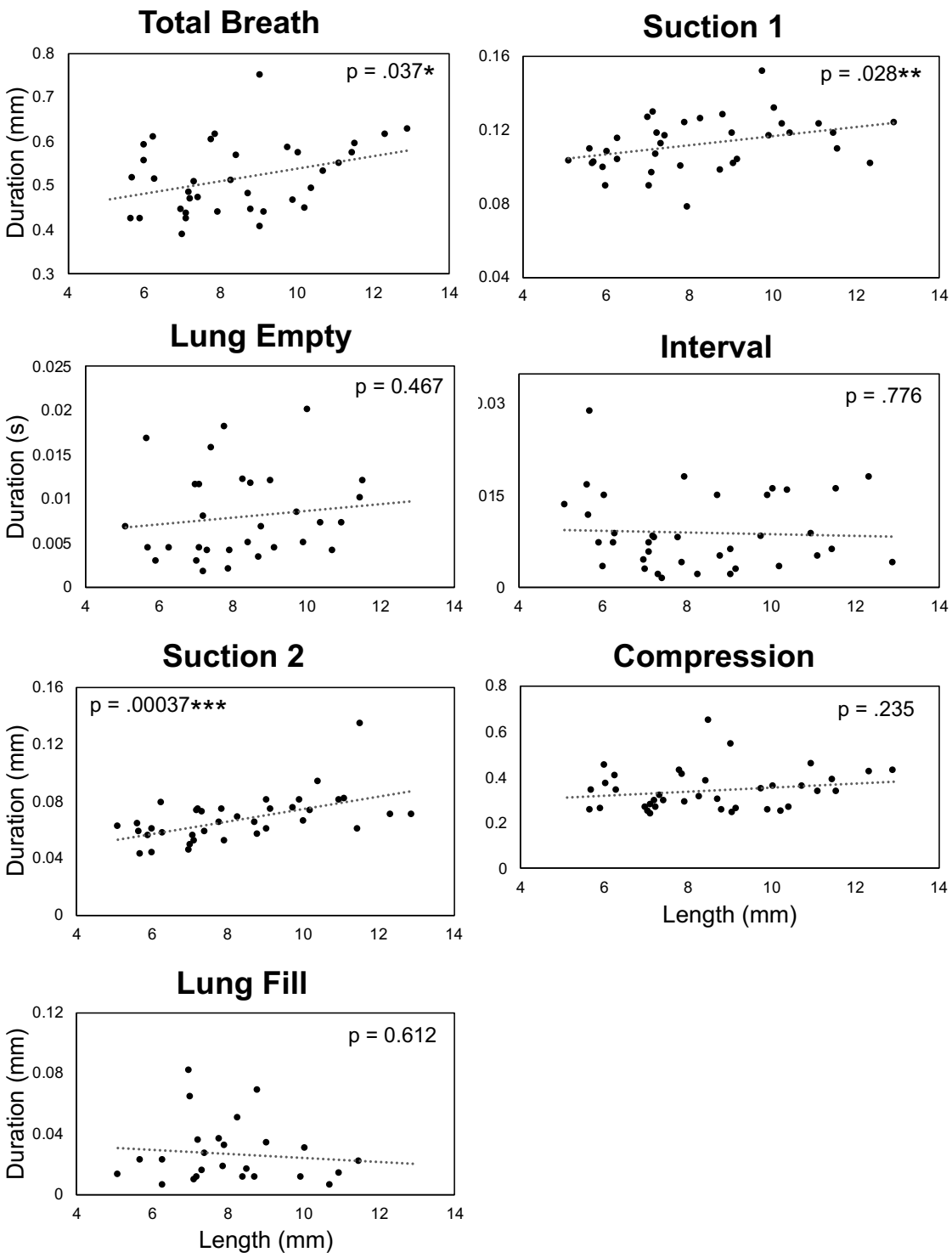


Fig. S4: Ontogenetic trends in the durations of kinematic phases of double bubble-sucking.