

Supplementary Information:
Dynamics of a liquid plug in a capillary tube under cyclic forcing:
memory effect and airway reopening

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I. SUPPLEMENTARY MOVIES

Movie S1



FIG. 1: **Movie S1**: Movie showing the temporal evolution of a single liquid plug of initial length $L_0 = 1.05mm$ pushed with the cyclic flow rate forcing in a cylindrical capillary tube of radius $R_c = 0.47mm$. The movie was shot with a Photron SA3 high speed camera mounted on a Z16 Leica Microscope at a frame rate of 125 images per second, a trigger time of $1/3000s$ and a resolution of 1024×64 pixels. a. Initial state b. Final state.

Movie S2

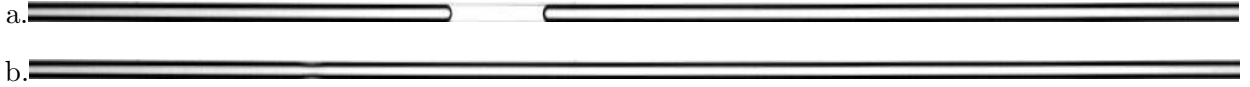


FIG. 2: **Movie S2**: Movie showing the temporal evolution of a single liquid plug of initial length $L_0 = 3.39mm$ pushed with the pressure cyclic forcing in a cylindrical capillary tube of radius $R_c = 0.47mm$. The movie was shot with a Photron SA3 high speed camera mounted on a Z16 Leica Microscope at a frame rate of 125 images per second, a trigger time of $1/3000s$ and a resolution of 1024×64 pixels a. Initial state b. End of the cycle there is no more plug and only liquid remains on the walls of the capillary tube.

Movie S3

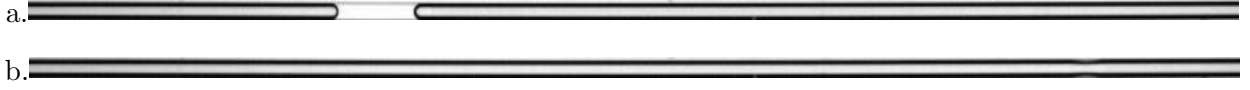


FIG. 3: **Movie S3**: Movie showing the temporal evolutions of a single liquid plug of initial length $L1 = 2.5mm$ pushed with the pressure cyclic forcing in a cylindrical capillary tube of radius $R_c = 0.47mm$. The movie was shot with a Photron SA3 high speed camera mounted on a Z16 Leica Microscope at a frame rate of 125 images per second, a trigger time of $1/3000s$ and a resolution of 1024×64 pixels a. Initial state b. Final state.

Movie S4

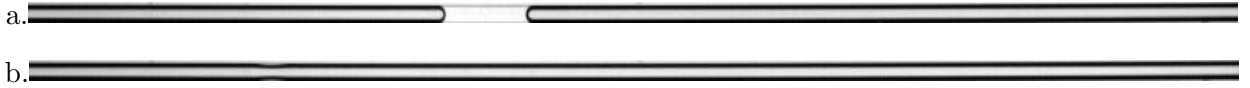


FIG. 4: **Movie S4**: Movie showing the temporal evolutions of a single liquid plug of initial length $L2 = 2.85mm$ pushed with the pressure cyclic forcing in a cylindrical capillary tube of radius $R_c = 0.47mm$. In the same cycle, the rupture length of the smaller plug in movie S3 is higher than the one for the bigger plug. The movie was shot with a Photron SA3 high speed camera mounted on a Z16 Leica Microscope at a frame rate of 125 images per second, a trigger time of $1/3000s$ and a resolution of 1024×64 pixels a. Initial state b. Final state.