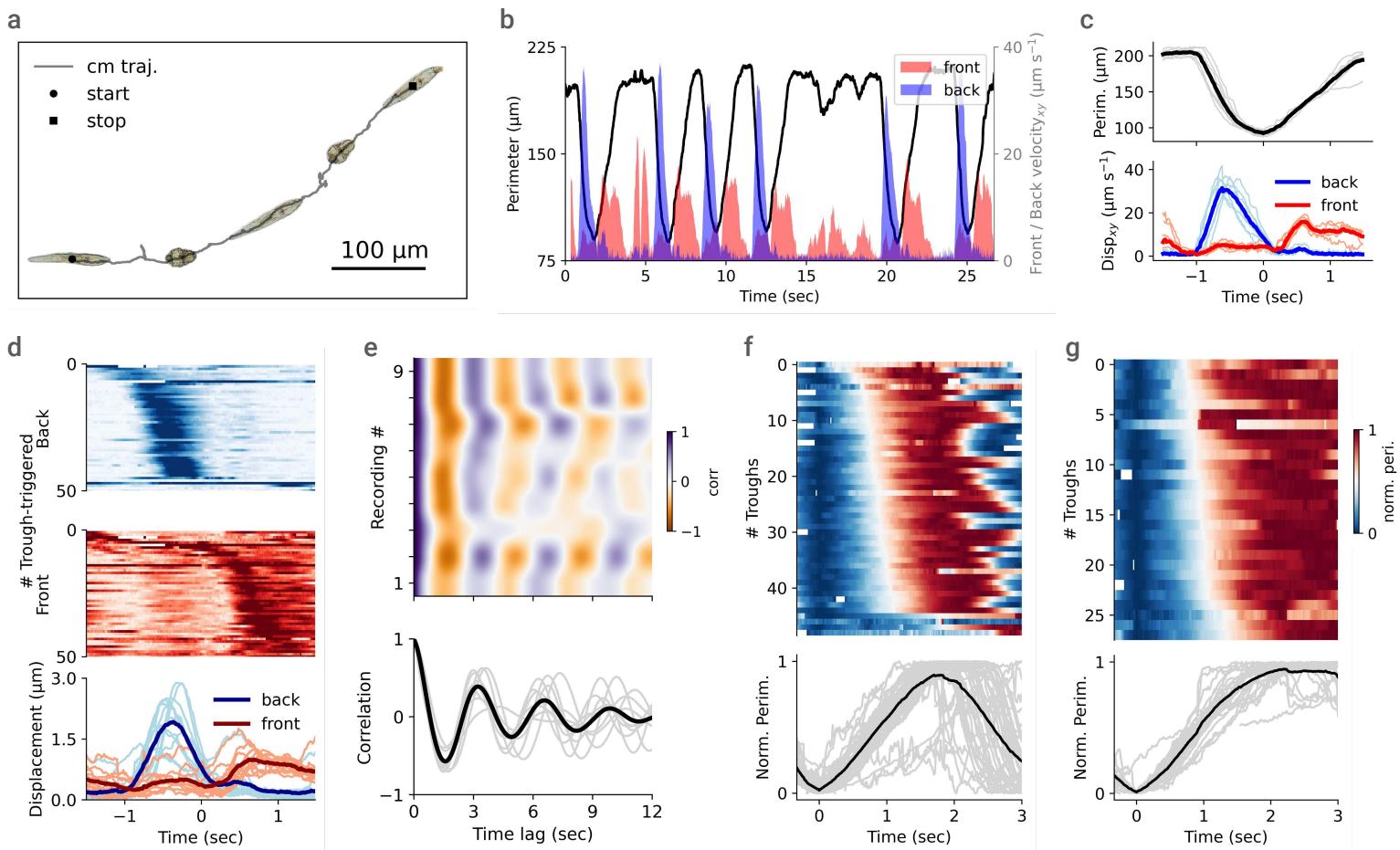
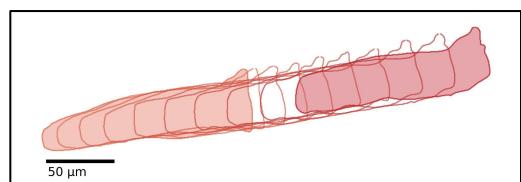
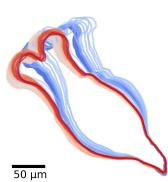
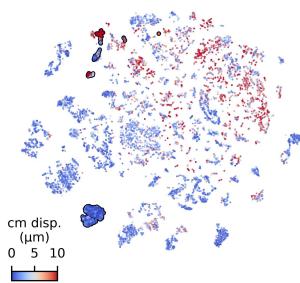
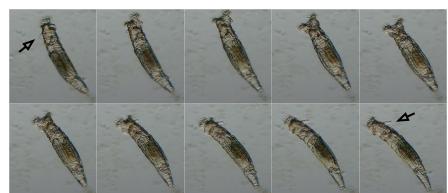
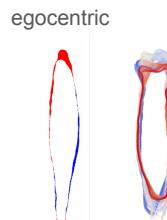
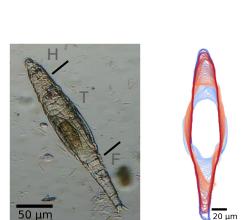
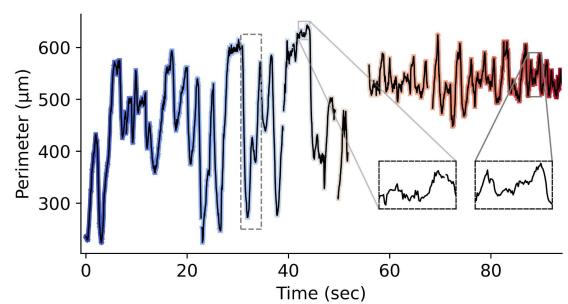
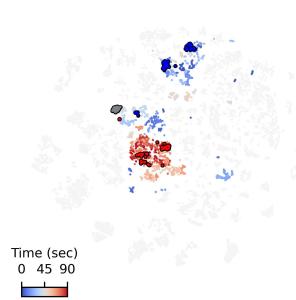
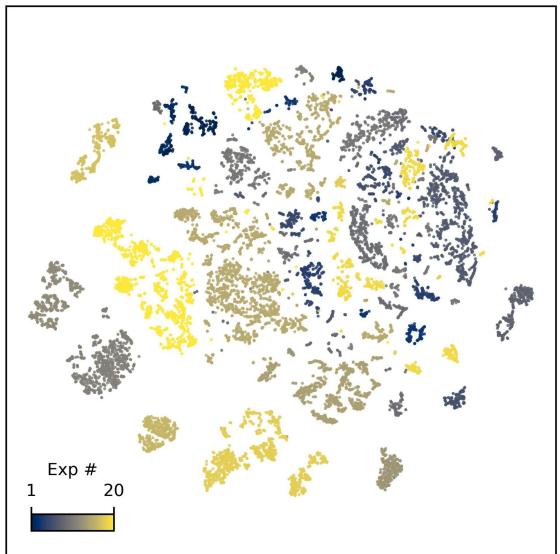
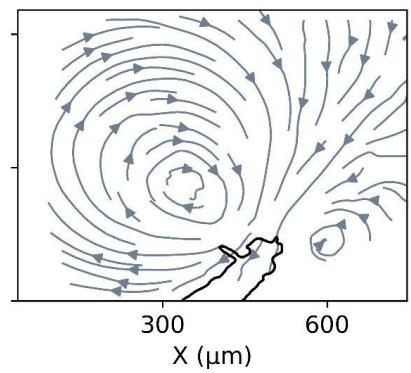
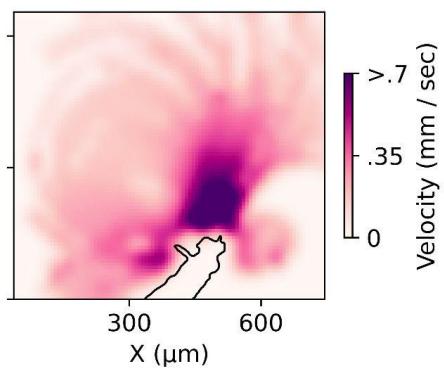
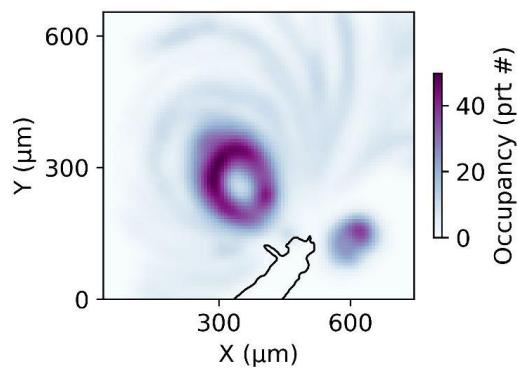
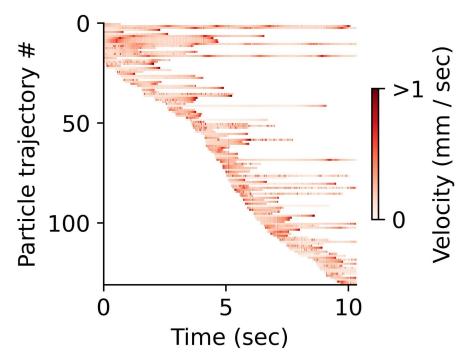
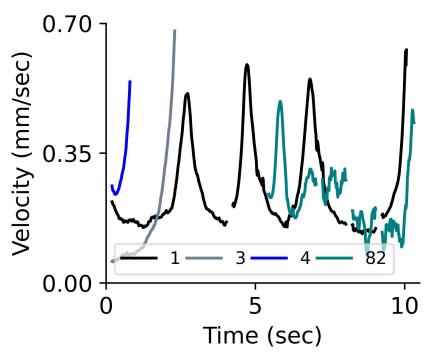
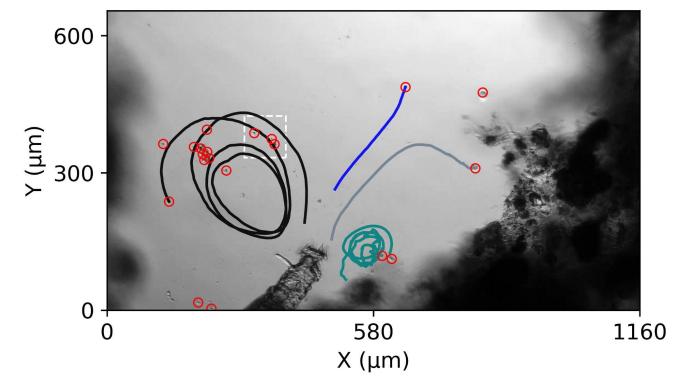


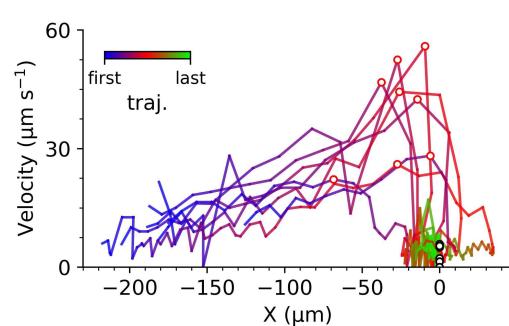
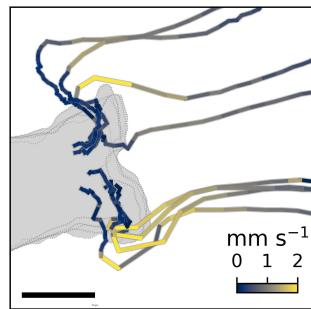
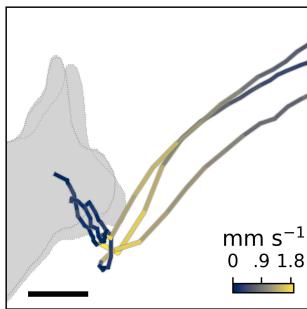
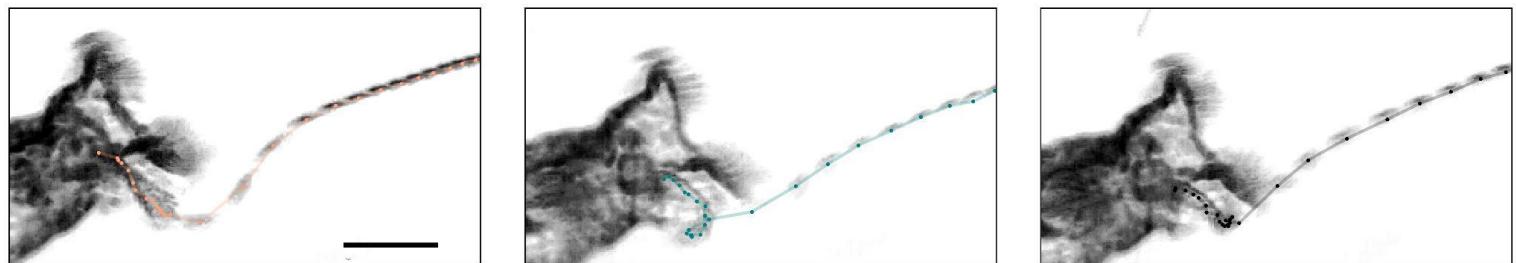
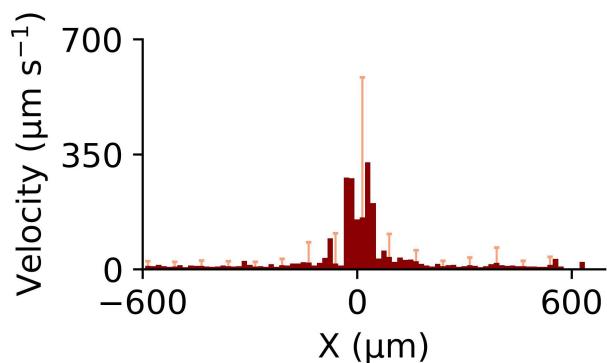
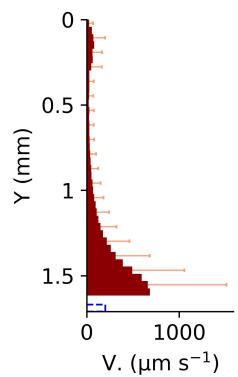
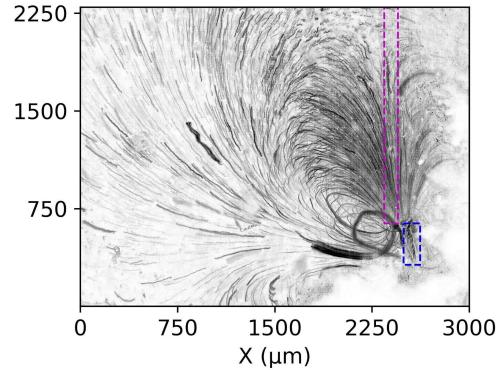
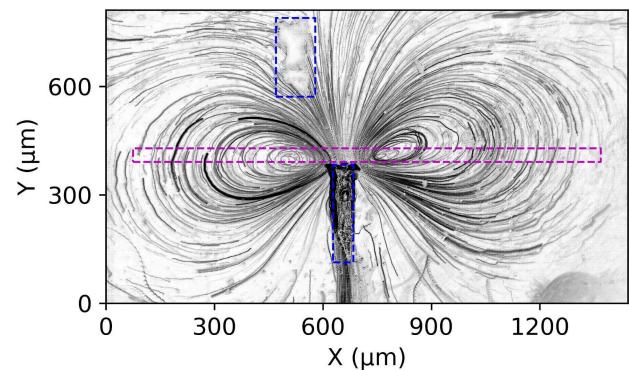
Bdelloid rotifer locomotion and feeding

Abstract and visual summary

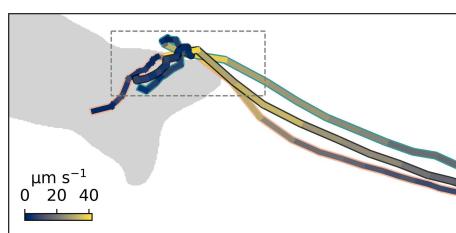




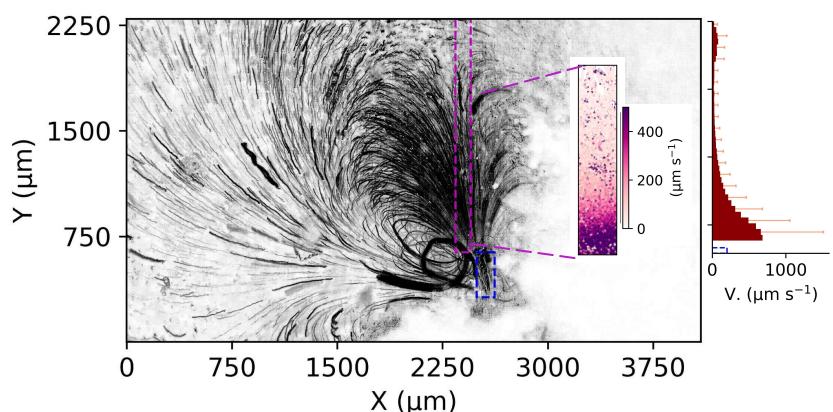
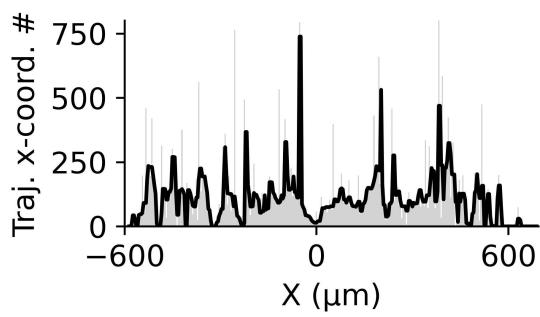
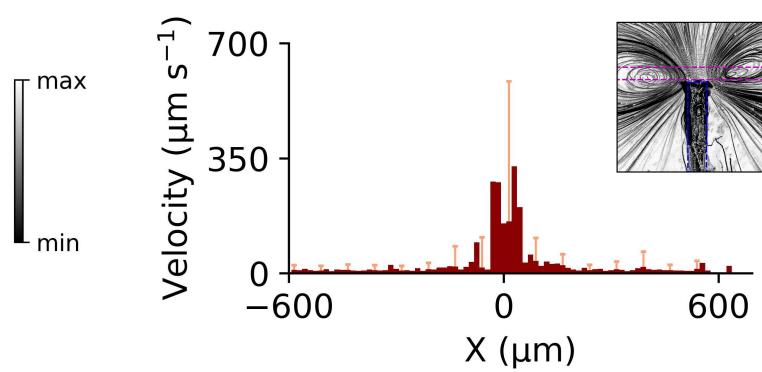
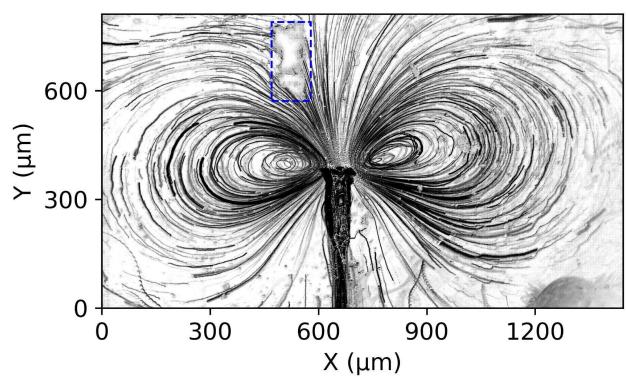
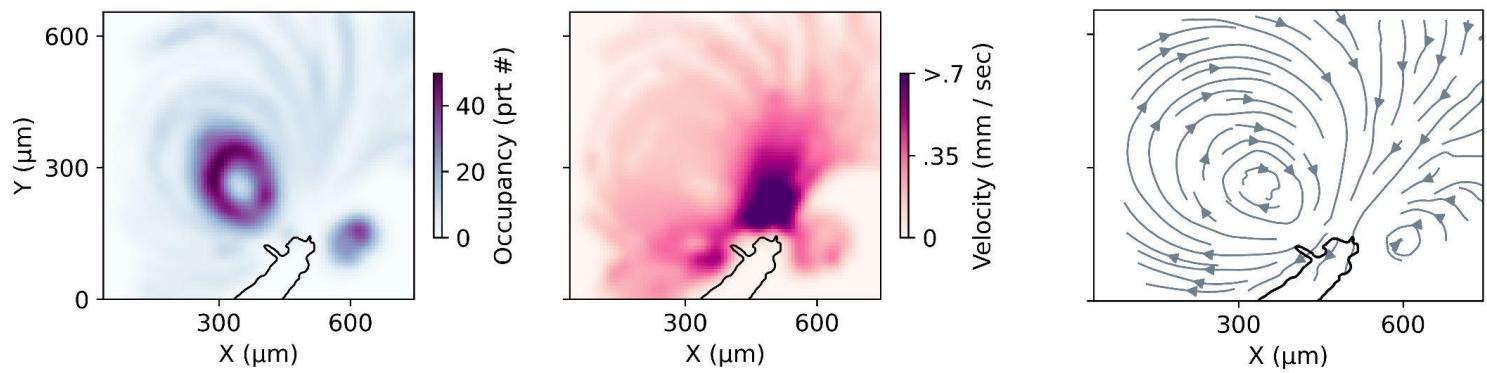
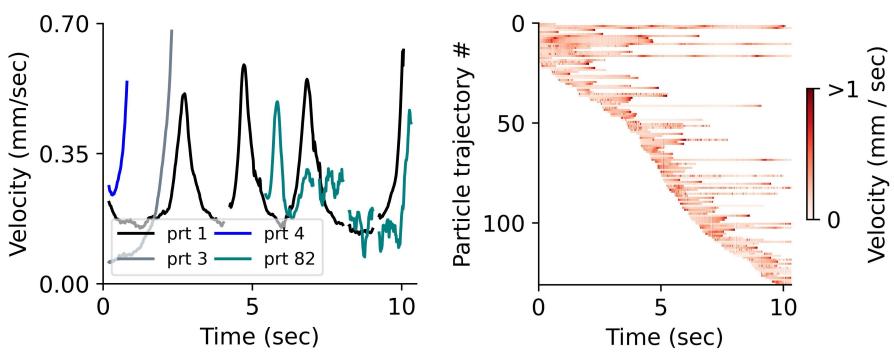
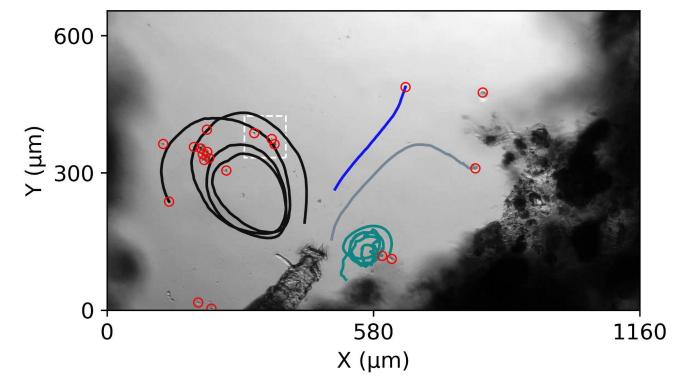


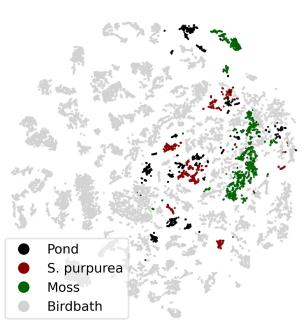
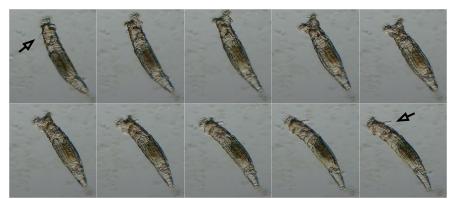
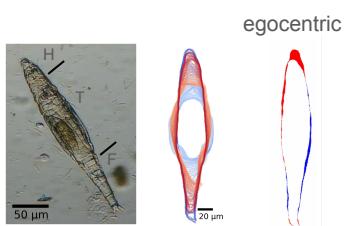
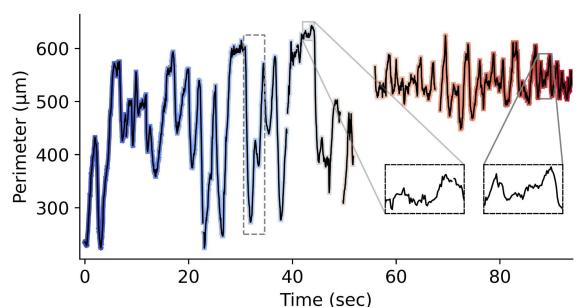
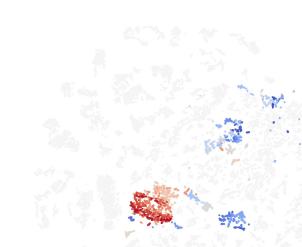
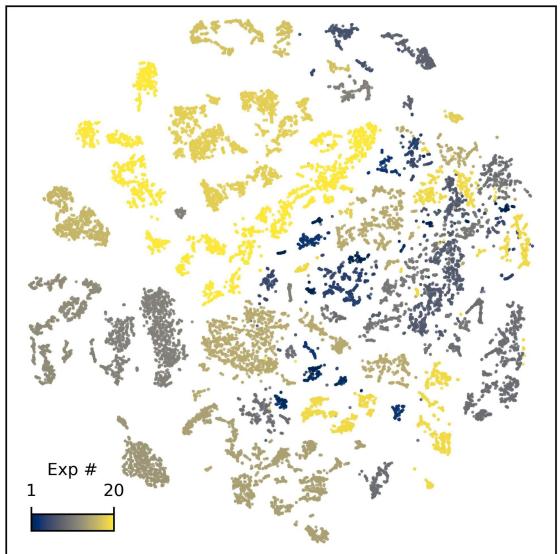


dial velocity pooled across several experiments
frontal current and side vortices overlaid



Particle capture + dwell time
stats





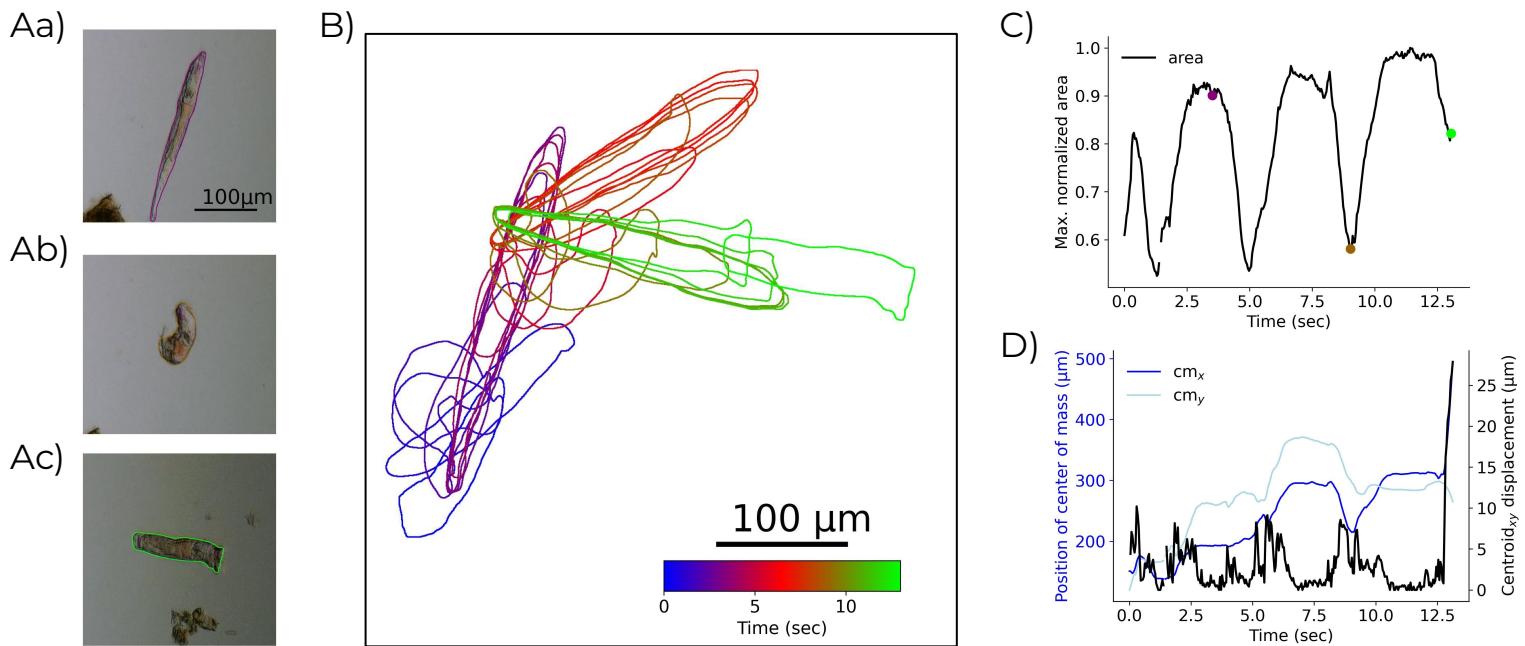


Figure 1 - Movement sequence of an isolated bdelloid rotifer. Aa-c) Individual frames illustrate the rotifers body shape while "leeching" and free-swimming recorded at 24 fps. The contour of the segmentation mask outlines the rotifers body and is color coded according to time. Aa) Top-down view of a rotifer facing upwards. Its head has a red tint due to a carmin vital stain. Its entire body is elongated, its foot anchored to no discernible substrate. Ab) Crouched body shape following the trailing of the rotifers posterior and before another elongation. Ac) Rotifer freely swimming. Its ciliated corona is visible (head facing to the right). Its foot and rump were retracted during take-off. Frame limits in Aa-c were centered around the center of mass (cm) of the segmentation mask of the rotifer. B) Overlay of contours from segmentation masks at 2 fps for the entire movement sequence (duration, 13 seconds). Contours are color-coded according to time as in (A). Starting from a crouched position (blue) the rotifers body elongates (magenta) and moves to another position. From there it elongates again, sampling its surrounding (red) before it samples in another direction (dark green) and transitions to free-swimming. C) Pattern of rotifer body area changing over time. Changes correspond to cycles of elongating versus shortening of body shape during movement and surround sampling. D) Pattern of rotifer cm movement over time. Cm x-component and y-component are plotted separately (blue lines). Centroid_{x,y} displacement shown in black (right y-axis). Note the large increase in movement speed once the rotifer starts swimming.

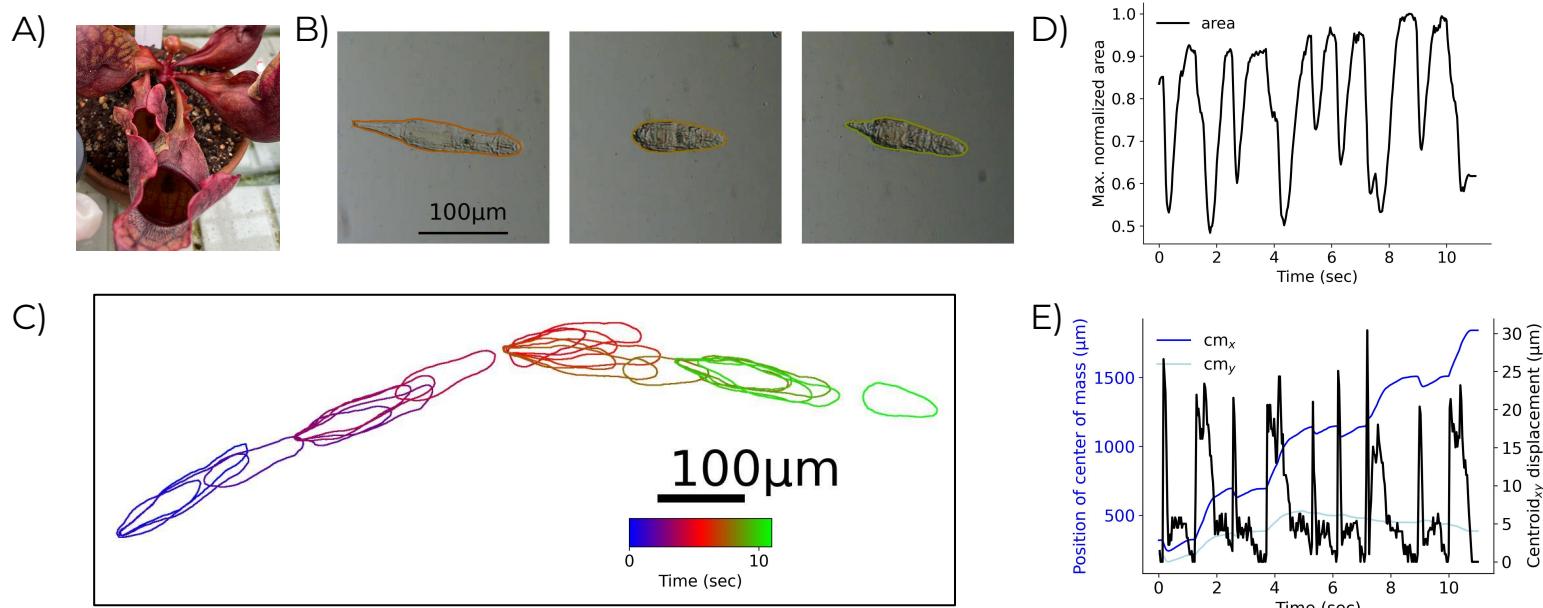


Figure 2 - Movement sequence of a bdelloid rotifer (family Adinetidae) isolated from Sarracenia purpurea. A) Image of *S. purpurea* before the plant fluid was sampled from one of its pitchers. B) Individual frames illustrate the rotifers body shape during locomotion recorded at 30 fps. The contour of the segmentation mask outlines the rotifers body and is color coded according to time. From left to right show elongated body during sampling, crouched body (foot fully- and head slightly retracted) during gliding motion and semi-elongated body while foot attaches to an indiscernible substrate following the gliding motion. C) Overlay of contours from segmentation masks at 2 fps for the entire movement sequence (duration, 11 seconds). Contours are color-coded according to time as in (B). The rotifers trajectory is relatively straight and forward. It samples the next direction once or twice (elongation followed by a swift retraction twitch) before it takes off into a gliding motion. During gliding the rotifer covers about 2-3 times its body length (200-400μm) within - roughly - a second of time. D) Pattern of rotifer body area changing over time. Changes correspond to cycles of elongating versus shortening of body shape during movement and surround sampling. E) Pattern of rotifer center-of-mass (cm) over time. Cm x-component and y-component are plotted separately (blue lines). Centroid_{x,y} displacement shown in black (right y-axis). Note the rapid transients of centroid_{x,y} displacement that correspond to swift twitches lacking significant ground coverage (cm_x and cm_y positions change slightly). Merely the longer-lasting centroid_{x,y} displacements are associated with actual movement. Four periods of gliding are observed, each lasting about a second wherein the rotifer covers about (10-20μm per frame, that is 300-600μm per second).

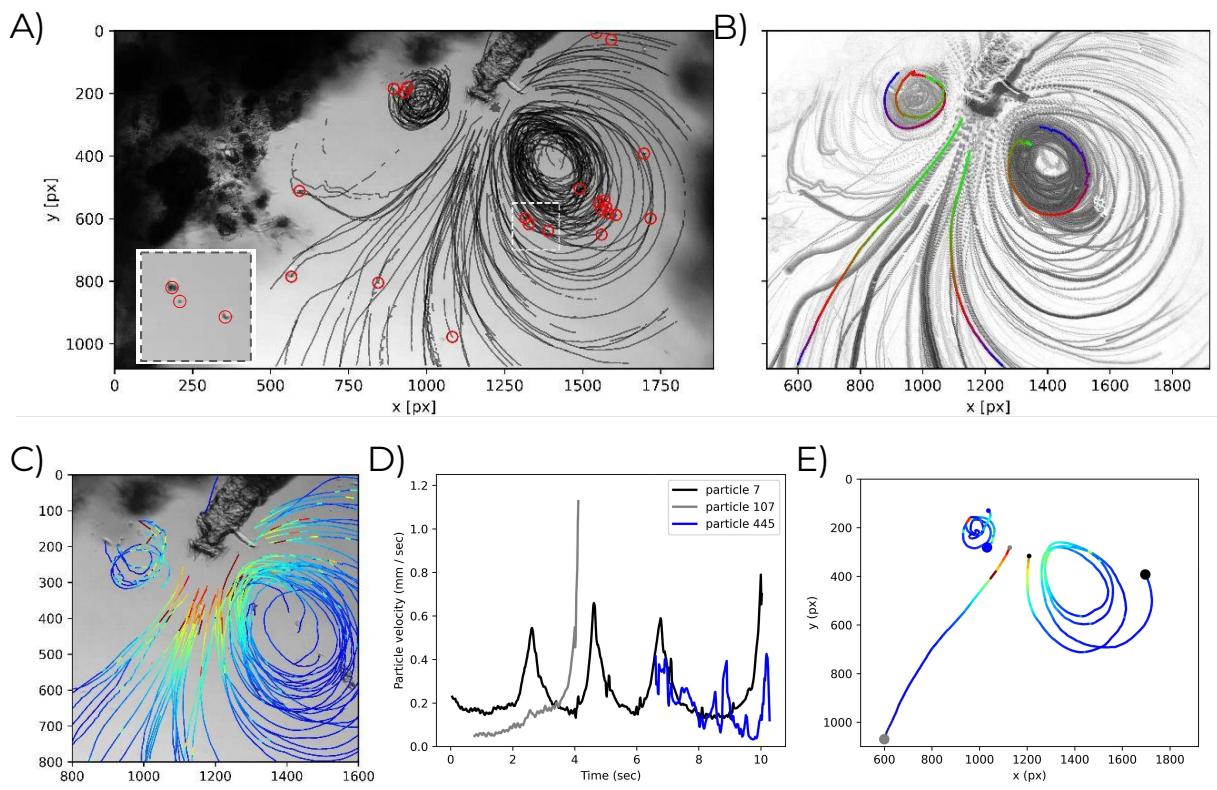


Figure X - ...