***eLife’s* transparent reporting form**

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**Sample-size estimation**

* You should state whether an appropriate sample size was computed when the study was being designed
* You should state the statistical method of sample size computation and any required assumptions
* If no explicit power analysis was used, you should describe how you decided what sample (replicate) size (number) to use

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In Appendix 2 we argue that the length of the time series data used in our analysis is sufficient to resolve the characteristic features of the P. polycephalum contraction dynamics.

**Replicates**

* You should report how often each experiment was performed
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All details of the data collection process in experiments are described in Appendix 1 in the section ‘Data’.

The experimental setup is explained in the Methods section under experiments.

**Statistical reporting**

* Statistical analysis methods should be described and justified
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* For each experiment, you should identify the statistical tests used, exact values of N, definitions of center, methods of multiple test correction, and dispersion and precision measures (e.g., mean, median, SD, SEM, confidence intervals; and, for the major substantive results, a measure of effect size (e.g., Pearson's r, Cohen's d)
* Report exact p-values wherever possible alongside the summary statistics and 95% confidence intervals. These should be reported for all key questions and not only when the p-value is less than 0.05.

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Principal Component Analysis was used to decompose times series data of P. polycephalum network contractions into modes. The analysis method is explained in detail in Appendix 2.

Furthermore, we argue in Appendix 2 that the length of the time series data used in the analysis is sufficient to resolve the characteristic features of the P. polycephalum contraction dynamics.

(For large datasets, or papers with a very large number of statistical tests, you may upload a single table file with tests, Ns, etc., with reference to sections in the manuscript.)

**Group allocation**

* Indicate how samples were allocated into experimental groups (in the case of clinical studies, please specify allocation to treatment method); if randomization was used, please also state if restricted randomization was applied
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This study did not make use of experimental groups.

**Additional data files (“source data”)**

* We encourage you to upload relevant additional data files, such as numerical data that are represented as a graph in a figure, or as a summary table
* Where provided, these should be in the most useful format, and they can be uploaded as “Source data” files linked to a main figure or table
* Include model definition files including the full list of parameters used
* Include code used for data analysis (e.g., R, MatLab)
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Please indicate the figures or tables for which source data files have been provided:

Two datasets from which Figures 1,2 and 3 and Figures 4 and 5 were generated respectively, will be made available in a repository.