

List of Publications

Key: * denotes first authorship, ^ indicates corresponding authorship, " represents last authorship, M identifies submitted manuscripts, and P signifies published papers.

Submitted Manuscripts (M)

- [M1] S.-Z. Lin, S. Tlili, J.-F. Rupprecht. *Viscous vertex model for active epithelial tissues*. arXiv 2602.13049 (2026); <https://doi.org/10.48550/arXiv.2602.13049>.
- [M2] M. Karnat, M. Saadaoui, S. Tlili, R. Karpinski, J.-F. Rupprecht. *Inferring the location and orientation of cell divisions on time-lapse image sequences*. bioRxiv 2024.02.05.578987; <https://doi.org/10.1101/2024.02.05.578987>.
- [M3] M. Karnat, G. H. Narayana, S. K. Peneti, V. Guglielmotti, Q. S. Rahaman, S. Jain, B. Ladoux, S.-Z. Lin, S. Tlili, R.-M. Mège, J.-F. Rupprecht. *Noninvasive rheological inference from stable flows in confined tissues*. arXiv 2511.20155 (2025); <https://doi.org/10.48550/arXiv.2511.20155>.

Published Papers (P)

- [P1] V. Weichselberger, G. Moore, S. Tlili, M. Merkel, P.F. Lenne, V. Trivedi. *Biophysics of organoids*. Developmental Cell, 2026.
- [P2] M. Lardy, S. Tlili, S. Gsell. *Inferring viscoplastic models from velocity fields: a physics-informed neural network approach*. arXiv preprint arXiv:2506.17681; <https://arxiv.org/abs/2506.17681>. Accepted to Journal of Non-Newtonian Fluid Mechanics;
- [P3] A. Gros*, J. Vanaret*, V. Dunsing–Eichenauer*, A. Rostan, P. Roudot, P.-F. Lenne", L. Guignard",^, S. Tlili",^ . *A quantitative pipeline for whole-mount deep imaging and multiscale analysis of gastruloids*. eLife Reviewed Preprint 107154; <https://elifesciences.org/reviewed-preprints/107154>.
- [P4] S. Tlili, M. Shagirov, S. Zhang, and T. E. Saunders. *Interfacial energy constraints are sufficient to align cells over large distances*. Biophysical Journal, 2025; 10.1016/j.bpj.2025.02.011.
- [P5] S. Gsell*,^, S. L. Tlili*,^, M. Merkel^, and P.-F. Lenne^ . *Marangoni-like tissue flows enhance symmetry breaking of embryonic organoids*. Nat. Phys. (2025). <https://doi.org/10.1038/s41567-025-02802-2>.
- [P6] C. Fu, F. Dilasser, S.-Z. Lin, M. Karnat, A. Arora, H. Rajendiran, H. T. Ong, N. M. Hoon, S. W. Phow, T. Hirashima . . . , J.-F. Rupprecht, S. Tlili, and V. Viasnoff^ . *E-cadherin-dependent phosphorylation of EGFR governs a homeostatic feedback loop controlling intercellular junction viscosity and collective migration modes*. Proceedings of the National Academy of Sciences, vol. 121, no. 37, (2024). doi.org/10.1073/pnas.2405560121.
- [P7] K. Anlas, N. Gritti, F. Nakaki, L. Salamo Palau, S. Tlili, D. Oriola, K. Arato, J.-L. Lim, J. Sharpe, and V. Trivedi. *Early, autonomous patterning of the anteroposterior axis in gastruloids*. Development (2024) 151 (22): dev202171. doi.org/10.1242/dev.202171.
- [P8] J. Vanaret, V. Dupuis, P.-F. Lenne, F. Richard, S. Tlili, and P. Roudot. *A detector-independent quality score for cell segmentation without ground truth in 3D live fluorescence microscopy*. IEEE Journal of Selected Topics in Quantum Electronics, 2023.
- [P9] P.-F. Lenne and S. Tlili. *Learning the mechanobiology of development from gastruloids*. Emerging Topics in Life Sciences, vol. 7, p. 417–422, 2023. https://hal.science/hal-03923509v2/file/Vanaret2023_nohighlight.pdf.
- [P10] J. de-Carvalho, S. Tlili, T. E. Saunders, and I. A. Telley. *The positioning mechanics of microtubule asters in Drosophila embryo explants*. eLife 12:RP90541, 2024. doi.org/10.7554/eLife.90541.3.

- [P11] A. Hashmi, S. Tlili, P. Perrin, M. Lowndes, H. Peradziryi, J. M. Brickman, A. M. Arias, and P.-F. Lenne. *Cell-state transitions and collective cell movement generate an endoderm-like region in gastruloids*. eLife, vol. 11, p. e59371, 2022. DOI:10.7554/eLife.59371.
- [P12] S. L. Tlili[^], F. Graner, and H. Delanoë-Ayari. *A microfluidic platform to investigate the role of mechanical constraints on tissue reorganization*. Development, vol. 149, p. dev200774, 2022. 10.1242/dev.200774.
- [P13] S. Tlili. *Unjammed development*. Nature Physics, vol. 18, p. 1400–1401, 2022.
- [P14] K. Karkali, P. Tiwari, A. Singh, S. Tlili, I. Jorba, D. Navajas, J. J. Muñoz, T. E. Saunders, and E. Martin-Blanco. *Condensation of the Drosophila nerve cord is oscillatory and depends on coordinated mechanical interactions*. Developmental Cell, vol. 57, p. 867–882, 2022.
- [P15] J. De-Carvalho, S. Tlili, L. Hufnagel, T. E. Saunders, and I. A. Telley. *Aster repulsion drives short-ranged ordering in the Drosophila syncytial blastoderm*. Development, vol. 149, p. dev199997, 2022.
- [P16] P.-F. Lenne, E. Munro, I. Heemskerk, A. Warmflash, L. Bocanegra-Moreno, K. Kishi, A. Kicheva, Y. Long, A. Fruleux, A. Boudaoud ..., and S. Tlili. *Roadmap for the multiscale coupling of biochemical and mechanical signals during development*. Physical Biology, vol. 18, p. 041501, 2021.
- [P17] L. Aoun, A. Farutin, N. Garcia-Seyda, P. Nègre, M. S. Rizvi, S. Tlili, S. Song, X. Luo, M. Biarnes-Pelicot, R. Galland ..., *Amoeboid swimming is propelled by molecular paddling in lymphocytes*. Biophysical Journal, vol. 119, p. 1157–1177, 2020.
- [P18] B. Bosze, Y. Ono, B. Mattes, C. Sinner, V. Gourain, T. Thumberger, S. Tlili, J. Wittbrodt, T. E. Saunders, U. Strähle ..., *Pcdh18a regulates endocytosis of E-cadherin during axial mesoderm development in zebrafish*. Histochemistry and Cell Biology, vol. 154, p. 463–480, 2020.
- [P19] S. Tlili[^], M. Durande, C. Gay, B. Ladoux, F. Graner, and H. Delanoë-Ayari[^]. *Migrating epithelial monolayer flows like a Maxwell viscoelastic liquid*. Physical Review Letters, vol. 125, p. 088102, 2020.
- [P20] H. Connahs^{*^}, S. Tlili^{*^}, J. van Creijl, T. Y. J. Loo, T. D. Banerjee, T. E. Saunders[^], and A. Monteiro[^]. *Activation of butterfly eyespots by Distal-less is consistent with a reaction-diffusion process*. Development, vol. 146, p. dev169367, 2019.
- [P21] M. Durande, S. Tlili, T. Homan, B. Guirao, F. Graner, and H. Delanoë-Ayari. *Fast determination of coarse-grained cell anisotropy and size in epithelial tissue images using Fourier transform*. Physical Review E, vol. 99, p. 062401, 2019.
- [P22] E. Gauquelin, S. Tlili, C. Gay, G. Peyret, R.-M. Mège, M. A. Fardin, and B. Ladoux. *Influence of proliferation on the motions of epithelial monolayers invading adherent strips*. Soft Matter, vol. 15, p. 2798–2810, 2019.
- [P23] S. Tlili^{*}, J. Yin^{*}, J.-F. Rupperecht, M. A. Mendieta-Serrano, G. Weissbart, N. Verma, X. Teng, Y. Toyama, J. Prost, and T. E. Saunders. *Shaping the zebrafish myotome by intertissue friction and active stress*. Proceedings of the National Academy of Sciences, vol. 116, p. 25430–25439, 2019.
- [P24] S. Tlili[^], E. Gauquelin, B. Li, O. Cardoso, B. Ladoux, H. Delanoë-Ayari, and F. Graner. *Collective cell migration without proliferation: density determines cell velocity and wave velocity*. Royal Society Open Science, vol. 5, p. 172421, 2018.
- [P25] S. Tlili, C. Gay, F. Graner, P. Marcq, F. Molino, and P. Saramito. *Colloquium: Mechanical formalisms for tissue dynamics*. The European Physical Journal E, vol. 38, p. 1–31, 2015.
- [P26] T. Vasilica Stirbat, S. Tlili, T. Houver, J.-P. Rieu, C. Barentin, and H. Delanoë-Ayari. *Multicellular aggregates: a model system for tissue rheology*. The European Physical Journal E, vol. 36, p. 1–14, 2013.
- [P27] F. Bosveld, I. Bonnet, B. Guirao, S. Tlili, Z. Wang, A. Petitalot, R. Marchand, P.-L. Bardet, P. Marcq, F. Graner ..., *Mechanical control of morphogenesis by Fat/Dachsous/Four-jointed planar cell polarity pathway*. Science, vol. 336, p. 724–727, 2012.