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# Editorial: Viscoelasticity: From Individual Cell Behavior to Collective Tissue Remodeling

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## Editorial on the Research Topic

## Viscoelasticity: From Individual Cell Behavior to Collective Tissue Remodeling

This issue gathers exciting multi-disciplinary work relating viscoelasticity and collective cell remodeling within various biological processes such as morphogenesis, tumorigenesis, and wound healing. Viscoelasticity is influenced by energy transfer and dissipation during cell rearrangement at various time and space scales. Cumulative structural changes at a subcellular level have effects on viscoelasticity at a supracellular level. Established configurations of migrating cells and the rate of their change, which significantly regulate viscoelasticity at a supracellular level, have the impact on the cohesiveness inhomogeneity and various mechanical and biochemical processes at a subcellular level. This Research Topic aims to connect the macroscopic viscoelastic parameters with the individual and collective cell response. Consideration of biochemical, biophysical and bio-mechanical aspects responsible for tissue remodeling, intercalation, and migration were discussed on various multicellular systems under *in vivo* and *in vitro* conditions.

Thus in this Research Topic we aim to provide a state-of-the-art view about the current knowledge related to viscoelasticity caused by collective cell remodeling and adhesive contractile properties, covering a plethora of phenomena such as: 1) single cell response under stretched monolayers modeled with an improved Vertex model, 2) adhesion percolation within a tissue as an important factor which influences its viscoelasticity, 3) the active turbulence caused by collective cell migration accompanied with the generation of mechanical waves, 4) cell jamming state transitions, and 5) viscoelastic response characterization in liver diseases. Alternative techniques to measure and control cell rearrangement under various experimental conditions are also considered, including atomic force microscopy measurements and various elastography techniques.

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This Research Topic provides an overview of the current understanding of various: biological, biochemical, biophysical and mechanical aspects of cell remodeling. The inter-relation between cell remodeling and tissue viscoelasticity was discussed by emphasizing the relevant rheological parameters, the way of their measurement under *in vivo*/*in vitro* conditions, and the strategy of multi-scale constitutive modeling.

## AUTHOR CONTRIBUTIONS

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

**Conflict of Interest:** The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.