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# Modelling Flow, Chemical Reactions and Mechanical Processes in Tissue

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## ABSTRACT

Experimental research is providing increasing information on biophysical and biochemical processes in cells and tissue. This information on cellular level has to be included in mathematical modelling of the dynamics of biological tissue. Describing flow, transport and reactions of substances in and their interactions with mechanics of the solid structures on a cellular level leads to a coupled system of nonlinear partial differential equations in complex geometric structures. Using experimental information, the relevant parameters of this system have to be determined in order to pass to a macroscopic scale limit.

In [1] the existence and uniqueness of the solution to the micoscopic system was proven. In [2] the scale limit is analyzed passing to a macroscopic model. It is important that the resulting system of equations including micro- and macro-variables are linking the different levels in a computable form. Thus, coupling information on the processes in the micro-scale with macroscopic properties we provide theoretical, but quantitative answers to questions posed by physiologists studying experimentally the transport through tissues and cell layers.

## REFERENCES

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