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**Nanomechanics of individual structures in endothelial
cells studied by multiparameter AFM-based
experimental methods**

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WARNING – IT IS A DRAFT

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Part I

Introduction

- 1. Physiological relevance of endothelial cells nanomechanics**
- 2. Cellular structures determining mechanical properties of cells**

Part II

Theoretical description of cell nanoindentation with an AFM probe

1. Working principle

2. Modeling the interaction

2.1. Electrostatic

2.2. Polymer brush

2.3. Elastic deformation

2.4. Hyperelastic

Part III

Identifying individual cellular structures

- 1. Cortical actin cytoskeleton**
- 2. Endothelial glycocalyx**

Part IV

Influence of measurement conditions

1. Cell fixation
2. Tip-induced mechanotransduction

Part V

Time relaxation

- 1. Methodology**
- 2. Model**
- 3. Results and discussion**

Part VI

Cell-cell interaction

1. Methodology
2. Model
3. Results and discussion

Part VII

Conclusions

References

- [1] Stanisława Stokłosowa. *Hodowla komórek i tkanek*. Wydawnictwo Naukowe PWN, Warszawa, 2004.

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Appendix

A. Something additional

B. And even less important