

Preface

Many biologists share opinion that form of biological objects influences their growth and replication. However, no complete studies have been done, and no quantitative models have been developed. Here, we discover that surface-volume unity of a biological object is a fundamental mechanism that governs the growth and replication. We derive a general mathematical equation describing the growth, and apply it first to cells, analyzing experimental results and cells' models; then we generalize this mechanism for other objects. The model is well supported by experimental results on Amoeba growth, development of trophectodermal cells in pigs' blastocysts, cellularization of the syncytial blastoderm of *Drosophila*, etc. We discovered also a new growth suppression mechanism based on the cells' form. The introduced growth mechanism has a general nature and acts as a placeholder, within which biochemistry growth and replication mechanisms deploy. The results will have diverse theoretical and practical implications in biology and medicine.