Biochemical Systems Analysis: A Study of Function and Design in Molecular Biology

By Michael A Savageau

CreateSpace Independent Publishing Platform. Paperback. Book Condition: New. This item is printed on demand. Paperback. 400 pages. Dimensions: 8.9in. x 6.0in. x 1.0in.The reductionist approach of molecular biology has given us detailed descriptions for many biochemical constituents of complex biological systems. For some of the simpler systems nearly the entire parts catalog has been assembled. These developments have set the stage for a new generation of questions -- questions of integration that deal with the relation between behavior of intact systems and their underlying molecular determinants, questions of unifying design principles that will give meaning to the bewildering diversity of alternative molecular designs, questions of higher-level theory and quantitative prediction, which currently are not available in most of biology. The motivation to develop this new perspective comes from the study of complex biochemical pathways, intricate circuits of gene regulation, network interactions within the immune system, plasticity of neural networks, and pattern formation by cellular networks. All these networks consist of more elemental constituents that find their meaning within the context of the intact system. The integrative perspective requires a new language and methodology. The objective of this text is to systematically develop these and to apply them to specific classes...

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