

## BIOMOLECULES

### THE LIVING STATE

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- The most important fact of biological systems is that all living organisms exist in a steady-state characterised by specific concentrations of each of these biomolecules.
- These biomolecules are in a metabolic flux.
- Any chemical or physical process moves spontaneously to equilibrium.

The steady state is a non-equilibrium state. One should remember from physics that systems at equilibrium cannot perform work. As living organisms work continuously, they cannot afford to reach equilibrium. Hence the living state is a non-equilibrium steady-state to be able to perform work. Living process is a constant effort to prevent falling into equilibrium. This is achieved by energy input.

Metabolism provides a mechanism for the production of energy. Hence the living state and metabolism are synonymous. Without metabolism there cannot be a living state.