Ciclo de charlas

The mano a mano of enthalpy and entropy in the social life of biological macromolecules

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Any living cell, even the simplest bacterial cell, is a natural object of enormous complexity. Its functioning implies that a myriad of different molecules are continuously engaged in pairwise or multiple interactions. Such a large-scale 'interactome' involves interactions between proteins and small ligands, between proteins and other proteins, between nucleic acids and proteins or with other nucleic acids… Such various types of interactions can always be described from a thermodynamic point of view with an enthalpic term, ΔH, and an entropic term, ΔS, that can be experimentally measured by calorimetry. An enormous amount of observations points to a remarkable and *a priori* unexpected correlation between these two terms measured either for the same system in various conditions (e.g. by addition of variable amount of a solute), or with homologous systems (e.g. homologous enzymes from various species) in the same conditions. Such a correlation is known as 'enthalpy/entropy compensation'. Striking examples of it will be presented along with theoretical considerations.

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