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## Compartmentalized aqueous chemistries: modelling the origins of metabolism

*Thursday, 8 July 2021 13:00 (90)*

In the introductory part of my lecture, the relevance of coupling compartmentalization phenomena and chemical reactions in aqueous conditions will be acknowledged, in particular in the context of addressing the problem of the origins of metabolism. The concept of 'minimal metabolism', suggested to play a key role at the interface between physics/chemistry and biology, will also be discussed with the students [1]. Then, the intricacies of that mutual coupling relationship will be highlighted, proposing a realistic approach to protocell modelling that accounts for them. For illustrative purposes, two specific theoretical contributions will be described in depth: first, one in which the heterogeneity and permeability properties of a vesicle membrane are shown to be fundamental for proto-metabolic viability and evolution [2]; second, one in which the importance of metabolism for protocell growth and stationary reproduction (and, thus, also potential evolution) is remarked [3]. To conclude, some more general considerations about the problem of origins of life will be offered for debate [4].

**Session Classification :** Tutorial