The DEB-theory essay

Tunisian group

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It was a very great occasion to study the DEB theory , since it deals with biology concepts that I already wondered about , but since I have been specialized in analytical chemistry I didn't find the right occasion to deal with such concept deeply till I registered in the master of information treatment and biocomplexity and then participated in this course .

The study of the only 4 first chapters of the DEB theory was not sufficient to understand some details in process and some assumption proposed in these 4 chapters .Some points that we faced incites us to ask about its relation with the evolution theory and whether the theory of evolution is the same line with these assumption, many questions was asked and since we didn't examine the chapter 10 we can not deny or confirm these assumptions .The first meeting with the DEB theory was different of those with other general theories . This is because of its particularity in explaining biological and eco-physiological concepts through energy dynamic budget, and so creating a wonderful scientific mix between mathematics, chemistry and biology showing us the real beauty and coherence between each science.

To understand the DEB assumptions, there is certain strategy used by the book which consist in presenting end explaining the qualitative aspect of the DEB theory. It is based on the individual life cycle , the basic process and all its metabolic reactions, like: digestion, maturation, respiration …

DEB is based on the question of what life is based on ? Through treating individuals, its mass and energy balance, its interaction with its environment, DEB theory tried to find the right answer and to make appropriate mathematical model that explain any specific case.

To model population dynamics of individuals, we should make a difference between two approaches:

Individual-based models (IBMs): A *brute force approach* involving simulating a large number of individuals, each obeying the rules of a DEB model (*i*-state dynamics)

Structured population models*: This involves modeling the distribution of individuals among I-states . A large body of theory has been developed1, and there is a powerful computational approach –the "escalator boxcar train"2.*

As a very rich research that is very detailed and that incite our scientific spirit to ask and to verify each assumption and its consequences and details, I think that the period of this tele-course would not be sufficient to us a group that treat this theory for the first time to understand and to learn properly all its aspects .