

## **QUESTIONS TO GUIDE THE SESSION: GROUP WORKSHOPS AND FINAL DISCUSSION**

1. Autonomous living organization: how does it contribute to evolutionary processes? Can biological organization be explained without evolutionary theory?
2. Darwin's theory of evolution has two main elements: the principle of natural selection and the classification of natural living diversity in a single system of genealogical relations, represented as a tree of life. Are these two elements challenged today?
3. How does self-organization (e.g., spatial-temporal pattern formation) contribute to biological processes, including reproductive and evolutionary processes?
4. Sameness and variation in biology. How many forms of heredity are at work in the reproduction of an organism? Are there differences between genetic and epigenetic inheritance?
5. Development and evolution: does the form or structure of organic traits depend on natural selection? How?
6. What is the difference between vertical and lateral (horizontal) transmission? Can the tree of life grasp the idea of connections that are not genealogical? What kinds of representations are required for that?
7. Life and living categories (organisms, species...): is life a collective phenomenon? Are there strict boundaries between organisms or between species?
8. Is there an evolutionary growth of complexity? What are the main mechanisms allowing it? Can major evolutionary transitions be explained without a theory of biological organization?