Night Science

The creative scientific process

Menu

A course on the creative scientific process

The formal scientific method tells you how to rigorously and objectively test a hypothesis. But where do hypotheses come from in the first place? Posing fruitful new questions, having ideas for novel hypotheses, and inventing new experimental technologies all require scientific creativity. Itai Yanai (New York University) and Martin Lercher (Heinrich Heine University Düsseldorf) have been exploring this hidden side of the scientific process in workshops, editorials and podcast interviews.

In this course, participants learn and practice different tools for the generation of scientific ideas. Sessions explore, for example, how anthropomorphic language unlocks intuitive brain capacities; how new questions can be identified by honing in on contradictions; how a hypothesis can be a liability for making new discoveries; and how ideas can be imported and exported across research fields. Each of the eight sessions is integrated with exercises, allowing the participants to practice the tools for creative scientific explorations.

The course is targeted at PhD students and Postdoctoral Fellows across the natural sciences and mathematics. But it is also highly relevant to seasoned investigators who are interested in a deeper understanding and further development of their scientific creativity.

Here, you will find an evolving set of documents and links for learning and teaching the creative side of the scientific process. We encourage students to work through the slides and documents.

We've put together this material in the express hope that it may help in the dissemination and will lead to courses at different institutions. Please feel free to contact Itai and Martin with any questions you might have on implementing this course at your university.

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