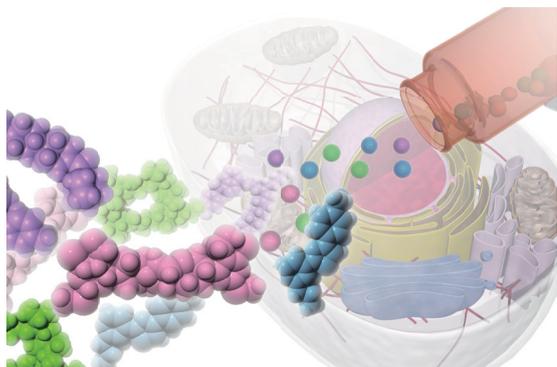


## “The Chemistry of Life”

Learn how to generate ideas at the interface between chemistry and biology.



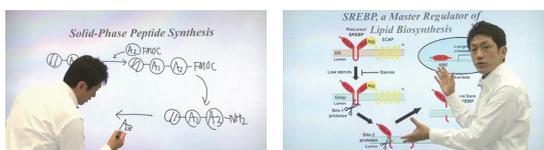
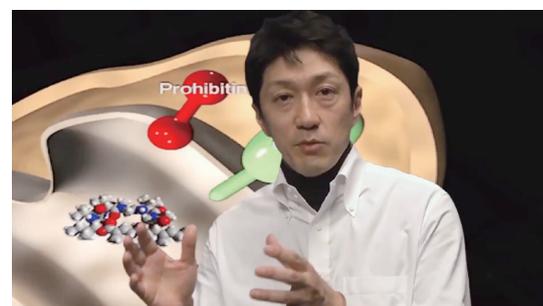
**April 4, 2019 – March 19, 2020**

Length: **Self-paced (13 units)**

Instructor: **Motonari Uesugi, Ph.D.**

Professor of The Institute for Integrated Cell-Material Sciences and  
Institute for Chemical Research, Kyoto University

Chemistry and biology are traditionally taught as separate subjects at the high school level, where students memorize fundamental scientific principles that are universally accepted. However, at the university level and in industry, we learn that science is not as simple as we once thought. We are constantly confronted by questions about the unknown and required to use creative, integrated approaches to solve these problems. By bringing together knowledge from multidisciplinary fields, we are empowered with the ability to generate new ideas. The goal of this course is to develop skills for generating new ideas at the interface between chemistry and biology by analyzing pioneering studies.



- Unit 1** Understanding Chemical Structures
- Unit 2** Writing and Synthesizing DNA
- Unit 3** DNA/RNA Applications
- Unit 4** Idea Generation Techniques
- Unit 5** Writing Amino Acids
- Unit 6** Writing and Synthesizing Proteins
- Unit 7** Combinatorial Chemistry & Chemical Genetics
- Unit 8** Fluorescent Molecules for Tracking Biology
- Unit 9** Fluorescent Proteins for Tracking Biology
- Unit 10** Review of Ideas
- Unit 11** Ideas for Fooling Sugars and Fats
- Unit 12** Ideas for Fighting against Cancer & Virus
- Unit 13** Review of Ideas

<https://www.edx.org/course/the-chemistry-of-life-2>  
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