

The Chem-Bio Informatics Society Annual Meeting 2018

Luncheon Seminar

“Is molecular robotics a friend or foe of the human being?”

October 11(Thu), 12:00-13:30

Akihiko Konagaya (TITECH)

Naoto Kawahara (Kyushu University)

Ryuma Shineha (Seijo University)

Erika Szymanski (The University of Edinburgh, UK)

Kenneth Oye (MIT Political Science, USA)

**Stephan Lingner (EA European Academy of Technology and
Innovation Assessment, Germany)**

Molecular robotics is an emerging discipline involving the design and creation of artificial biological robots with sense and intelligence based on DNA nano-technology including DNA origami and DNA computing. Although the current accomplishments are still in remaining at the experimental stage, the potential applicability of molecular robotics is immense, and so are the negative implications such as bioterrorism and dual use. In order to prevent such negative repercussions while pursuing beneficial applications, we propose, in collaboration with experts of ethics and social sciences, the Ethical Principles of Molecular Robotics as an essential guideline for any person engaging in the field of molecular robotics.

Our seminar is composed of three sections. First, we provide a technology assessment concerning the current situation of molecular robotics. We shed light on the complex interdependence of benefit and risk yielded by the future technological advancement of molecular robotics, focusing on the genome editing function of molecular robots. We also note that the ontological ambiguity of molecular robots might pose a serious threat to the current international regulatory regime on biological and chemical weapons. Second, based on the current state analysis, we present the draft of the Ethical Principles of Molecular Robotics. In the principles, we stress the importance of grasping the serious dilemma posed by the technology and intend to cover broad risks from environmental damage to misuse by terrorists. Third, we open the discussion to the floor. We will discuss together how to improve the draft. Participants from various fields are welcome.



Japan Science and Technology Agency RISTEX

Human Information Technology Ecosystem

Co-Creation and Communication for Real-Time Technology Assessment on Information Technology and Molecular

Robotics

(CoRTA)

<https://ristex.jst.go.jp/hite/>

CBI 学会 2018 年大会

ランチョンセミナー

「分子ロボットは人類にとって敵か味方か？」

10月11日(木) 12:00~13:30

小長谷明彦 (東京工業大学)

河原直人 (九州大学)

標葉隆馬 (成城大学)

Erika Szymanski (The University of Edinburgh, UK)

Kenneth Oye (MIT Political Science, USA)

Stephan Lingner (EA European Academy of Technology and Innovation Assessment, Germany)

分子ロボットとは DNA ナノ技術を活用して運動・感覚・知能を持つ生体素材のロボットを作り出すことを目指す萌芽的学術分野である。この技術が実用化された場合の応用可能性は大きなものがあるが、同時にそれによってもたらされる負の影響も膨大なものとなる可能性がある。このようなジレンマを乗り越えて研究実践を継続するために、我々は倫理分野や社会科学分野の専門家とも協同して、分子ロボット倫理原則の草案を検討してきた。本セミナーでは、分子ロボット技術の現状についてのテクノロジーアセスメントを共有した後、我々の倫理原則草案を発表する。発表された草案をどのように改善するかをめぐって、フロアを交えて活発な議論を行いたい。



小長谷明彦



河原直人



標葉隆馬



Erika Szymanski



Kenneth Oye



Stephan Lingner

JST 社会技術開発センター (RISTEX)

「人と情報のエコシステム」研究開発領域

情報技術・分子ロボティクスを対象とした議題共創のためのリアルタイム・テクノロジーアセスメントの構築(CoRTTA)

<https://ristex.jst.go.jp/hite/>