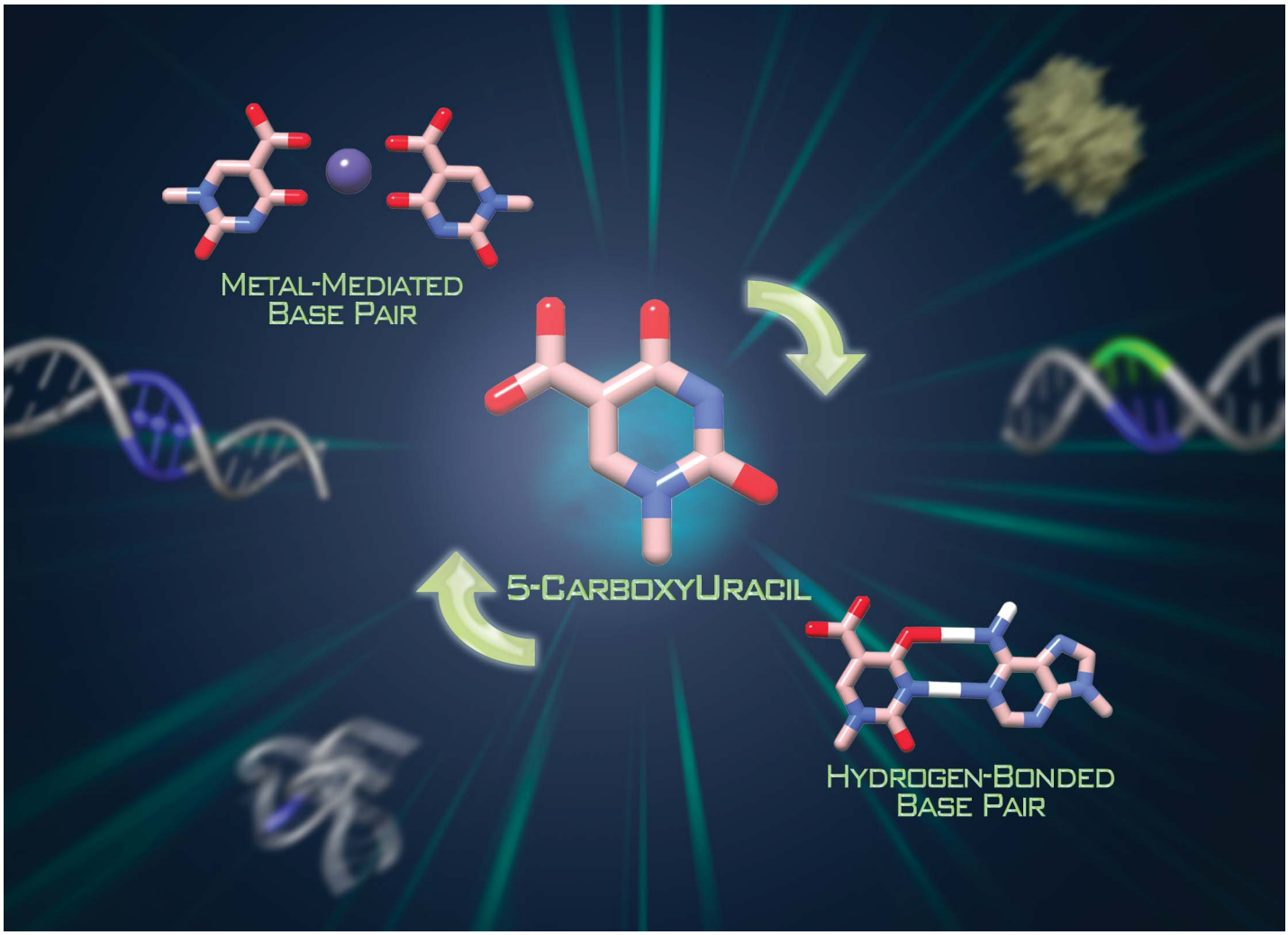

Showcasing research from Professor Mitsuhiko Shionoya's laboratory, Department of Chemistry, Graduate School of Science, The University of Tokyo, Tokyo, Japan.

Ligase-mediated synthesis of Cu^{II}-responsive allosteric DNAzyme with bifacial 5-carboxyuracil nucleobases

A Cu^{II}-responsive allosteric DNAzyme has been developed by introducing bifacial 5-carboxyuracil (**caU**) nucleobases, which form both hydrogen-bonded **caU–A** and metal-mediated **caU–Cu^{II}–caU** base pairs. The base sequence was logically designed so that the **caU**-modified DNAzyme can form a catalytically inactive structure containing **caU–A** base pairs and an active form with **caU–Cu^{II}–caU** pairs. The **caU**-modified DNAzyme was synthesized by joining short **caU**-containing fragments with a standard DNA ligase. Both ligase-mediated synthesis and Cu^{II}-dependent allosteric regulation were achieved by the bifacial base pairing properties of **caU** nucleobases.

As featured in:

See Yusuke Takezawa, Mitsuhiko Shionoya *et al.*, *Chem. Sci.*, 2024, **15**, 2365.

ROYAL SOCIETY OF CHEMISTRY

rsc.li/chemical-science

Registered charity number: 207890