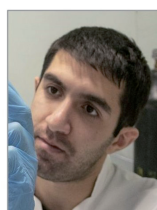
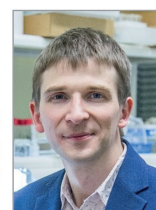


Metal-(Acyclic Diaminocarbene) Complexes Demonstrate Nanomolar Antiproliferative Activity against Triple-Negative Breast Cancer

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Invited for the cover of this issue are Tatiyana Serebryanskaya, Mikhail Kinzhalov and co-workers at St. Petersburg State University, the Research Institute for Physical Chemical Problems, Belarusian State University, Togliatti State University and Blokhin National Medical Research Center of Oncology. The image depicts the shield of Pallas Athena with the structure of a palladium carbene complex that protects against triple-negative breast cancer. Read the full text of the article at [10.1002/chem.202400101](https://doi.org/10.1002/chem.202400101).

What is the most significant result of this study?

In the early stages of developing metal-based drugs, palladium complexes were considered too toxic due to rapid ligand exchange under physiological conditions. Further efforts have shown that, in a suitable ligand environment, the palladium center can serve as a fruitful platform for the design of efficient antiproliferative agents with relatively low toxicity. In this study, we employed specially designed acyclic diaminocarbene ligands to ensure unprecedented stability of the palladium coordination sphere and thereby achieved outstanding activity and selectivity of the designed species against one of the most clinically challenging and aggressive types of malignant tumor.

What was the inspiration for this cover design?

The cover design was inspired by the very unique ability of our palladium species to selectively target malignant cancer cells while sparing normal cells and tissues. This ability reminded us of the original meaning of the word “palladium”, which was a symbolic figure or object believed to provide protection and safety in the face of danger. In ancient Greece, a “palladium” was a wooden statue of Pallas Athena, who protected Troy. Pallas Athena was also worshipped as the goddess of wisdom. Thus, for the cover design, we used the statue of Pallas Athena protecting her breast with a shield embroidered with the structure of the palladium carbene complex as a symbol of the selective cytotoxicity of the developed palladium species against triple-negative breast cancer and a snake as a symbol of the wisdom required to design a suitable coordination environment to unveil the curative potency of palladium metal center instead of its toxicity.

What was the biggest surprise?

The high basicity of the synthesized organometallic species, their rapid protonation in aqueous solution and their stability under a wide range of physiologically relevant pH values were unexpected and, when revealed, let us consider mitochondria as a possible therapeutic target of the developed complexes.

