



TECHNOLOGY

Metal Based Synthetic Nucleic Acid Enzymes

OVERVIEW

Many industrial, medicinal and biological processes rely on metal complexes to activate and control the reactive power of molecular oxygen, nature's most abundant oxidant. Selectivity of these processes is dictated by a synergy expressed between the metal and its surrounding ligands that helps to create the active complexes. Dicopper protein complexes are used by nature for activating molecular oxygen.

A researcher at the Department of Chemistry and Biochemistry, University of Maryland, College Park, jointly with researchers from the Department of Chemistry, Johns Hopkins University has developed a series of low molecular weight synthetic complexes based on dicopper for related applications under ambient and biological conditions. These complexes selectively recognize specific conformations of nucleic acids and alternatively oxidize their nucleobases or phosphoribose backbone depending on the particular complex chosen. The required co-reactants, molecular oxygen and a thiol, are both present in sufficient quantities within cells that these activities may be supported in vivo for mapping chromosome structure and remodeling. In addition, the dicopper complexes have the potential to provide anticancer therapy at equivalent potency to the widely prescribed and metal-dependent drug bleomycin. Currently, the compounds are being tested as anticancer agents by the National Cancer Institute, with one of the derivatives being slated for in vivo mouse studies following successful in vitro studies.

For additional information, please contact the Office of Technology Commercialization, University of Maryland. Phone: 301-405-3947. E-mail: otc@umd.edu

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Additional Information

INSTITUTION

University of Maryland, College Park

PATENT STATUS

Patent(s) pending

LICENSE STATUS

Contact OTC for licensing information

CATEGORIES

- Chemicals

EXTERNAL RESOURCES

- [US Patent 7,390,832](#)

LS-2001-088