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Chemistry Colloquium | Ectonucleotidases CD39 and CD73 From Structure to Function to Cancer Immunotherapy, Nov. 15

Ohio University College of Arts & Sciences

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Categories: Events
Tags: Chemistry and biochemistry colloquia, chemistry and biochemistry events, Norbert Sträter

Ohio University's Chemistry & Biochemisty Colloquium Series presents **Dr. Norbert Sträter** on "The Ectonucleotidases CD39 and CD73: From Structure to Function to Cancer Immunotherapy" on Wednesday, Nov. 15, at 3:45 p.m. in Clippinger Laboaratoies 194.

Norbert Sträter

Sträter is with the Institute of Bioanalytical Chemistry, University of Leipzig, Leipzig, Germany.

Abstract: In addition to its prominent role in cellular energy supply, ATP is also an important extracellular signalling molecule in pathways denoted as purinergic signalling (Figure). The nucleotide triphosphate diphosphohydrolases (NTPDases, including CD39) and ecto-5′-nucleotidase (CD73) are the dominant enzymes in the breakdown of extracellular ATP to adenosine in many tissues. CD73 is the primary source of extracellular adenosine.

Many tumor types overexpress CD73 and/or CD39 to reduce the concentration of immunostimulatory ATP and increase the immunosuppressive adenosine in the tumor environment in order to evade the immune response. The two ectonucleotidases have therefore been recognised as promising targets in cancer immunotherapy. We have determined crystal structures of CD73 and CD39 and characterised the catalytic mechanism of the metal-dependent enzymes with substrate and transition state analogs. Domain movements play an important role in the activity of both enzymes. We are cooperating with medicinal chemists in the structure-based design of specific and potent inhibitors based on nucleotide derivatives and non-nucleotide compounds. Crystallographic fragment screening is employed to search for new lead structures.