UNIVERSITÉ BLAISE PASCAL
U.F.R de Recherche Scientifique et Technique

CYCLE DE CONFÉRENCES DE CHIMIE

Avec le concours de : ***Manufacture Française des Pneumatiques MICHELIN***
Centre de Développement Préclinique, Schering-Plough
Fédération de Chimie (FR 2404)
Section Auvergne de la Société Française de Chimie
U.F.R.S.T. / Master de Chimie / Département de Chimie

Mercredi 24 Novembre 2010 à 16h (Hors cycle)

Amphi de Chimie Paul REMI - (Site des Cézeaux)

Dr. Eduardo García-Junceda

Departamento de Química Bio-Orgánica, Instituto de Química Orgánica General

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From multi-enzyme systems to multi-functional enzymes. Designing of new biocatalyst for C-C bond formation

DHAP-dependent aldolases have been thoroughly used in organic synthesis. Their main drawback is their strict specificity for DHAP. In this sense, our research group has developed a straightforward multi-enzyme system based on the use of the recombinant ATP-dependent DHAK from *C. freundii* that allows the use of DHA as initial donor. Although this multi-enzyme system is attractive since it is a one-pot/one-step route to the phosphorylated aldol adduct and we have showed its utility with the three synthetically useful DHAP-dependent aldolases, a considerable number of issues remain. In order to simplify and to improve the catalytic behaviour of this multi-enzyme system we have followed a double strategy: i) the design of a new bifunctional enzyme named DLF which presents the aldolase and the kinase activities in the same protein and ii) a directed evolution program to modify the kinase substrate specificity for the phosphate-donor toward inorganic polyphosphate (poly-P_i) instead of ATP.

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