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Titolo	Asymmetric and Selective Biocatalysis // edited by Jose M. Palomo and Cesar Mateo
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Formato	Materiale a stampa
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Sommario/riassunto	<p>This Issue contains one communication, six articles, and two reviews. The communication from Paola Vitale and others represents a work where whole cells were used as biocatalysts for the reduction of optically active chloroalkyl arylketones followed by a chemical cyclization to give the desired heterocycles. Among the various whole cells screened (baker's yeast, <i>Kluyveromyces marxianus</i> CBS 6556, <i>Saccharomyces cerevisiae</i> CBS 7336, <i>Lactobacillus reuteri</i> DSM 20016), baker's yeast provided the best yields and the highest enantiomeric ratios (95:5) in the bioreduction of the above ketones. In this respect, valuable chiral non-racemic functionalized oxygen-containing heterocycles (e.g., (S)-styrene oxide, (S)-2-phenyloxetane, (S)-2-phenyltetrahydrofuran), amenable to be further elaborated on, can be smoothly and successfully generated from their prochiral precursors. Studies about pure biocatalysts with mechanistical studies, application in different reactions, and new immobilization methods for improving their stability were reported in five different articles. The article by Su-Yan Wang and others describes the cloning, expression, purification, and characterization of an N-acetylglucosamine 2-epimerase from <i>Pedobacter heparinus</i> (PhGn2E). For this, several N-acylated glucosamine derivatives were chemically synthesized and used to test the substrate specificity of the enzyme. The mechanism of the enzyme</p>

was studied by hydrogen/deuterium NMR. The study at the anomeric hydroxyl group and C-2 position of the substrate in the reaction mixture confirmed the epimerization reaction via ring-opening/enolate formation. Site-directed mutagenesis was also used to confirm the proposed mechanism of this interesting enzyme. The article by Forest H. Andrews and others studies two enzymes, benzoylformate decarboxylase (BFDC) and pyruvate decarboxylase (PDC), which catalyze the non-oxidative decarboxylation of 2-keto acids with different specificity. BFDC from *Pseudomonas putida* exhibited very limited activity with pyruvate, whereas the PDCs from *S. cerevisiae* or from *Zymomonas mobilis* showed virtually no activity with benzoylformate (phenylglyoxylate). After studies using saturation mutagenesis, the BFDC T377L/A460Y variant was obtained, with 10,000-fold increase in pyruvate/benzoylformate. The change was attributed to an improvement in the K_m value for pyruvate and a decrease in the k_{cat} value for benzoylformate. The characterization of the new catalyst was performed, providing context for the observed changes in the specificity. The article by Xin Wang and others compares two types of biocatalysts to produce D-lysine L-lysine in a cascade process catalyzed by two enzymes: racemase from microorganisms that racemize L-lysine to give D,L-lysine and decarboxylase that can be in cells, permeabilized cells, and the isolated enzyme. The comparison between the different forms demonstrated that the isolated enzyme showed the higher decarboxylase activity. Under optimal conditions, 750.7 mmol/L D-lysine was finally obtained from 1710 mmol/L L-lysine after 1 h of racemization reaction and 0.5 h of decarboxylation reaction. D-lysine yield could reach 48.8% with enantiomeric excess (ee) of 99%. In the article by Rivero and Palomo, lipase from *Candida rugosa* (CRL) was highly stabilized at alkaline pH in the presence of PEG, which permitted its immobilization for the first time by multipoint covalent attachment on different aldehyde-activated matrices. Different covalent immobilized preparation of the enzyme was successfully obtained. The thermal and solvent stability was highly increased by this treatment, and the novel catalysts showed high regioselectivity in the deprotection of per-O-acetylated nucleosides. The article by Robson Carlos Alnoch and others describes the protocol and use of a new generation of tailor-made bifunctional supports activated with alkyl groups that allow the immobilization of proteins through the most hydrophobic region of the protein surface and aldehyde groups that allows the covalent immobilization of the previously adsorbed proteins. These supports were especially used in the case of lipase immobilization. The immobilization of a new metagenomic lipase (LipC12) yielded a biocatalyst 3.5-fold more active and 5000-fold more stable than the soluble enzyme. The PEGylated immobilized lipase showed high regioselectivity, producing high yields of the C-3 monodeacetylated product at pH 5.0 and 4 °C. Hybrid catalysts composed of an enzyme and metallic complex are also treated in this Special Issue. The article by Christian Herrero and others describes the development of the Mn(TpCPP)-Xln10A artificial metalloenzyme, obtained by non-covalent insertion of Mn(III)-meso-tetrakis(p-carboxyphenyl)porphyrin [Mn(TpCPP), 1-Mn] into xylanase 10A from *Streptomyces lividans* (Xln10A). The complex was found able to catalyze the selective photo-induced oxidation of organic substrates in the presence of [RuII(bpy)3]2+ as a photosensitizer and [CoIII(NH3)5Cl]2+ as a sacrificial electron acceptor, using water as oxygen atom source. The two published reviews describe different subjects with interest in the fields of biocatalysis and mix metallic-biocatalysis, respectively. The review by Anika Scholtissek and others describes the

state-of-the-art regarding ene-reductases from the old yellow enzyme family (OYEs) to catalyze the asymmetric hydrogenation of activated alkenes to produce chiral products with industrial interest. The dependence of OYEs on pyridine nucleotide coenzyme can be avoided by using nicotinamide coenzyme mimetics. In the review, three main classes of OYEs are described and characterized. The review by Yajie Wang and Huimin Zhao highlights some of the recent examples in the past three years that combine transition metal catalysis with enzymatic catalysis. With recent advances in protein engineering, catalyst synthesis, artificial metalloenzymes, and supramolecular assembly, there is great potential to develop more sophisticated tandem chemoenzymatic processes for the synthesis of structurally complex chemicals. In conclusion, these nine publications give an overview of the possibilities of different catalysts, both traditional biocatalysts and hybrids with metals or organometallic complexes to be used in different processes-particularly in synthetic reactions-under very mild reaction conditions.

2. Record Nr.	UNINA9910416497303321
Autore	Déchanéz-Clerc Isabelle
Titolo	Archéologie des enceintes urbaines et de leurs abords en Lorraine et en Alsace (XIIe-XVe siècle) // Yves Henigfeld, Amaury Masquillier
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ISBN	2-915544-65-4
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Altri autori (Persone)	DuvalHélène ElterRené FaucherreNicolas Ferraressolvan GamaFranck GébusLaurent GiuliantoGérard GuillaumeJacques HenigfeldYves JeandemangeSébastien KochJacky KraemerCharles KuchlerPhilippe LaffiteJean-Denis LansivalRenée LichtléFrancis MasquillierAmaury MetzBernhard MeyerNicolas

MoulisCédric
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ReutenauerFabrice
RohmerPascal
SchoeserBruno
VermardLaurent
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Soggetti

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Depuis une vingtaine d'années, les interventions archéologiques en Lorraine et en Alsace ont révélé une centaine de sites ayant livré des vestiges de fortifications de villes médiévales. Ces découvertes sont à l'origine d'un programme de recherche interrégional sur les enceintes urbaines et leurs abords du xiie au xve siècle, réunissant une vingtaine d'archéologues et d'historiens. La publication de ce travail collectif offre l'occasion de renouveler de façon sensible la perception d'une des principales composantes de la ville médiévale, dans une zone de transition politique et culturelle, partagée entre Royaume de France et terres d'Empire. La première partie de l'étude, élaborée à partir de l'analyse des différentes sources documentaires existantes, permet de dresser un premier état de la question. Elle propose également un historique des opérations archéologiques en Lorraine et en Alsace réalisées de 1985 à 2005 ainsi qu'une évocation des recherches entreprises dans les régions voisines. La deuxième comprend dix-huit études monographiques détaillées, portant sur des villes de dimension modeste ou moyenne. Elle est suivie de deux chapitres de synthèse portant sur les composantes physiques de l'enceinte et sur ses abords immédiats. Les principaux apports de l'étude et les questions en souffrance font l'objet d'un chapitre de conclusion ouvrant sur des perspectives de recherche. Zusammenfassung Dank der archäologischen Forschungen der letzten zwanzig Jahre wurden in Lothringen und im Elsass an die hundert Fundstätten mit Resten von mittelalterlichen Stadtbefestigungen nachgewiesen. Diese Entdeckungen waren Ausgangspunkt eines überregionalen Forschungsprogramms, an dem an die zwanzig Archäologen und Historiker beteiligt sind. Es beschäftigt sich mit den Stadtbefestigungen und deren unmittelbarer Umgebung vom 12. bis 15. Jahrhundert. Die

Veröffentlichung dieser Gemeinschaftsarbeit bietet Gelegenheit einen
der Hauptbestandteile der mittelalterlichen Stadt in einer...
