



(12) **CORRECTED EUROPEAN PATENT SPECIFICATION**

(15) Correction information:  
**Corrected version no 1 (W1 B1)**  
**Corrections, see**  
**Bibliography INID code(s) 73**

(48) Corrigendum issued on:  
**25.10.2017 Bulletin 2017/43**

(45) Date of publication and mention  
of the grant of the patent:  
**16.08.2017 Bulletin 2017/33**

(21) Application number: **11844020.5**

(22) Date of filing: **29.11.2011**

(51) Int Cl.:  
**C12N 15/01** <sup>(2006.01)</sup> **C12N 9/00** <sup>(2006.01)</sup>  
**C12Q 1/02** <sup>(2006.01)</sup>

(86) International application number:  
**PCT/SE2011/051449**

(87) International publication number:  
**WO 2012/074476 (07.06.2012 Gazette 2012/23)**

(54) **RATIONAL ENZYME MINING**  
**RATIONALER ENZYMABBAU**  
**IDENTIFICATION RATIONNELLE D'ENZYMES**

(84) Designated Contracting States:  
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB**  
**GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO**  
**PL PT RO RS SE SI SK SM TR**

(30) Priority: **29.11.2010 SE 1051254**

(43) Date of publication of application:  
**09.10.2013 Bulletin 2013/41**

(73) Proprietor: **InZymes Biotech AB**  
**582 23 Linköping (SE)**

(72) Inventors:  
• **KARLSSON, Martin**  
**S-585 99 Linköping (SE)**  
• **JONSSON, Bengt-Harald**  
**S-582 12 Linköping (SE)**  
• **CARLSSON, Uno**  
**S-614 31 Söderköping (SE)**

(74) Representative: **Awapatent AB**  
**P.O. Box 5117**  
**200 71 Malmö (SE)**

(56) References cited:  
**WO-A1-01/12842 WO-A2-2004/097001**

- **PAUL WILME ET AL: "Metaproteomics Provides Functional Insight into Activated Sludge Wastewater Treatment", PLOS ONE, vol. 3, no. 3, 12 March 2008 (2008-03-12), page e1778, XP055108973, ISSN: 1932-6203, DOI: 10.1371/journal.pone.0001778**
- **MARK A. WILLIAMS ET AL: "Metaproteomic characterization of a soil microbial community following carbon amendment", SOIL BIOLOGY AND BIOCHEMISTRY, vol. 42, no. 7, 1 July 2010 (2010-07-01), pages 1148-1156, XP055108975, ISSN: 0038-0717, DOI: 10.1016/j.soilbio.2010.03.021**
- **P. L. Bond ET AL: "Metaproteomics for Analysis of Microbial Function in the Environment", Microbiology Australia, 1 September 2007 (2007-09-01), pages 121-123, XP055108669, Retrieved from the Internet: URL:http://espace.library.uq.edu.au/view/UQ:178271 [retrieved on 2014-03-18]**
- **HENNING BOUWS ET AL: "Fungal secretomes - nature's toolbox for white biotechnology", APPLIED MICROBIOLOGY AND BIOTECHNOLOGY, SPRINGER, BERLIN, DE, vol. 80, no. 3, 18 July 2008 (2008-07-18), pages 381-388, XP019623721, ISSN: 1432-0614**

Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent Bulletin, any person may give notice to the European Patent Office of opposition to that patent, in accordance with the Implementing Regulations. Notice of opposition shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

- SINCHAIKUL S ET AL: "Bioinformatics, functional genomics, and proteomics study of *Bacillus* sp", JOURNAL OF CHROMATOGRAPHY B: BIOMEDICAL SCIENCES & APPLICATIONS, ELSEVIER, AMSTERDAM, NL, vol. 771, no. 1-2, 5 May 2002 (2002-05-05), pages 261-287, XP004350541, ISSN: 1570-0232, DOI: 10.1016/S1570-0232(02)00054-5
- PUNIT SHAH ET AL: "Comparative Proteomic Analysis of *Botrytis cinerea* Secretome", JOURNAL OF PROTEOME RESEARCH, vol. 8, no. 3, 6 March 2009 (2009-03-06), pages 1123-1130, XP055108719, ISSN: 1535-3893, DOI: 10.1021/pr8003002
- KANG Y M ET AL: "Proteomics for biodeterioration of wood (*Pinus taeda* L.): Challenging analysis by 2-D PAGE and MALDI-TOF/TOF/MS", INTERNATIONAL BIODETERIORATION AND BIODEGRADATION, ELSEVIER LTD, GB, vol. 63, no. 8, 1 December 2009 (2009-12-01), pages 1036-1044, XP026740595, ISSN: 0964-8305, DOI: 10.1016/J.IBIOD.2009.07.008 [retrieved on 2009-09-04]
- KIM ET AL: "Proteomics of filamentous fungi", TRENDS IN BIOTECHNOLOGY, ELSEVIER PUBLICATIONS, CAMBRIDGE, GB, vol. 25, no. 9, 23 August 2007 (2007-08-23), pages 395-400, XP022210239, ISSN: 0167-7799, DOI: 10.1016/J.TIBTECH.2007.07.008
- WILMES ET AL: "Metaproteomics: studying functional gene expression in microbial ecosystems", TRENDS IN MICROBIOLOGY, ELSEVIER SCIENCE LTD., KIDLINGTON, GB, vol. 14, no. 2, 1 February 2006 (2006-02-01), pages 92-97, XP005281904, ISSN: 0966-842X, DOI: 10.1016/J.TIM.2005.12.006
- VALENZUELA ET AL: "Genomics, metagenomics and proteomics in biomining microorganisms", BIOTECHNOLOGY ADVANCES, ELSEVIER PUBLISHING, BARKING, GB, vol. 24, no. 2, 1 March 2006 (2006-03-01), pages 197-211, XP005277611, ISSN: 0734-9750, DOI: 10.1016/J.BIOTECHADV.2005.09.004
- CARLOS A JEREZ: "Proteomics And Metaproteomics Applied To Biomining Microorganisms", MICROBIAL PROCESSING OF METAL SULFIDES, SPRINGER, DE, 1 January 2007 (2007-01-01), pages 241-251, XP009177078, DOI: 10.1007/1-4020-5589-7\_12 ISBN: 978-1-4020-5588-1
- FERRER M. ET AL.: 'Metagenomics for mining new genetic resources of microbial communities' J MOL MICROBIOL BIOTECHNOL vol. 16, no. 1-2, 2009, pages 109 - 123, XP055090055
- FERRER M. ET AL.: 'Interplay of metagenomics and in vitro compartmentalization' MICROBIAL BIOTECHNOLOGY vol. 2, no. 1, 2009, pages 31 - 39, XP055090057
- UCHIYAMA T. ET AL.: 'Functional metagenomics for enzyme discovery: challenges to efficient screening' CURRENT OPINION IN BIOTECHNOLOGY vol. 20, no. 6, 2009, pages 616 - 622, XP026778870
- DYKHUIZEN D.E.: 'Chemostats used for studying natural selection and adaptive evolution' METHODS IN ENZYMOLOGY vol. 224, 1993, pages 613 - 631, XP001036679
- DIRK BENNDORF ET AL: "Improving protein extraction and separation methods for investigating the metaproteome of anaerobic benzene communities within sediments", BIODEGRADATION, KLUWER ACADEMIC PUBLISHERS, DO, vol. 20, no. 6, 21 April 2009 (2009-04-21), pages 737-750, XP019746355, ISSN: 1572-9729, DOI: 10.1007/S10532-009-9261-3
- Carla M. R. Lacerda ET AL: "Metaproteomic Analysis of a Bacterial Community Response to Cadmium Exposure", Journal of Proteome Research, vol. 6, no. 3, 1 March 2007 (2007-03-01), pages 1145-1152, XP055156879, ISSN: 1535-3893, DOI: 10.1021/pr060477v
- V. Thongboonkerd ET AL: "Fluoride Exposure Attenuates Expression of *Streptococcus pyogenes* Virulence Factors", Journal of Biological Chemistry, vol. 277, no. 19, 10 May 2002 (2002-05-10), pages 16599-16605, XP055222729, US ISSN: 0021-9258, DOI: 10.1074/jbc.M200746200
- Giuseppe Gallo ET AL: "Differential proteomic analysis reveals novel links between primary metabolism and antibiotic production in *Amycolatopsis balhimycina*", PROTEOMICS, vol. 10, no. 7, 8 April 2010 (2010-04-08), pages 1336-1358, XP055223571, ISSN: 1615-9853, DOI: 10.1002/pmic.200900175
- P. K. H. Lee ET AL: "Evidence for Nitrogen Fixation by "Dehalococcoides ethenogenes" Strain 195", Applied and Environmental Microbiology, vol. 75, no. 23, 1 December 2009 (2009-12-01), pages 7551-7555, XP055223569, US ISSN: 0099-2240, DOI: 10.1128/AEM.01886-09
- Ruth E. Richardson ET AL: "Phylogenetic Characterization of Microbial Communities That Reductively Dechlorinate TCE Based upon a Combination of Molecular Techniques", Environmental Science & Technology, vol. 36, no. 12, 1 June 2002 (2002-06-01), pages 2652-2662, XP055223599, US ISSN: 0013-936X, DOI: 10.1021/es0157797