Maria Dimarogona, PhD

CV-Maria Dimarogona

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Date of Birth: 2nd of December of 1980
Citizenship: Hellenic

A. RESUME

1. Education

• (1998-2004) Diploma in Chemical engineering (**Grade 8.17/10**), School of Chemical Engineering, National Technical University of Athens (NTUA), Greece.
• (2006-2007) Master in "Structural and Functional Engineering of Biomolecules" (MRes with distinction, Grade 16.83/20), Paris XI-Sud/Paris V, France.
Diploma thesis title (INSERM, UMR-S747): "*Structural studies of proteins implicated in the regulation of blood pressure*." Advisor: Dr. Pierre Nioche
• (2007-2012) Ph.D. in Laboratory of Biotechnology, Department of Synthesis and Development of Industrial Processes, School of Chemical Engineering, NTUA. Thesis title: ´´*Structural and molecular studies of biocatalysts implicated in hemicellulose degradation*´´. Supervisor: Professor P. Christakopoulos.

2. Employment record

7. **Assistant Professor,** Department of Chemical Engineering, University of Patras, October 2017-
6. **Postdoctoral Research Associate,** Biotechnology Laboratory, School of Chemical Engineering, NTUA, September 2015-August 2017.
5. **Postdoctoral Research Associate,** Department of Chemistry and Biotechnology, Swedish University of Agricultural Sciences (SLU), Uppsala, Sweden, March 2014–August 2015.
4. **Postdoctoral Research Associate,** Biotechnology Laboratory, School of Chemical Engineering, NTUA, March 2012-February 2014.
3. **Research assistant,** Department of Chemistry, University of Copenhagen, Denmark, February-June 2011.
2. **Research assistant,** Biotechnology Laboratory, School of Chemical Engineering, NTUA, October 2007-February 2012.
1. **Chemical Engineer,** Domylco Construction Chemicals company, June 2004-May 2006.

3. Research Experience-Participation in Research Programmes

5. 2014-2015: Postdoctoral Research associate (participated in proposal design and submission and performed research): "**Structure and mechanism of novel polysaccharide oxidases**", funded by VINNOVA (Swedish Govermental Agency for Innovation Systems),

53000€.

4. 2012-2015: Postdoctoral Research associate (participated in experimental design and supervision): "**Metagenomics of ligninolytic microorganisms – Bioconversion of plant by-products into high-added value products**", THALIS PROJECT, funded by Hellenic Ministry of Education, 180000 €

3. 2011-2013: Postdoctoral Research associate (performed part of the research work): "**Upgrading of Textile products using novel enzyme activities**", SYNERGASIA 2009, funded by the Greek Ministry of Economy, Competitiveness and Shipping, 220000 €

2. 2010-2013: Research associate (performed part of research work): "**Molecular, structural and catalytic study of glucuronoyl esterases identified by the use of bioinformatics tools**", National Programme of Fundamental Research IRAKLITOS II, funded by Hellenic Ministry of Education, 40000 €

1. 2008-2010**:** Research asscociate (performed part of experimental work): "**Molecular, structural and catalytic study of novel biocatalysts (hemicellulases) identified by the use of bioinformatics tools**", PEVE research project funded by NTUA.

4. Teaching and Supervision experience

- **Teaching assistant** (2007-2011) at the laboratory courses of the Biotechnology Laboratory, School of Chemical Engineering, National Technical University of Athens:**"Biotechnology and Environment"** and **"Applied Biotechnology"**

- **Supervision of BSc and MSc students:** I have supervised 5 students for their diploma thesis [Toufa T. (Aug 2011), Kayange I. (Aug 2011), Katsibouras C. (Feb 2013), Athanasiou D. (Apr 2014) and Cheras B. (Jul 2014) in NTUA, and Klaas Y. (Jul 2015), in SLU]

- **Opponent** for Master Thesis examination of Bing Liu, entitled "Dissecting part of the catalytic mechanism of a new class oxidative biomass degrading enzymes", in University of Uppsala, Sweden (Jun 2014).

- **Tutor** at the practical session entitled ”Practical on 3D structure determination from MX data” in the frame of the workshop entitled ”Dilemmas in structural biology:selection & integration of methods” held in NHRF, Athens, Greece (February 2016)

5. Awards

- 2016: **“Stamos Stournas”** award for the best 2012 PhD Thesis conducted in the School of Chemical Engineering of NTUA.

- 2014-2015: Scholarship "**VINNMER Marie Curie Incoming**" from VINNOVA for postdoctoral work in the Department of Chemistry and Biotechnology, SLU, Sweden
- 2014: Supervision of the diploma thesis of Vasilios Cheras that was selected as the best thesis of the School of Chemical Engineering (NTUA) for 2014.
- 2011: **European Molecular Biology (EMBO) fellowship** for short-term scientific visit to the University of Copenhagen (Denmark).
- 2010: Award (2nd) in the 4th Annual Workshop of COST FP0602, Cesme, Turkey, 21-24 September 2010, for the presentation entitled "*Synergistic enhancement of cellulase performance on hydrothermal pretreated wheat straw by the addition of GH-61 activity*".
- 2009: **COST Action FP0602 fellowship** for short-term scientific visit to the University of Copenhagen (Denmark).
- 2006-2010: State Scholarship's Foundation, National Technical University of Athens (Master and PhD thesis Scholarship).

6. Other

- Registered user of the following Stations of Synchrotron Radiation: Synchrotron Radiation Source (ESRF), France, SRS Daresbury Laboratory (till 2008), UK, EMBL Hamburg Outstation, Germany and MAX-Lab, Sweden.
- Reviewer in **5** peer-reviewed Biotechnology Journals: World Journal of Microbiology and Biotechnology, Food and Bioproducts Processing, Biotechnology for Biofuels, Journal of Proteomics and Enzymology and Computational and Structural Biology Journal.

7. Professional Affiliations

1. Hellenic Crystallographic Association (HeCrA)
2. Hellenic Society of Biochemistry and Molecular Biology (HSBMB)
3. Member of the Technical Chamber of Greece (TEE)

B. AUTHORSHIP

1. Book Chapters

1. Dimarogona M., Topakas E. (2015) **Chapter 12. Regulation and heterologous expression of lignocellulosic enzymes in *Aspergillus*,** in "New and future developments in microbial biotechnology and bioengineering: *Aspergillus* system properties and applications". Gupta V.K., Elsevier , 12:171-185.

2. Publications (Citation Index)

15. Karnaouri A., Muraleedharan M.N., Dimarogona M., Topakas E., Rova U., Sandgren M. and Christakopoulos P. (2017) **Recombinant expression of thermostable processive *Mt*EG5 endoglucanase and its synergism with *Mt*LPMO from *Myceliophthora thermophila* during the hydrolysis of lignocellulosic substrates.** Biotechnology for Biofuels, 10:126
14. Nikolaivits E.*, Dimarogona M.*, Fokialakis N., Topakas E. (2017) **Marine-Derived Biocatalysts: Importance, Accessing and Application in Aromatic Pollutant Bioremediation.** Frontiers in Microbiology, 8:265.
    *These authors have contributed equally to this work.
13. Katsimpouras C., Dimarogona M., Petropoulos P., Christakopoulos P., Topakas E. (2016) **A thermostable GH26 endo-β-mannanase from Myceliophthora thermophila capable of enhancing lignocellulose degradation.** Applied Microbiology and Biotechnology, 100(19): 8385-8397.
12. Courtade G., Wimmer R., Røhr Å.K., Preims M., Felice A.K., Dimarogona M., Vaaje-Kolstad G., Sørlie M., Sandgren M., Ludwig R., Eijsink V.G., Aachmann F.L. (2016) **Interactions of a fungal lytic polysaccharide monooxygenase with β-glucan substrates and cellobiose dehydrogenase** Proceedings of the National Academy of Sciences of the United States of America, 113(21): 5922-27.
11. Courtade G., Wimmer R., Dimarogona M., Sandgren M., Eijsink V.G., Aachmann F.L. (2016) **Backbone and side-chain 1H, 13C, and 15N chemical shift assignments for the apo-form of the lytic polysaccharide monooxygenase NcLPMO9C.** Biomolecular NMR Assignments, 10(2): 277-280.
10. Dimarogona M., Nikolaivits E., Kanelli M., Christakopoulos P., Sandgren M., Topakas E. (2015) **Structural and functional studies of a *Fusarium oxysporum* cutinase with polyethylene terephthalate modification potential.** Biochimica et Biophysica Acta, 1850(11): 2308-17.
9. Borisova A.S., Isaksen T., Dimarogona M., Kognole A.A., Mathiesen G., Várnai A., Røhr Å.K., Payne C.M., Sørlie M., Sandgren M., Eijsink V.G. (2015) **Structural and functional characterization of a lytic polysaccharide monooxygenase with broad substrate specificity**, Journal of Biological Chemistry, 290(38): 22955-69.
8. Katsimpouras C., Benarouche A., Navarro D., Karpusas M., Dimarogona M., Berrin J.-G., Christakopoulos P., Topakas E. (2014) **Enzymatic synthesis of model substrates recognized by glucuronoyl esterases from *Podospora anserina* and *Myceliophthora thermophila*.** Applied Microbiology and Biotechnology, 98(12), pp.5507-5516.

7. Dimarogona M., Topakas E., Christakopoulos P. (2013). **Recalcitrant polysaccharide degradation by novel oxidative biocatalysts.** Applied Microbiology and Biotechnology, 97, pp. 8455-8465.
6. Charavgi M., Dimarogona M., Topakas E., Christakopoulos P., Chrysina E. (2013). **The structure of a novel glucuronoyl esterase from *Myceliophthora thermophila* gives new insights on its role as a potential biocatalysts.** Acta Crystallographica Section D, 69(1), pp. 63-73.
5. Dimarogona M., Topakas E., Christakopoulos P. (2012). **Cellulose degradation by oxidative enzymes.** Computational and Structural Biotechnology Journal, 2(3), http://dx.doi.org/10.5936/csbj.201209015
4. Dimarogona M., Topakas E., Olsson L., Christakopoulos P. (2012). **Lignin boosts the cellulase performance of a GH-61 enzyme from *Sporotrichum thermophile*.** Bioresource Technology, 110, pp. 480-487.
3. Dimarogona M., Topakas E., Christakopoulos P., Chrysina E.D. (2012). **The structure of a GH10 xylanase from *Fusarium oxysporum* reveals the presence of an extended loop on top of the catalytic cleft.** Acta Crystallographica Section D, 68(7), pp. 735-742.
2. Topakas E., Moukouli M., Dimarogona M., Christakopoulos P. (2012). **Expression, characterization and structural modelling of a feruloyl esterase from the thermophilic fungus *Myceliophthora thermophila.*** Applied Microbiology and Biotechnology, 94(2), pp. 399-411.
1. Topakas E., Moukouli M., Dimarogona M., Vafiadi C., Christakopoulos P. (2010). **Functional expression of a thermophilic glucuronoyl esterase from *Sporotrichum thermophile*: identification of the nucleophilic serine.** Applied Microbiology and Biotechnology, 87, pp. 1765-1772

3. International Conference Attendances

17. Dimarogona M., Christakopoulos P., Topakas E. and Sandgren M. **Crystallization and preliminary X-ray diffraction analysis of a lytic polysaccharide monooxygenase from the biomass degrading fungus *Myceliophthora thermophile***. Revolutions in Structural Biology: Celebrating the 100th Anniversary of Sir John Kendrew, 16-17 November 2017, Heidelberg, Germany. Abstract book p. 75 (P-53).

16. Nikolaivits E., Dimarogona M., Topakas E. **Protein engineering of a fungal polyphenoloxidase and its potential application in bioconversion of POPs.** 13th International Symposium on Biocatalysis and Biotransformations 9-13 July 2017, Budapest, Hungary. Abstract book p.327 (P-262).

15. Courtade G., Wimmer R., Røhr Å. K., Preims M., Felice A.K.G., Dimarogona M., Vaaje-Kolstad G., Sørlie M., Sandgren M., Ludwig R., Eijsink V. G. H., Aachmann F. L. **Interactions of a fungal lytic polysaccharide monooxygenase with β-glucan substrates and cellobiose dehydrogenase.** 12th Carbohydrate Bioengineering Meeting, April 23-26 2017, BOKU Vienna, Austria, Abstract Book Poster P14, p. 115.

14. Dimarogona M., Liu B., Westereng B., Sandgren M. **Structure and function of a cellulose degrading LPMO from the white-rot basidiomycete *Heterobasidion irregulare*.** Cellulosomes, Cellulases & Other Carbohydrate Modifying Enzymes Gordon Research Conference 2-7 August 2015, Proctor Academy, Andover NH, USA, Conference Proceedings P14 (session II), p.13**.**

13. Isaksen T., Borisova A.S., Dimarogona M., Varnai A., Sørlie M., Røhr A.K., Payne C.M., Ståhlberg J., Sandgren M., Eijsink V.G.H. **Structural and functional characterization of *Nc*LPMO9C, a broad-specificity lytic polysaccharide monooxygenase.** Cellulosomes, Cellulases & Other Carbohydrate Modifying Enzymes Gordon Research Conference 2-7 August 2015, Proctor Academy, Andover NH, USA, Conference Proceedings P24 (session II), p.14.

12. Yperman K., Dimarogona M., Christakopoulos P., Topakas E., Sandgren M., Ståhlberg J. **Binding affinity determination of lytic polysaccharide monooxygenases.** 18th Annual Conference of the Swedish Structural Biology Network, 12-15 June 2015, Tällberg, Sweden, Abstract Book Poster P33, p. 77

11. Muraleedharan M.N., Karnaouri A., Dimarogona M., Topakas E., Rova U., Christakopoulos P. **Development of tailor-made "oxidative boosted" enzyme mixtures for the bioconversion of targeted feed stocks.** 11th Carbohydrate Bioengineering Meeting, Finland, 10-13 May 2015, Abstract Book Poster P85, p. 161

10. Borisova A.S., Isaksen T., Dimarogona M., Varnai A., Sørlie M., Røhr A.K., Payne C.M., Ståhlberg J., Sandgren M., Eijsink V.G.H. **Insights into LPMO diversity from structural and functional characterization of NcLPMO9C, a broad-specificity lytic polysaccharide monooxygenase**. 11th Carbohydrate Bioengineering Meeting,Espoo, Finland, 10-13 May 2015, Abstract Book Poster P16, p. 92

9. Dimarogona M., Nikolaivits E., Kanelli M., Christakopoulos P., Sandgren M., Topakas E. **Structural and functional studies of a Fusarium oxysporum cutinase with polyethylene terephthalate modification potential.** 11th Carbohydrate Bioengineering Meeting,Espoo, Finland, 10-13 May 2015, Abstract Book Poster P30, p. 106

8. Dimarogona M., Chrysina E.D., Christakopoulos P., Sandgren M., Topakas E. **Structural studies of a feruloyl esterase from *Fusarium oxysporum* employing experimental phasing approaches.** 18th Annual Conference of the Swedish Structural Biology Network, 13-16 June 2014, Tällberg, Sweden, Abstract Book Poster P19, p. 18

7. Charavgi M.D., Dimarogona M., Moukouli M., Topakas E., Christakopoulos P., Chrysina E.D. **The crystal structure of a novel glucuronoyl esterase from *Sporotrichum thermophile* gives new insights on its role as a potential biocatalyst.** Plant and Seaweed Polysaccharides Workshop, Nantes, France, July 17-20, 2012, Abstract Book P32.

6. Christakopoulos P., Topakas E., Dimarogona M., Moukouli M., Karnaouri A. **Glycosyl hydrolases from *Sporotrichum thermophile* with biotechnological potential**.12th

Bratislava Symposium on Saccharides, Smolenice, Slovakia, 19-23 June 2011, Abstract Book p. 31.

5. Dimarogona M., Topakas E., Christakopoulos P. **Cloning, expression and characterization of a family 61 glycoside hydrolase from the thermophilic fungus *Myceliopthora thermophila*.** 9th Carbohydrate Bioengineering Meeting, Lisbon, Portugal, 15-18 March 2011. Abstract Book p.94

4. Topakas E., Moukouli M., Dimarogona M., Vafiadi C., Christakopoulos P. **Identification of the nucleophile serine in glucuronoyl esterases.** The Fourth Annual Workshop of COST FP0602, Cesme, Turkey, 21-24 September 2010. Abstract Book p. 65 (**2ο βραβείο καλύτερης παρουσίασης poster**).

3. Dimarogona M., Topakas E., Christakopoulos P. **Synergistic enhancement of cellulase performance on hydrothermal pretreated wheat straw by the addition of GH-61 activity.** The Fourth Annual Workshop of COST FP0602, Cesme, Turkey, 21-24 September 2010. Abstract Book p. 20.

2. Dimarogona M., Topakas E., Felby C., Thygesen L.G., Christakopoulos P. **Cloning, expression and characterization of a glycoside hydrolase family 61 endoglucanase from *Fusarium oxysporum.*** PhD course on Biotechnology for Bioethanol Production. 18-23 October 2009, Chalmers University of Technology, Goteborg, Sweden.

1. Dimarogona M., Topakas E., Christakopoulos P., Chrysina E.D. **Structural studies of new xylanolytic enzymes.** EMBO Practical Course on X-ray Crystal Structure Determination of Macromolecules, September 14-20 2008 Saint Aubin, France. Abstract Book p.3.

4. National Conference Attendances

10. Nikolaivits E., Chalima A., Dimarogona M., Topakas E. **Protein engineering of a polyphenol oxidase from *Myceliophthora thermophila* towards enhancement of its monophenolase activity.** 7th National MikroBioKosmos Conference 7-9 April 2017, Athens. Abstract book p. 228-229.

9. Dimarogona M., Topakas E., Christakopoulos P., Chrysina E.D **Crystal structure of a ferulic acid esterase from *Fusarium oxysporum* that belongs to the fungal tannase superfamily**. HeCrA-HSCBB16, Joint International Conference of Hellenic Crystallographic Association & Hellenic Society for Computational Biology and Bioinformatics 7-9 October 2016, Agricultural University of Athens. Abstract book p.112.

8. Nikolaivits E., Dimarogona M., Norra G.F., Voutsas E., Christakopoulos P. Topakas E. Structural and funnctional studies of a cutinase from ***Fusarium oxysporum*** **with**

synthetic activity in water-oil systems and thermodynamic study of the reacting system. 6th National MikroBioKosmos Conference 3-5 April 2015, Athens. Abstract book p. 228-229.

7. Karamolegkou M., Dimarogona M., Halila S., Vorgias C.E., Chrysina E.D **Structural studies of Chitobiase from S. marcescens in complex with Glc-NAc derivatives for potential biomedical and industrial applications.** 65th conference of Hellenic Society of Biochemistry and Molecular Biology (HSBMB), 28-30 November 2014, Thessaloniki, P83 (Session I), p.34.

6. Karamolegkou M., Dimarogona M., Halila S., Vorgias C.E., Chrysina E.D **Probing chitobiase active site with potent NAG derivatives, strong inhibitors of hexosaminidase with a broad range of industrial and biomedical applications**. Current Trends in Structural Biology & 7th International Conference of the Hellenic Crystallographic Association, 19-21 September 2014, FORTH, Crete. Abstract book P21, p.74.

5. Charavgi M.D., Dimarogona M., Moukouli M., Topakas E., Christakopoulos P., Chrysina E.D. **The 3-D structure of a novel Glucuronoyl Esterase from *Sporotrichum thermophile* (StGE2) at 1.55 Å.** Eugenides Foundation, 62nd HSBMB Conference, December 9-11, 2011, Athens, Greece, p. 252.

4. Charavgi M.D., Dimarogona M., Moukouli M., Topakas E., Christakopoulos P., Chrysina E.D. **Crystallographic studies of glucuronoyl esterase from *Sporotrichum thermophile* – a novel biocatalyst for the plant biomass degradation.** 11th Panhellenic Symposium of Catalysis, October 22-23, 2010, Athens, Greece, Abstract book A21.

3. Dimarogona M., Topakas E., Christakopoulos P., Chrysina E. **Crystal structure of a new endo-β-1,4-xylanase from *Fusarium oxysporum* determined at 1.9 Å resolution.** Hellenic Crystallographic Association, 5th International Conference, Thessaly, Greece, 24-25 September 2010. **Oral presentation**.

2. Christakopoulos P., Katapodis P., Topakas E., Vafiadi C., Xiros C., Moukouli M., Dimarogona M., Kourtoglou E. **Bioconversion of lignocellulosic biomass into high added value products.** 1st National MikroBioKosmos Conference, 12-14 December 2008, Abstract Book, p. 265-267.

1. Dimarogona M., Moukouli M., Topakas E., Christakopoulos P & Chrysina E.D. **Structural studies of new hemicellulose degrading enzymes.** Hellenic Crystallographic Association, 4th Conference, 26-27 September 2008, Athens. Abstract Book, p. 53.