

Eleni Ioannou, PhD
Molecular Biologist

Item	Number
Books	1
Book Chapters	
Articles in International Peer-Reviewed Journals Indexed in Bibliographical Databases	9
Articles not Indexed in Bibliographical Databases	
Refereed International Conference Presentations	9
Invited Presentations	
Google Scholar/Scopus Citation Index (including self-citations)	136
Google Scholar/Scopus h-index	7
Involved in Successful Grant Applications	

1. EDUCATION

2014 – 2019 **Institute of Biological, Environmental and Rural Sciences, Abeyistwath University**
PhD in Biological Sciences with a focus on enzymology and *in silico* protein design

The primary goal of the thesis was the development of a tailor-made hemicellulolytic multifunctional enzyme that will target a complex substrate rich in hemicellulose.

For this reason, the structure-function relationship of a novel unusual enzyme was studied using homology modeling and small-angle X-ray scattering (SAXS) techniques to predict its structure. In addition, the full-length enzyme (consisting of a GH10 xylanase domain interspersed by 2 contiguous CBM domains) as well as a series of truncated variants were further biochemically characterised.

The proposed structure served as a blueprint for the rational design of a bi-functional chimeric enzyme where the CBM domains were replaced by a protein with xylosidase activity. The chimera was successfully overexpressed and shown to retain both parental enzyme activities when assayed on a complex biomass substrate.

2012 – 2014 **Department of Biochemistry and Biotechnology, University of Thessaly**
MSc in Molecular Biology Applications- Molecular Genetics- Diagnostic Markers, (8,17)
MSc Research Project: Methoxy- and methyl- phenyl- nucleosides as inhibitors of thymidylate synthase. **Laboratory of Bio- Organic Chemistry**

2006 – 2011 **Democritus University of Thrace**
BSc in Molecular Biology and Genetics, Department of Molecular Biology and Genetics, (6,46)
Honors Thesis research project: Molecular reconstitution of crystallizable troponin complexes of insect *Lethocerus indicus* volatile muscles.
Laboratory of Biomolecular Function and Structure

2. EMPLOYMENT HISTORY

2019 – 2022 **Aalto University, School of Chemical Engineering, Department of Bioproducts and Biosystems**
Post-doctoral researcher in the Protein Technology group
Research interests: Biophysical characterization of non-catalytic proteins. (part of the BioUPGRADE project)

2011-2013 **Research Genetic Cancer Centre Ltd (R.G.C.C. Ltd)**
Molecular Biologist, Research & Development department, Florina, Greece
Research interests: Cancer stem cells, circulating tumor cells, flow cytometry analysis, gene expression analysis.

3. ACADEMIC AND SCIENTIFIC EXPERIENCE

3.1. Undergraduate teaching

- 10/2023-02/2024 **Department of Food Science and Nutrition, University of Thessaly**
- External Department Instructor Academic Year 2023-2024 for the courses «Biology» and «Biochemistry»
- Teaching Biology and Biochemistry courses
 - Preparing and Demonstrating the Lab practicals
- Department of Nutrition and Dietetics, University of Thessaly**
- External Department Instructor Academic Year 2023-2024 for the course «Biochemistry»
- Teaching and demonstrating Lab practicals

- 04-06/2023 **Department of Animal Science, University of Thessaly**
- Academic scholar for the course «Genetic Improvement»
- Teaching and demonstrating the Lb practicals

3.2. Postgraduate teaching

- 04/10-09/12
2021 **Department of Bioproducts and Biosystems, School of Chemical Engineering, Aalto University**
- And Master's Programme in Life Science Technologies
- 28/10-02/12
2019 Laboratory course in Biosystems and biomaterials CHEM- E8110
- 01/03-20/04
2021 **Department of Bioproducts and Biosystems, School of Chemical Engineering, Aalto University**
- And Master's Programme in Chemical, Biochemical and Materials Engineering
- 22/02-14/04
2020 Biolab III CHEM-E3160

- 3.3. Supervision/Co- supervision of 1 completed Undergraduate, 3 completed Postgraduate and 1 ongoing Doctoral Theses

4. PUBLICATIONS

4.1. Books

PhD Thesis

«Development of novel enzymatic tools for the production of xylose- based products within a lignocellulosic biorefinery concept.»

Eleni Ioannou, Aberystwyth University, Aberystwyth, 2018

4.2. Articles in International Peer-Reviewed Journals Indexed in Bibliographical Databases

1. Pohto, A., Koponen, M., Master, E. & Ioannou, E. (manuscript in preparation). "Site-directed mutagenesis of fungal loosenin-like proteins to identify key amino acid residues impacting loosenin function."
2. Hiltunen, S., Sapkota, J., Ioannou, E., Momeni, M., H., Master, E. & Ristolainen, M. (prepared for submission). "Comparative assessment of chemical and biochemical approaches to the activation of lignocellulosic materials and emerging opportunities for expansin-related proteins."
3. Monschein, M., Ioannou, E., Koitto, T., Al Amin, L. A. K. M., Varis, J. J., Wagner, E. R., Mikkonen, K. S., Cosgrove, D. J., & Master, E. R. (2023). Loosenin-Like Proteins from *Phanerochaete carnosae* Impact Both Cellulose and Chitin Fiber Networks. *Applied and environmental microbiology*, **89**(1), e0186322.
4. Wu, H., Ioannou, E., Henrissat, B., Montanier, C.Y., Bozonnet, S., O'Donohue, M.J. & Dumon, C. (2021). "Multimodularity of a GH10 Xylanase Found in the Termite Gut Metagenome." *Appl Environ Microbiol.*, **87**(3): e01714-20.
5. Bouraoui, H., Desrousseaux, M. L., Ioannou, E., Alvira, P., Manai, M., Remond, C., Dumon, C., Fernandez-Fuentes, N. & O'Donohue, M. J. (2016). "The GH51 alpha-l-arabinofuranosidase from *Paenibacillus* sp. THS1 is multifunctional, hydrolyzing main-chain and side-chain glycosidic bonds in heteroxylans." *Biotechnology for biofuels*, **9**, 140.
6. Toloudi, M., Ioannou, E., et al. (2014). "Comparison of the growth curves of cancer cells and cancer stem cells." *Current stem cell research & therapy*, **9**(2): 112-116.
7. Apostolou, P., Toloudi, M., et al. (2013). "AP-1 Gene Expression Levels May Be Correlated with Changes in Gene Expression of Some Stemness Factors in Colon Carcinomas." *Journal of Signal Transduction*, Volume 2013, Article ID 497383, 5 pages
8. Apostolou, P., Toloudi, M., et al. (2013). "Study of the interaction among Notch pathway receptors, correlation with stemness, as well as their interaction with CD44, dipeptidyl peptidase-IV, hepatocyte growth factor receptor and the SETMAR transferase, in colon cancer stem cells." *Journal of receptor and signal transduction research*, **33**(6): 353-358.

9. Apostolou, P., Toloudi, M., et al. (2013). "Anvirzel in combination with cisplatin in breast, colon, lung, prostate, melanoma and pancreatic cancer cell lines." *BMC pharmacology & toxicology*, **14**: 18.
10. Apostolou, P., Toloudi, M., et al. (2012). "Cancer stem cells stemness transcription factors expression correlates with breast cancer disease stage." *Current stem cell research & therapy*, **7**(6): 415-419.
11. Tsiamita, M., Pavlaki, M., et al. (2012). "Development of a sensitive cost-effective capture ELISA for detection of murine monoclonal antibodies: correlation with SPR biosensor technology." *Anti-inflammatory & anti-allergy agents in medicinal chemistry*, **11**(2): 173-181.

5. REFEREED INTERNATIONAL CONFERENCE PRESENTATIONS

- August 2022, 6th Symposium on Biotechnology Applied to Lignocelluloses, Jack Poole Hall, UBC Campus, Vancouver, British Columbia, Canada. -Title: Action of fungal loosening on cellulosic and chitin substrates. (Poster) Authors: D. Dahiya, M. Monschein, **E. Ioannou**, L. A. K. M. Al Amin, A. Y. Wang, S. de Ruijter, E. Master
- July 2019, *Gordon Research Conference on Carbohydrate-Active Enzymes for Glycan Conversions*, Proctor Academy 204 Main Street, Andover, United States. -Title: Unravelling the role of secreted, non-hydrolytic fungal proteins in biomass modification. (Poster) Authors: M. Monschein, L. A. K. M. Al Amin, **E. Ioannou**, C. Tacer, J. Varis, K. S. Mikkonen, E. Master
- September 2017, *Enzyme Engineering XXIV*, Pierre Baudis Congress Center Toulouse, France, Engineering Conferences International. -Title: Multifunctional enzyme engineering by computational design for lignocellulosic valorization. (Poster) Authors: **E. Ioannou**, D. Bryant, M. O' Donohue, N. Fernandez- Fuentes, C. Dumon
- April 2017, *2nd LBNet International Conference*, Shrigley Hall, Cheshire, UK, LBNet, BBSRC, University of York. -Title: Novel enzymatic tools for cell-wall deconstruction using metagenomic screening and protein modelling. (Oral presentation) Authors: **E. Ioannou**, C. Dumon, D. Bryant, N. Fernandez- Fuentes, M. O' Donohue
- May 2015, *11th Carbohydrate Bioengineering Meeting*, Espoo, Finland, University of Helsinki, VTT and Aalto-liopisto. -Title: Characterization of an unusual multimodular GH10 xylanase. (Poster) Authors: **E. Ioannou**, H. Wu, G. Cioci, B. Guyez, G. Arnal, C. Dumon, D. Bryant, N. Fernandez- Fuentes, M. O' Donohue
- September 2014, *25th European Grassland Federation General Meeting*, Aberystwyth, Wales, U.K., EGF -Title: Development of novel enzymatic tools for the production of xylose-based products within a lignocellulosic biorefinery concept. (Poster) Authors: **E. Ioannou**, C. Dumon, D. Bryant, M. O' Donohue, N. Fernandez- Fuentes
- March 2013, *Science to Market Conference. Personalised Medicine - Trends in 2013*, Cologne, Germany, EAPB - Title: DCs as cancer vaccines. Mature DCs as a tool to sustain minimal residual disease status in malignancies. (Poster) Authors: **E. Ioannou**, M. Chatziioannou, M. Toloudi, P. Apostolou, I. Papatotiriou

- April 2012, *18th Hellenic Congress of Clinical Oncology*, Athens, Greece, Hellenic Society of Medical Oncology –Title: Colon Cancer Cells and Cancer Stem Cells: A growth curves comparison. (Poster) Authors: **E. Ioannou**, M. Chatzioannou, M. Toloudi, P. Apostolou, I. Papatotiriou
- December 2011, *62nd Congress of Hellenic Society for Biochemistry and Molecular Biology*, Athens, Greece, HSBMB. -Title: Studying the impact of 5-FU in colon cancer cells in comparison with colon cancer stem cells. (Poster) Authors: **E. Ioannou** , P. Apostolou, M. Toloudi, M. Chatzioannou, I. Papatotiriou

6. ADMINISTRATIVE EXPERIENCE

-September- December 2017, participated in the European Union Science Olympiad (EUSO) organised locally in Kastoria, Greece to prepare students for the competition in Biology, design the experiment in which students were examined, supervise the examination, and mark the final reports prepared by the students

-October 10- October 16 2020, and October 18- October 22 2021 organized a week long hands on training of high school students in preparation for the International Biology Olympiad (IBO) in collaboration with University of Helsinki, Aalto University, and Aalto Junior

7. MISCELLANEOUS

AWARDS

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| 2016 | ‘Best poster’ award, Public Engagement and Impact Postgraduate Module, Community Day event 18/06/2016, Old College, Aberystwyth, Aberystwyth University |
| 2014 | ‘Best business idea’ and ‘Audience’ award, ‘ <i>The Journey 2014</i> ’, Warwick U.K., Berlin Germany, Wroclaw Poland, Climate- KIC, EIT. |

ENGLISH FRENCH

First Certificate in English from Cambridge University
Diplôme d'études en langue française (DELF) tout public, level A2

COMPUTERS Excellent - European Computer Driving Licence, ECDL Core