

# CONSTANTINOS E. VORGIAS

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## ACADEMIC QUALIFICATIONS

- University of Athens School of Natural and Mathematic Sciences, Faculty of Biology (1980)
- Ph-D thesis from the Natural Sciences Faculty of Karls Ruprecht Heidelberg University, Germany (1985)

## RESEARCH/PROFESSIONAL ACTIVITIES

- Post-graduate fellowship in the department of Biology, Nuclear Research Centre, "Demokritos" Athens (1980).
- Ph-D fellowship from Max-Planck Department for Cell Biology, Heidelberg, Germany, Prof. Dr. Peter Traub (1981-1984).
- Visiting scientist at the European Molecular Biology Laboratory, Heidelberg, Germany Structural department. Prof. Dr. D. Tsernoglou (1984-1985).
- Military service in the Greek army, lieutenant in reserve (1985-1987).
- Senior scientist fellowship of the Biotechnology Program of European Community. Max-Planck Institute for Biophysical Chemistry, Department for Molecular Genetics, Prof. Dr. D. Galwitz (1988-1989).
- Staff Scientist at the European Molecular Biology Laboratory, Hamburg-Outstation. Head of Biochemistry-Molecular Biology Laboratory (1989-1996).

- Professor of Biochemistry at the Department of Biochemistry-Molecular Biology, Faculty of Biology of National and Kapodistrian University of Athens (1996-now).
- Head of the Department of Biochemistry-Molecular Biology, Faculty of Biology of National and Kapodistrian University of Athens (2009-2010).
- 2010-2011 Responsible for the building maintenance of the School of Natural Sciences of Athens University
- 2011 (2-6) Four months Sabbatical with short visits at: EMBL Hamburg (GR), Netherlands Cancer Institute (NL), Polish Academy of Science (PL), Ulm University (GR), Imperial College (UK).

## OTHER ACTIVITIES

- Active Member of the European Chitin Society since 1993
- Active Member of the Greek Biological Society since 1981
- Active Member of the Greek Biochemical Biophysical Society since 1985
- Active Member of the Hellenic Crystallographic Society, since 2001
- Vice President of the ALUMNI Heidelberg in Greece, since 2002.
- Active member of the Greek Society for Biosciences, since 2004.
- President of the Greek Biotechnological Society, since 2006
- Member of the Greek National Res. Comm. (2006-2008)
- Vice President (elected) of the Faculty of Biology (2005-2007)
- Member and President of the Greek National Examination Comm. (2006-now)
- Organization of the 1<sup>st</sup> International School at the University of Athens in cooperation with Ulm University (International Post Graduate School). Protein structure and function and Kinases as drug targets. Sept 2010, 22-26.
- Organization of the 2<sup>nd</sup> International School at the University of Athens in cooperation with Ulm University (International Post Graduate School). Biochemical, Molecular Biology and structural basis of the biology of stem cells. Sept 2011, 20-24.
- Organization of the 1<sup>st</sup> National School at the University of Athen with the title From Gene to Protein and more.... 2011, 8-12/7.
- Organization of the International Congress in Extremophiles Santorini-Greece Sept 2012, 22-28.
- Organization of the 1<sup>st</sup> summer school at the Faculty of Biology of Athens University with the title: Proteins: from the gene to the structure and more..." 1-3 July 2011.

## **DISTINCTIONS**

- Post-graduate fellowship award from the Greek Ministry for Atomic Energy (1981).
- Post-graduate fellowship award from Max-Planck Society (1981-1985).
- Senior scientist fellowship award from the Biotechnology Program of European Community (1988-1989).
- Short-term fellowship award from European Molecular Biology Organization (EMBO) (1991).
- Senior Researcher Fellowship award of the DGXII of EU Biotechnology program, Visiting Professor at the Technical University of Harburg – Hamburg (1998).
- Visiting Professor award from the Max-Planck Society to work at the Institute for Cell Biology, Heidelberg (2000).
- DAAD Senior Research award as visiting Professor at the Technical University of Harburg-Hamburg (2003).
- Visiting Professor award of Hans Kupczyk Foundation at the Ulm University (2005).
- DAAD Senior Research award as visiting Professor at the Technical University of Harburg-Hamburg (2006).
- DAAD Senior Research award as visiting Professor at the EMBL Hamburg-Germany- Ulm and Regensburg Universities (Summer 2009).

## **SCIENTIFIC PUBLICATIONS / CITATIONS**

- In international journals and books, about 100 publications with a citation index above 3000 and impact factor over 300.
- Over 130 contributions in national and international conferences and workshops.
- Invited speaker in over 30 national and international conferences and lectures.
- Over 40 Diplom thesis
- About 10 Diplom Master thesis
- 10 PhD student

## PUBLICATIONS IN INTERNATIONAL JOURNALS AND BOOKS

1. Nelson W. J., Vorgias C. E. and Traub P. (1982) A rapid method for the large scale purification of the intermediate filament protein vimentin by single-stranded DNA cellulose affinity chromatography. *Biochem. Biophys. Res. Commun.* 106, 1141-1147.
2. Traub P., Nelson W. J., Kühn S. and Vorgias C. E. (1983) The interaction *in vitro* of the intermediate filament protein vimentin with naturally occurring RNAs and DNAs. *J. Biol. Chem.* 258, 1456-1466.
3. Vorgias C. E. and Traub P. (1983) Isolation of glial fibrillary acidic protein from bovine brain white matter and its purification by affinity chromatography on single-stranded DNA cellulose. *Biochem. Biophys. Res. Comm.* 115, 68-75.
4. Traub P. and Vorgias C. E. (1983) Involvement of the N-terminal polypeptide of vimentin in the formation of intermediate filaments. *J. Cell Sci.* 63, 43-67.
5. Vorgias C. E. and Traub P. (1983) Isolation, purification and characterisation of the intermediate filament protein desmin from porcine smooth muscle. *Prep. Biochem.* 13, 227-243.
6. Traub P. and Vorgias C. E. (1984) Differential effect of arginine modification with 1,2-cyclohexanedione on the capacity of vimentin and desmin to assemble into intermediate filaments and to bind to nucleic acids. *J. Cell Sci.* 65, 1-20.
7. Traub P., Vorgias C. E. and Nelson W. J. (1985) Interaction *in vitro* of the Neurofilament Triplet Proteins from Spinal Cord with Natural RNAs and DNAs. *Mol. Biol. Rep.* 10, 129-136.
8. Vorgias C. E. and Traub P. (1986) Nucleic acid-binding activities of the intermediate filament subunits desmin and glial fibrillary acidic protein. *Z. Naturforsch.* 416, 897-909.
9. Vorgias C. E. and Traub P. (1986) Efficient degradation *in vitro* of all intermediate filament subunits proteins by the  $\text{Ca}^{2+}$ -activated neutral thiol proteinase from Ehrlich Ascite Tumor cells and porcine kidney. *Bioscience Reports* 6, 57-64.
10. Zimmermann H.-P., Plagens U., Vorgias C. E. and Traub P. (1986) Changes in the organization of non-epithelial intermediate filaments induced by triethyl lead chloride. *Exp. Cell Res.* 167, 360-368.
11. Kuehn S., Vorgias C. E. and Traub P. (1987) Interaction *in vitro* of non-epithelial intermediate proteins with supercoiled plasmid DNA. *J. Cell Sci.* 87, 543-554.
12. Vorgias C. E., Peridis G. A., Traub P. and Sekeris C. E. (1988) Colchicine, colcemide and cytochalasin-b do not affect translocation of the glucocorticoid hormone-receptor in rat thymocytes or ehrlich ascites cells. *Bioscience Reports* 8, 193-197.

13. Gallwitz D., Haubruck H., Molenaar C., Prange R., Putzicha M., Schmitt H.-D., Vorgias C. E. and Wagner P. (1988) Structural and functional analysis of *ypt* proteins, a family of *ras*-related nucleotide-binding proteins in eucaryotic cells. In: The Guanine - Nucleotide Binding Proteins, Common Structural and Functional Properties, Edited by L. Bosch, B. Kraal and A. Parmeggiani, NATO ASI Series, Life Sciences Vol. 165, 257-264.
14. Haubruck H., Prange R., Vorgias C. E. and Gallwitz, D. (1989) The *ras*-related mouse *ypt1* protein can functionally replace the YPT1 gene product in yeast EMBO J. 8, 1427-1432.
15. Wilson K. S., Vorgias C. E., Tanaka I., White W. S. and Kimura M. (1990) The thermostability of DNA binding protein HU from thermophilic and mesophilic *bacilli*. Protein Engineering 4,11-22.
16. Vorgias C. E., Kingswell A. J., Dauter Z., Wilson K. S. (1991) Cloning, overexpression, purification and crystallisation of ribosomal protein L9 from *Bacillus stearothermophilus*. FEBS Lett. 286, 204-208.
17. Vorgias C. E., Lemaire H-G. and Wilson K. S. (1991) Overexpression and Purification of the Galactose Operon Enzymes from *E. coli*. Protein Expr. Purif. 2, 330-338.
18. Vorgias C. E. and Wilson K. S. (1991) A rapid method for the purification of recombinant integration host factor. Protein Expr. Purif. 2, 317-320.
19. Padas M. P., Wilson K. S. and Vorgias C. E. (1992) DNA binding protein from mesophilic and thermophilic *bacilli*: cloning, overexpression and purification. Gene 117, 39-44.
20. Vorgias C. E., Kingswell A. J., Dauter Z. and Oppenheim A. B. (1992) Crystallisation of recombinant chitinase from the cloned *chiA* gene of *Serratia marcescens*. J. Mol. Biol. 226, 897-898.
21. Tews I., Dauter Z., Oppenheim A. B. and Vorgias C. E. (1992) Crystallisation of recombinant chitobiase from *Serratia marcescens*. J. Mol. Biol. 228, 696-697.
22. Sayers Z., Brouillon P., Vorgias C. E., Nolting H. F., Hermes C. and Koch M. H. J. (1993) Cloning and expression of *Saccharomyces cerevisiae* copper-metallothionein gene in *Escherichia coli* and characterisation of the recombinant protein. Eur. J. Biochem. 212, 521-528.
23. Vorgias C. E., Tews I., Perrakis A., Wilson K. S. and Oppenheim, A. B. (1993) Purification and characterisation of the recombinant chitin degrading enzymes chitinase and chitobiase from *Serratia marcescens*. In Chitin Enzymology (Muzzarelli, R. A. A. ed.) pp 417-422.
24. Perrakis A., Wilson K. S., Chet. I., Oppenheim, A. B. and Vorgias C. E. (1993) Phylogenetic relationships of chitinases. In Chitin Enzymology (Muzzarelli, R. A. A. ed.) pp 217-232.
25. Rypniewski W. R., Perrakis A., Vorgias C. E. and Wilson K. S. (1994) Evolutionary divergence and conservation of trypsins. Protein Eng. 7, 57-64.

26. Vis H., Boelens R., Mariani M., Stroop R., Vorgias C. E., Wilson K. S. and Kaptein R. (1994)  $^1\text{H}$ ,  $^{13}\text{C}$  and  $^{15}\text{N}$  resonance assignments and secondary structure analysis of the HU protein from *Bacillus stearothermophilus* using two- and three-dimensional double- and triple-resonance heteronuclear magnetic resonance spectroscopy. *Biochemistry* 33, 14858-14870.
27. Perrakis A., Tews I., Dauter Z., Wilson K. S. and Vorgias C. E. (1994) X-ray structure analysis of Chitinase A from *Serratia marcescens*. In *Chitin World* (eds Karnicki, Z.S., Wojtasz-Pajak, A., Brzeski, M.M. and Bykowski, P.J.) pp 408-415.
28. Tews I., Vincentelli R., Perrakis A., Dauter Z., Wilson K. S. and Vorgias C. E. (1994) Primary and 3D-analysis of chitobiase from *Serratia marcescens*. In *Chitin World* (eds Karnicki, Z.S., Wojtasz-Pajak, A., Brzeski, M.M. and Bykowski, P.J.) pp 415-423.
29. Perrakis A., Tews I., Dauter Z., Oppenheim, A. B., Chet I., Wilson K. S. and Vorgias C. E. (1994) Crystal structure of a bacterial chitinase at 2.3 Ang. resolution. *Structure* 2, 1169-1180.
30. Vis H., Mariani M., Vorgias C. E., Wilson K. S., Kaptein R. and Boelens R. (1995) Solution structure of the HU Protein from *Bacillus stearothermophilus*. *J. Mol. Biol.* 254, 692-703.
31. Sitrit Y., Vorgias C. E., Chet I. and Oppenheim A. B. (1995) Cloning and primary structure of a *chiA* gene from *Aeromonas caviae* *J. Bacteriology* 177, 4187-4189.
32. Sikorski M. M., Topunov A. F., Strozycki P. M., Vorgias C. E., Wilson K. S. and Legoski A. B. (1995) Cloning and expression of plant leghemoglobin cDNA of *Lupinus luteus* in *Escherichia coli* and purification of the recombinant protein. *Plant Science* 108, 109-117.
33. Boelens R., Vis H., Vorgias C. E., Wilson K. S. and Kaptein R. (1996) Structure and dynamics of the DNA binding protein HU from *Bacillus stearothermophilus* by NMR Spectroscopy. *Biopolymers* 40, 553-559.
34. Tews I., Perrakis A., Dauter Z., Oppenheim A. B., Wilson K. S. and Vorgias C. E. (1996) Bacterial chitobiase structure provides insight into catalytic mechanism and the basis of Tay-Sachs disease. *Nature Structural Biology* 3, 638-648.
35. Vis H., Vageli O., Nagel J., Vorgias C. E., Wilson K. S., Kaptein R. and Boelens R. (1996) NMR study of the interaction of the HU protein from *Bacillus stearothermophilus* with DNA. *Magnetic Resonance in Chemistry* 34, 81-86.
36. Tews I., Vincentelli R. and Vorgias C. E. (1996) N-acetylglucosaminidase (chitobiase) from *Serratia marcescens*: gene sequence, and protein production and purification in *Escherichia coli*. *Gene* 170, 63-67.

37. Tews I., Wilson K. S. and Vorgias C. E. (1996) Enzymatic mechanism of N-acetylglucosaminidase revealed by structural studies on enzyme substrate-inhibitor complexes. *Advances in Chitin Science* Vol. 1. pp 26-33.
38. Perrakis A., Ouzounis C. Wilson K. S. and Vorgias C. E. (1996) Implications of the 3-D structure determination of family 18 chitinases. Similarities with FnIII domains, oviductal proteins and narbonins. *Advances in Chitin Science* Vol. 1. pp 34-41.
39. Kanellopoulos P. N., Pavlou K., Perrakis A., Agianian B., Vorgias C. E., Mavrommatis C., Soufi M., Tucker P. A. and Hamodrakas S. J. (1996) The crystal structure of the complexes of Concanavalin A with 4'-nitrophenyl- $\alpha$ -D-mannopyranoside and 4'- nitrophenyl- $\alpha$ -D-glucopyranoside. *J. Struct. Biol.* 116, 345-355.
40. Vorgias C. E., Perrakis A. and Tews I. (1996) Structure function studies on the chitinolytic enzymes of *Serratia marcescens* chitinase and chitobiase. *Annals of the New York Academy of Science.* 799, 190-192.
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42. Tews I., Wilson K. S. and Vorgias C. E. (1996) Structural studies on N-acetylglucosaminidase enzyme-inhibitor complexes In *Chitin Enzymology* (Muzzarelli, R. A. A. ed.) Vol 2, pp 213-225.
43. Fernandes M. J. G., Leclerc D., Henrissat. B., Vorgias C. E., Gravel R., Hechtman P. and Kalpan F. (1997) Identification of candidate active site residues in lysosomal beta-hexosaminidase A. *J. Biol. Chem.* 272, 814-820.
44. Chernin L. S., De la Fuente., Sobolev V., Haran S., Vorgias C. E., Oppenheim A. B. and Chet I. (1997) Molecular cloning, structural analysis and Expression in *Escherichia coli* of a chitinase gene from *Enterobacter agglomerans*. *Appl. Env. Microbiology* 63, 834-839.
45. Spindler-Bath M., Blattner R., Vorgias C. E. and Spindler K-D. (1998) Inhibition of two family 18 chitinases by various allosamidin derivatives. *Pestic.Sci.* 52, 47-52.
46. Joergensen S., Vorgias C. E. and Antranikian G. (1997) An extracellular alpha-amylase from the hypethermophilic Archeon *Pyrococcus furiosus*. Cloning, Sequencing, Characterization and Expression in *E. coli* and *Bacillus subtilis*. *J. Biol. Chem.* 272, 16335-16342.
47. Drouillard S., Armand S., Davies G., Vorgias C. E and Henrissat B. (1997) *Serratia marcescens* chitobiase is a retaining glycosidase utilising substrate acetamido group participation *Biochem. J.* 328, 945-949.

48. Vorgias C. E. (1997) Overproduction of the recombinant chitinase A from *Serratia marcescens* in *E. coli*, fast purification, biochemical and biophysical characterisation. Chapter in Chitin Handbook (Muzzarelli and Peter eds.) ISBN 88-86889-01-1.
49. Vorgias C. E. and Petratos K. (1997) From the purified protein to the 3D-structure and enzymatic mechanism of chitinase A from the chitinolytic soil bacterium *Serratia marcescens*. Chapter in Chitin Handbook Chapter in Chitin Handbook (Muzzarelli and Peter eds.) ISBN 88-86889-01-1.
50. Vorgias C. E. (1997) Structural basis of chitin hydrolysis in bacteria. Advances in Chitin Society Vol II, pp. 176-187.
51. Christodoulou E. and Vorgias C. E. (1998) Cloning, overproduction, purification and crystallisation of the DNA binding protein HU from the hyperthermophilic eubacterium *Thermotoga maritima*. Acta Cryst.. D54, 1043-1045.
52. Vis H, Vorgias C. E., Wilson K. S., Kaptein R. and Boelens R. (1998) Mobility of NH bonds in DNA-binding protein HU of *Bacillus stearothermophilus* from reduced spectral density mapping analysis at multiple NMR fields. J. Biomolecular NMR 11, 265-277.
53. Vorgias C. E. and Antranikian G. (2000) Glycosyl Hydrolases from Extremophiles in Glycomicrobiology, pp313-339 (ed. by Doyle) Kluwer Academic/Plenum Publishers, N. York
54. Boehlke K., Pisani F. M, Vorgias C. E., Frey B., Sobek H., Rossi M. and Antranikian G. (2000) PCR performance of the B-type DNA polymerase from the thermophilic euryarchaeon *Thermococcus aggregans* improved by mutations in the Y-GG/A motif. Nucleic Acids Res. 28, 3910-3917.
55. Prag G., Papanikolau Y., Tavlas G., Vorgias C. E., Petratos K. and Oppenheim A. B. (2000) Structures of chitobiase mutants complexed with the substrate di-N-acetyl-D-glucosamine: the catalytic role of the conserved acidic pair, aspartate 539 and glutamate 540. J. Mol. Biol. 300, 611-617.
56. Fontaine T., Simenel C., Dubreucq G., Adam O., Delepierre M., Lemoine J., Vorgias C. E., Diaquin M. and Latgé J-P. (2000) Molecular Organization of the Alkali-insoluble Fraction of *Aspergillus fumigatus* cell wall. J. Biol. Chem. 275, 27594-27607.
57. Lonhienne T. G. A., Mavromattis C., Vorgias C. E, Buchon L., Gerday C. and Bouriotis V. (2001) Cloning, Sequences, and characterization of two chitinase genes from the antarctic *Arthrobacter* sp. strain TAD20: Isolation and partial characterization of the enzymes. J. Bacteriology 183, 1773-1779.
58. Lonhienne T. G. A., Zoidakis J., Vorgias C. E, Feller G., Gerday C., and Bouriotis V. (2001) Modular structure, local flexibility and cold-activity of a novel chitobiase from a psychrophilic antarctic bacterium J. Mol. Biol. 310, 291-297.



59. Christodoulou E., Duffner F. and Vorgias C. E. (2001) Overexpression, purification and characterization of a thermostable Chitinase (Chi40) from *Streptomyces thermoviolaceus* OPC-520. *Protein Expr. Purif.* 23, 97-105.
60. Papanikolau Y., Prag G., Tavlas G., Vorgias C. E., Oppenheim A. B. and Petratos K. (2001) High-resolution structural analyses of mutant Chitinase A complexes with substrates provide new insight into the mechanism of catalysis. *Biochemistry* 40, 11338-11343.
61. Prog G., Vorgias C. E. and Oppenheim, A. B. (2001) Conservation and structural elements and catalytic mechanism in *Serratia marcescens* chitinolytic enzymes. *Chitin Enzymology*, 2001. Ancona. Pp. 351-360.
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63. Christodoulou E. and Vorgias CE. (2002) The thermostability of the DNA binding protein HU from mesophilic, thermophilic and extreme thermophilic bacteria *Extremophiles* 6, 21-31.
64. Christodoulou E. and Vorgias C. E. (2002) Understanding heterologous protein overproduction under the T7 promoter: A practical exercise. *Biochemical and Mol. Biol. Education* 30, 189-191.
65. Bernard M., Mouyna I., Dubreucq G., Debeaupuis J.-P., Fontaine T., Vorgias C. E., Fuglsang C. and Latgé J-P. (2002) Characterization of a cell wall acid phosphatase in *Aspergillus fumigatus*. *Microbiology* 148, 2819-2829.
66. Christodoulou E., Rypniewski W. and Vorgias C. E. (2003) High resolution X-ray structure of the DNA binding protein HU from the hyperthermophilic eubacterium *Thermotoga maritima* and the determinants of its thermostability. *Extremophiles* 7(2), 111-122.
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86. G. Giamas, J. Stebbing, C. E. Vorgias and U. Knippschild (2007) Protein kinases as targets for cancer treatment. *Pharmacogenomics* 8, 1005-1016.
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