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C.V. of
Dr. Grigorios Amoutzias
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Faculty/Research Positions

- January 2014 – present: Assistant Professor of Bioinformatics in Genomics, Department of Biochemistry and Biotechnology, University of Thessaly, Greece.
- July 2010 – December 2013: Lecturer of Bioinformatics in Genomics, Department of Biochemistry and Biotechnology, University of Thessaly, Greece.
- February 2010 – June 2010: Postdoctoral researcher at the Systems Biology group of Prof. Stephen G. Oliver, Department of Biochemistry, University of Cambridge, UK.

- February 2008 – January 2010: EMBO long term fellow at Prof. Yves Van de Peer's group, at the Bioinformatics and Evolutionary Genomics Group, Department of Plant Systems Biology, UGent & VIB, Gent, Belgium.
- July 2007 – January 2008: Postdoctoral researcher at the Bioinformatics and Evolutionary Genomics Group of Prof. Yves Van de Peer, Department of Plant Systems Biology, UGent & VIB, Gent, Belgium.
- April 2007 – July 2007: Visiting scientist at the Bioinformatics group of Dr. Christos Ouzounis, Institute of Agrobiotechnology, INA, EKETA, Thessaloniki, Greece.
- October 2005 - March 2007: First assistant at the Bioinformatics group of Prof. Marc Robinson-Rechavi, Department of Ecology and Evolution, Faculty of Medicine and Biology, University of Lausanne, Switzerland.
- March 2004 – September 2004. CASE (AstraZeneca) funded PhD placement in text mining, at the Pathways group of Dr David De Graaf, in the pharmaceutical company AstraZeneca PLC, Macclesfield, UK and Waltham, MA, USA.

Education

- 2001-2005: PhD in Bioinformatics, Manchester University, UK. Supervisor: Prof Stephen G. Oliver, Prof Erich Bornberg-Bauer, Dr David Robertson (co-supervisor).
- 2000-2001: MRes in Bioinformatics (with Distinction), Leeds University, UK
- 1998-1999: Exchange student with Erasmus/Socrates programme, Queen's University of Belfast, UK.
- 1994-1999: BSc in Biology, Aristotle University of Thessaloniki, Greece.

Awards-scholarships-distinctions

- 2008 – 2010: EMBO long-term postdoctoral fellowship (ALTF-930-2007).
http://www.embo.org/fellowships/autumn_07.html
- 2005: Best published PhD research of the year 2004 in the Faculty of Life Sciences, University of Manchester, UK. £1200 prize (see page 6 of document in url bellow, section: Faculty Research Symposium).
<http://documents.manchester.ac.uk/display.aspx?DocID=7475>
- 2001-2004: EPSRC studentship for PhD studies.
- 2001-2004: CASE (AstraZeneca) studentship for PhD studies.

- 2004: Travel funding to attend the Gordon Conference on Molecular Evolution. Ventura, CA, USA. Poster presentation of the article published in EMBO reports (Amoutzias et al., 2004).
- Article in EMBO reports (Amoutzias et al., 2004) commented in:
<http://www.nature.com/embor/journal/v5/n4/full/7400129.html>
<http://www.corante.com/loom/archives/2004/02/>

Skills

- Programming skills: Perl, R, MATLAB, C, Java, SQL.
- Operating systems: Mac OSX, Linux, Windows
- Mathematical modelling: 3 weeks training (July - August 2012) in principles of Metabolic Simulations with Flux Balance Analysis in the group of Prof. Stephen G. Oliver, Department of Biochemistry, University of Cambridge, UK (certificate upon request).

Reviewing experience

- Served as reviewer for the journals: Genome Biology, PLOS Computational Biology, PLOS One, Molecular Biosystems, BMC Evolutionary Biology, BMC Biology, Yeast, Zoological Sciences, Nature Scientific Data, International Journal of Genomics, Food and Chemical Toxicology, .
- Grant application reviewer (since 2011) for the Research Foundation - Flanders (Fonds Wetenschappelijk Onderzoek -Vlaanderen, FWO).
- Reviewer for the Kalippos framework of open access online scientific books for the Greek Academia.

Research interests

Evolution, gene regulation, transcription factors, phosphorylation, molecular networks, secondary metabolism.

Genomics, phylogenetics, data integration, text mining.

During his PhD and other research posts, Dr Amoutzias focused on the integration of data from genomic, various functional 'omic' sources, and from literature. This data integration, combined with statistical, phylogenetic and domain architecture analyses gave insight about the properties, functions and evolution of molecular networks, especially at the level of post-translational regulation. Specifically, the work on dimerizing TFs provided for the first time a detailed and yet simple model for convergent evolution of protein interaction networks. Moreover, it generated new hypotheses about dimerization patterns in oncogenic TFs, that may be targeted and exploited therapeutically in the future.

During his postdoctoral positions at the University of Ghent, Belgium, at the University of Cambridge, UK and as a faculty member at the Department of Biochemistry and Biotechnology, University of Thessaly, Dr Amoutzias has been working on the evolution of phosphorylation in eukaryotes. His team have been integrating high-throughput MS/MS proteomic with genomic and functional genomic data. Published and ongoing work has demonstrated the global properties of the yeast phosphoproteome, the intricacies of its evolution and also that post-translational regulation affects the evolution of the genome, specifically by affecting the survival rate of duplicated genes.

Accepted Research Proposals.

- 2014 - 2015: Aristeia II national research framework for the **F**iltering, **A**nnotation and **B**ioinformatics analyses of high-throughput **P**hosphoproteomic data (FAB-Phos). Budget: €200,000. Principal Investigator: Dr. Amoutzias.

- 2011 – 2012: Processing and analysis of human genomic and phosphoproteomic data. Funded by the Research Committee of the University of Thessaly. Budget: €3,330. Principal Investigator: Dr. Amoutzias.
- 2008 – 2010: EMBO long-term postdoctoral fellowship (ALTF-930-2007).

Publications

Dr Amoutzias has co-authored 38 peer-reviewed papers (13 as first author, 5 as corresponding author) and 2 book chapters (as first author) in the field of Bioinformatics. All the work that Dr. Amoutzias has performed is purely computational. According to Scopus (search on 20-03-2017), Dr Amoutzias' work was cited 879 times (675 times, excluding self-citations of all authors) and has an H-index of 13. According to Researchgate (search on 20-03-2017), his work was cited 1021 times and has an H-index of 15, whereas in Google Scholar (search on 20-03-2017), Dr Amoutzias' work was cited 1237 times and has an H-index of 15 and i10 index of 19.

Book Chapters

2) **Amoutzias G.D.** and Van de Peer Y. Single-Gene and Whole-Genome duplications and the evolution of protein-protein interaction networks. In: Evolutionary Genomics and Systems Biology. 2010. pp. 413-429

1) **Αμούτζιας Γρ.**, Van de Peer Y. Η εξέλιξη των πρωτεϊνικών αλληλεπιδράσεων μέσα από το πρίσμα της Βιοπληροφορικής και της Βιολογίας Συστημάτων. In: Βιοπληροφορική. 2008. Επιμέλεια: Κοσσίδα Σ. Σελ. 187-204.

Peer-reviewed Papers

38) Vlastaridis P, Kyriakidou P, Chaliotis A, Van de Peer Y, Oliver SG, **Amoutzias GD**. Estimating the total number of phosphoproteins and phosphorylation sites in eukaryotic proteomes. *Gigascience* 2017. *In press*. DOI: 10.1093/gigascience/giw015

37) Vlastaridis P., Papakyriakou A., Chaliotis A., Stratikos E., Oliver SG. and **Amoutzias GD**. The pivotal role of protein phosphorylation in the control of yeast central metabolism. *G3: Genes, Genomes, Genetics* 2017 Mar 1. pii: g3.116.037218.

36) Tsimpidis M, Bachoumis G, Mimouli K, Kuriakopoulou Z, Robertson DL, Markoulatos P, **Amoutzias GD**. T-RECs: Rapid and large-scale detection of recombination events among different evolutionary lineages of viral genomes. *BMC Bioinformatics*. 2017 Jan 5;18(1):13.

35) Chaliotis A, Vlastaridis P, Mossialos D, Ibba M, Becker HD, Stathopoulos C and **Amoutzias GD** The complex evolutionary history of aminoacyl-tRNA synthetases. *Nucleic Acids Res*. 2017 Feb 17;45(3):1059-1068.

34) Fikatas A, Dimitriou TG, Kyriakopoulou Z, Tsachouridou O, Gartzonika C, Levidiotou-Stefanou S, **Amoutzias GD**, Markoulatos P. Serum neutralization assay for the determination of antibody levels against non-polio enterovirus strains in Central and Western Greece. *Viral Immunol*. 2016 Sep;29(7):444-50.

33) **Amoutzias GD**, Giannoulis T, Moutou KA, Psarra AG, Stamatis C, Tspourlianos A, Mamuris Z. SNP identification through transcriptome analysis of the European brown hare (*Lepus europaeus*): cellular energetics and mother's curse. *PLoS One*. 2016 Jul 26;11(7).

32) Vlastaridis P, Oliver SG, Van de Peer Y, **Amoutzias GD**. The Challenges of Interpreting Phosphoproteomics Data: A Critical View Through the Bioinformatics Lens. *Lecture Notes in Bioinformatics*. 2016. 9874, pp. 196-204.

31) **Amoutzias GD**, Chaliotis A, Mossialos D. Discovery Strategies of Bioactive Compounds Synthesized by Nonribosomal Peptide Synthetases and Type-I Polyketide Synthases Derived from Marine Microbiomes. *Mar Drugs*. 2016 Apr 16;14(4). pii: E80.

30) Pappi PG, Maliogka VI, **Amoutzias GD**, Katis NI. Genetic variation of eggplant mottled dwarf virus from annual and perennial plant hosts. *Arch Virol*. 2016 Mar;161(3):631-9.

- 29) Katsiani, A.T., Maliogka, V.I., **Amoutzias, G.D.**, Efthimiou, K.E., Katis, N.I. Insights into the genetic diversity and evolution of Little cherry virus 1. *Plant Pathology* 2015, 64 (4), pp. 817-824
- 28) Kyriakopoulou Z, Bletsas M, Tsakogiannis D, Dimitriou TG, **Amoutzias GD**, Gartzonika C, Levidiotou-Stefanou S, Markoulatos P. Molecular epidemiology and evolutionary dynamics of Echovirus 3 serotype. *Infect Genet Evol.* 2015 Jun;32:305-12.
- 27) Kyriakopoulou Z, Pliaka V, **Amoutzias GD**, Markoulatos P. Recombination among human non-polio enteroviruses: implications for epidemiology and evolution. *Virus Genes.* 2015 Apr;50(2):177-88
- 26) Tsakogiannis D, Kyriakopoulou Z, Ruether IG, **Amoutzias GD**, Dimitriou TG, Diamantidou V, Kotsovassilis C, Markoulatos P. Determination of HPV16 physical status through E1/E6 and E2/E6 ratio analysis. *J Med Microbiol.* 2014 Sep 11. pii: jmm.0.076810-0.
- 25) Ruether IG, Dimitriou TG, Tsakogiannis D, Kyriakopoulou Z, **Amoutzias GD**, Gartzonika C, Levidiotou-Stefanou S, Markoulatos P. Characterization of novel intergenogroup and intergenotype recombinant noroviruses from central Greece. *Mol Cell Probes.* 2014 Aug;28(4):204-10.
- 24) Tsakogiannis D, Darmis F, Gortsilas P, Ruether IG, Kyriakopoulou Z, Dimitriou TG, **Amoutzias G**, Markoulatos P. Nucleotide polymorphisms of the human papillomavirus 16 E1 gene. *Arch Virol.* 2014 Jan;159(1):51-63.
- 23) Tsakogiannis D, Kyriakopoulou Z, **Amoutzias G**, Ruether IG, Dimitriou TG, Panotopoulou E, Markoulatos P. Identification of novel E6-E7 sequence variants of human papillomavirus 16. *Arch Virol.* 2013 Apr;158(4):821-8.
- 22) Cock MJ, Sterck L, Rouzé P, Scornet D, Allen AE, **Amoutzias G**, et al. The Ectocarpus Genome and Brown Algal Genomics. The Ectocarpus Genome Consortium. In: *Advances in Botanical Research.* 2012. Volume 64, 2012, Pages 141-184

- 21) Stagos D, **Amoutzias GD**, Matakos A, Spyrou A, Tsatsakis AM, Kouretas D. Chemoprevention of liver cancer by plant polyphenols. *Food Chem Toxicol*. 2012 Jun;50(6):2155-70.
- 20) **Amoutzias GD**, He Y, Lilley KS, Van de Peer Y, Oliver SG. Evaluation and properties of the budding yeast phosphoproteome. *Mol Cell Proteomics*. 2012 Jun;11(6):M111.009555.
- 19) Cock MJ, Sterck L, Rouzé P, Scornet D, Allen AE, **Amoutzias G**, et al. The Ectocarpus genome and the independent evolution of multicellularity in brown algae. *Nature*. 2010 Jun 3;465(7298):617-21.
- 18) **Amoutzias GD**, He Y, Gordon J, Mossialos D, Oliver SG, Van de Peer Y. Posttranslational regulation impacts the fate of duplicated genes. *Proc Natl Acad Sci U S A*. 2010 Feb 16;107(7):2967-71.
- 17) Mossialos D, **Amoutzias GD**. Role of siderophores in cystic fibrosis (CF) pathogenesis: foes or friends? *Int J Med Microbiol*. 2009 Feb;299(2):87-98.
- 16) **Amoutzias GD**, Robertson DL, Van de Peer Y, Oliver SG. Choose your partners: Dimerization in eukaryotic transcription factors. *Trends Biochem Sci*. 2008 May;33(5):220-9.
- 15) **Amoutzias GD**, Van de Peer Y, Mossialos D. Evolution and taxonomic distribution of non-ribosomal peptide and polyketide synthases. *Future Microbiol*. 2008 Jun;3:361-70.
- 14) **Amoutzias G**, Van de Peer Y. Together we stand: genes cluster to coordinate regulation. *Dev Cell*. 2008 May;14(5):640-2.
- 13) Pinney JW, **Amoutzias GD**, Rattray M, Robertson DL. Reconstruction of ancestral protein interaction networks for the bZIP transcription factors. *Proc Natl Acad Sci U S A*. 2007 Dec 18;104(51):20449-53

- 12) Pampalakis G, Arampatzidou M, **Amoutzias G**, Kossida S, Sotiropoulou G. Identification and analysis of mammalian KLK6 orthologue genes for prediction of physiological substrates. *Comput Biol Chem.* 2007 Nov 29
- 11) Mossialos D, **Amoutzias G**. Siderophores in fluorescent pseudomonads: new tricks from an old dog. *Future Microbiol.* 2007 Aug;2:387-95.
- 10) **Amoutzias GD**, Pichler EE, Mian N, De Graaf D, Imsiridou A, Robinson-Rechavi M, Bornberg-Bauer E, Robertson DL, Oliver SG. A protein interaction atlas for the nuclear receptors: Properties and quality of a hub-based dimerisation network. *BMC Syst Biol.* 2007 Jul 31;1(1):34.
- 9) Holden BJ, Pinney JW, Lovell SC, **Amoutzias GD** & Robertson DL. An exploration of alternative visualizations of the basic helix-loop-helix protein interaction network. *BMC Bioinformatics.* 2007 Aug 6;8(1):289.
- 8) **Amoutzias G**, Veron A, Weiner A, Robinson-Rechavi M, Bornberg-Bauer E, Oliver S, Robertson D. One Billion Years of bZIP Transcription Factor Evolution: Conservation and Change in Dimerization, and DNA-Binding Site Specificity. *Mol Biol Evol.* 2006 Dec 28.
- 7) **Amoutzias GD**, Bornberg-Bauer E, Oliver SG, Robertson DL. The Reduction/oxidation-phosphorylation control of the DNA binding of the bZIP family is linked with its dimerization network. *BMC Genomics* 2006 May 4;7:107
- 6) Podowski RM, Cleary JG, Goncharoff NT, **Amoutzias G**, Hayes WS. Suregene, a scalable system for automated term disambiguation of gene and protein names. *J Bioinform Comput Biol.* 2005 Jun;3(3):743-70.
- 5) **Amoutzias GD**, Weiner J, Bornberg-Bauer E. Phylogenetic profiling of protein interaction networks in eukaryotic transcription factors reveals focal proteins being ancestral to hubs. *Gene.* 2005 Feb 23
- 4) **Amoutzias GD**, Robertson DL, Oliver SG, Bornberg-Bauer E. Convergent evolution of

gene networks by single-gene duplications in higher eukaryotes.. *EMBO Rep.* 2004 Mar;5(3):274-9.

Commented in:

<http://www.nature.com/embor/journal/v5/n4/full/7400129.html>

<http://www.corante.com/loom/archives/2004/02/>

Awarded:

<http://documents.manchester.ac.uk/display.aspx?DocID=7475>

3) **Amoutzias GD**, Robertson DL, Bornberg-Bauer E. The evolution of protein interaction networks in regulatory proteins. *Comp Func Genomics* 2004; 5: 79-84

2) Podowski RM, Cleary JG, Goncharoff NT, **Amoutzias G**, Hayes WS. AZuRE, a scalable system for automated term disambiguation of gene and protein names. *Proc IEEE Comput Syst Bioinform Conf.* 2004;:415-24.

1) Imsiridou A, Hardy H, Maudling N, **Amoutzias G**, Zaldivar Comenges JM. Web database of molecular genetic data from fish stocks. *J Hered.* 2003 May-Jun;94(3):265-7.