

Curriculum Vitae

Personal Information:

Name: Vassiliki (Lila) Koumandou
Nationality: Greek
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Education:

- 2001-2005 UNIVERSITY OF CAMBRIDGE, Department of Biochemistry** *Cambridge, UK*
PhD awarded July 2006. Supervisor: Prof. CJ Howe. Thesis title: "Molecular genetics of the chloroplast in the dinoflagellate *Amphidinium operculatum*."
- 1998-2000 UNIVERSITY OF WASHINGTON, School of Oceanography** *Seattle, WA, USA*
MSc in Oceanography awarded December 2000. GPA: 3.7 (out of 4.0)
Research Assistant with Prof. EV Armbrust. Thesis title: "Protein markers of sexual reproduction in marine diatoms."
- 1993-1997 MASSACHUSETTS INSTITUTE OF TECHNOLOGY (MIT)** *Cambridge, MA, USA*
BSc in Biology awarded June 1997. Minor in Spanish. GPA: 4.8 (out of 5.0)
Undergraduate Research assistant with Prof. EA Boyle (Earth, Atmospheric, and Planetary Sciences Department), and with Prof. SW Chisholm during two-week oceanographic cruise to the Sargasso Sea, MIT-Woods Hole Oceanographic Institution. Undergraduate thesis project in Biology with Prof. PW Robbins: "Library-screening for novel genes involved in yeast cell wall synthesis."

Professional experience:

- 2015-** Lecturer, Laboratory of Genetics, Department of Biotechnology, Agricultural University of Athens, Greece.
- 2013-2015** Marie-Curie Intra-European Research Fellow, Bioinformatics and Medical Informatics group, Biomedical Research Foundation, Academy of Athens, Greece. Project title: "The emergence of bioenergetic diversity in prokaryotes." Co-ordinator: Dr S Kossida.
http://cordis.europa.eu/projects/rcn/106370_en.html
- 2011-2013** Post-doctoral Research Associate with Prof. A Scorilas at the Department of Biochemistry and Molecular Biology, University of Athens, Greece. Project INSPIRE
http://cordis.europa.eu/project/rcn/100288_en.html <http://inspire.uoa.gr/>
- 2010-2011** Post-doctoral Research Associate with Dr. S Kossida, Bioinformatics and Medical Informatics group, Biomedical Research Foundation, Academy of Athens, Greece. Project DICODE http://cordis.europa.eu/project/rcn/95901_en.html
- 2005-2010** Post-doctoral Research Associate with Prof. MC Field, Department of Pathology, University of Cambridge, UK. Project funded by the Wellcome Trust.
- 3-8/2001** Research Assistant with Dr. D Kafetzopoulos, Institute of Molecular Biology and Biotechnology, FORTH, Heraklion, Crete, Greece.
- 3-7/1998** Intern in the Department of Science and Research in Fisheries (Directorate General XIV), Commission of the European Communities, *Brussels, Belgium*

- 9/97-2/98** MISTI (MIT Science and Technology Initiatives) internship with Prof. P Herrlich and Dr. H Schorle, Forschungszentrum Karlsruhe, Germany.
- 1-6/1996** Research Intern with Dr. E Berdalet and Prof. M Estrada, Institute of Marine Sciences, CSIC, Barcelona, Spain.

Honors, awards, fellowships:

- 2018-** Semifinalist at the MIT Enterprise Forum Greece competition, as a member of Innate Repair, a University spin-off developing novel cancer therapeutics.
- 2013-2015** Marie Curie Intra-European Fellowship, Biomedical Research Foundation, Academy of Athens, Greece
- 2009** EMBO short-term fellowship to train with Dr. JB Dacks on phylogenetic analysis at the University of Alberta, Canada. (Also awarded, but declined, short-term fellowships by The Biochemical Society and The Royal Society for the same project and period.)
- 2008** FEBS conference grant to present at the FEBS-IUBMB Young Scientists Forum and the FEBS-IUBMB Congress in Athens.
- 2001-2005** Postgraduate fellowship from the Biotechnology and Biological Sciences Research Council (BBSRC), the Cambridge European Trust, and Corpus Christi College Cambridge.
- 1998-2000** Postgraduate fellowship from the School of Oceanography, University of Washington, Seattle, USA.
- 1993-1997** Undergraduate part-cost bursary from MIT, Cambridge, MA, USA. Burchard Scholar '96.

Languages: Mother tongue: Greek. Fluent in English. Very good Spanish and German.

Research Interests: Comparative genomics and evolution of diversity in biochemical systems

- Bioenergetics: molecular evolution of diverse bioenergetic pathways in prokaryotes, bioenergetic diversity of the human gut microbiome, redox control of gene expression
- Endocellular trafficking: last eukaryotic common ancestor, prokaryote to eukaryote transition
- Quorum sensing: comparative genomics and evolution of diverse systems, role in pathogenesis

Laboratory techniques and Bioinformatics/IT skills:

- Experience in maintaining bacterial, yeast, trypanosome and algal cultures.
- Recombinant DNA techniques, PCR, qRT-PCR, RNAi, Southern, Northern, microarray analysis.
- Protein expression and purification, Western, immunoprecipitation.
- Bright-field microscopy and epifluorescence microscopy (immunofluorescence).
- Web-based and unix-based sequence analysis (BLAST, HMMer, Clustal, Muscle).
- Phylogenetic analysis (MrBayes, PhyML, RaxML, ProtTest, FigTree).
- Microarray analysis (GenePix, Bluefuse, Genespring, Limma).
- NGS data analysis (fastq, bwa, samtools, GATK, IGV).

Teaching Experience:

- Genetics (core course 3rd Semester) Agricultural University of Athens (2015-).
- Special topics in genetics (elective 4th Semester) Agricultural University of Athens (2018-).
- Bioinformatics (core course 5th Semester) Agricultural University of Athens (2015-).
- Evolution (elective 6th Semester) Agricultural University of Athens (2015-).
- Genetics of Model Organisms (elective 8th Semester) Agricultural University of Athens (2015-).

- Genetics of disease (elective 9th Semester) Agricultural University of Athens (2018-).
- Bioinformatics and functional genomics topics at the MSc program in Molecular Medicine, Medical School, University of Athens (2011-2015), the MSc program in Clinical Biochemistry & Molecular Diagnostics, Faculty of Biology, University of Athens (2011-), and the MSc program in Systems Biology, Agricultural University of Athens (2015-).
- Seminar on Next Generation Sequencing technologies and bioinformatics tools for data analysis, FEBS practical & lecture course "Introduction into Systems Biology", Biomedical Research Foundation, Academy of Athens, 26-30 September 2011.
- Postgraduate 4-day Seminar on Bioinformatics and Proteomics, Hanoi National University of Education, Vietnam, June 2011.
- Supervisions (small-group teaching) for the Part1B (2nd year) Biochemistry and Molecular Biology course of the Natural Sciences Tripos, University of Cambridge, UK (2007-2010).
- Teaching assistant in undergraduate Cell Biology laboratory practicals (University of Cambridge 2002-2004), Biological Oceanography course (University of Washington 2000), and Molecular Biology laboratory practicals (MIT, 1997).

Supervision of Graduate and Undergraduate Students:

- Member of the thesis committee of one PhD, two MSc and eight undergraduate students of the Department of Biotechnology, Agricultural University of Athens (2015-).
- Supervisor for three undergraduate students carrying out a summer research project in the Genetics lab of the Agricultural University of Athens (2016-).
- Co-supervisor for three post-graduate students carrying out their MSc research projects, and one undergraduate student carrying out his final-year practical research project in Dr. Kossida's lab, at the Biomedical Research Foundation, Academy of Athens (2011-2015).
- Co-supervisor for one undergraduate student carrying out her final-year practical research project in Prof. Field's lab (2009).
- Co-supervisor for one undergraduate student carrying out her final-year practical research project in Prof. Howe's lab (2004).

Commissions of Trust:

- Reviewer for the journals: BMC Bioinformatics, Current Bioinformatics, Evolutionary Bioinformatics, Genomics, Journal of Molecular Biochemistry, Marine Genomics, Planta.
- Member of the MIT Educational Council, interviewing candidates for undergraduate study at the Massachusetts Institute of Technology, USA (2004-2016).

Membership of scientific societies:

- Member of the Hellenic Initiative "Mikrobiokosmos" (2012-), the Hellenic Society for Computational Biology and Bioinformatics (HSCBB, 2012-), the Hellenic Society for Biochemistry and Molecular Biology (EEBMB, 2011-), and the Biochemical Society, UK (2007-2010).

Scientific publications: Scopus Author ID: 6506372290, h-index: 13

- 1) Agioutantis P, Koumandou VL (2018) Bioenergetic diversity of the human gut microbiome. *Metagene* 16: 10-14 <https://doi.org/10.1016/j.mgene.2017.12.007> (Impact Factor: 1.55)
- 2) Koumandou VL, Kossida S (2015) Evolution of b-type cytochromes in prokaryotes. *PeerJ PrePrints* 3:e1950 <https://doi.org/10.7287/peerj.preprints.1564v1> (citations: 1)

- 3) Papageorgiou L, Loukatou S, [Koumandou VL](#), Makalowski W, Megalooikonomou V, Vlachakis D, Kossida S (2014) Structural models for the design of novel antiviral agents against Greek Goat Encephalitis. *PeerJ* 2:e664 (IF: 2.36, citations: 5)
- 4) [Koumandou VL](#), Kossida S (2014) Evolution of the FOF1 ATP synthase complex in light of the patchy distribution of different bioenergetic pathways across prokaryotes. *PLoS Computational Biology* 10(9): e1003821 (IF: 4.41, citations: 10)
- 5) Karamichali I, [Koumandou VL](#), Karagouni AD, Kossida S (2014) Frequent gene fissions associated with human pathogenic bacteria. *Genomics* 103(1): 65-75 (IF: 2.72, citation: 2)
- 6) Porcel BM, Denoeud F, Oppendoerfer F, Noel B, Madoui MA, Hammarton TC, Field MC, Da Silva C, Couloux A, Poulain J, Katinka M, Jabbari K, Aury JM, Campbell DA, Cintron R, Dickens NJ, Docampo R, Sturm NR, [Koumandou VL](#), Fabre S, Flegontov P, Lukeš J, Michaeli S, Mottram JC, Szöőr B, Zilberstein D, Bringaud F, Wincker P, Dollet M (2014) The streamlined genome of *Phytomonas* spp. relative to human pathogenic kinetoplastids reveals a parasite tailored for plants. *PLoS Genetics* 10(2): e1004007 (IF: 5.93, citations: 39)
- 7) Papageorgiou L, Vlachakis D, [Koumandou VL](#), Papangelopoulos N, Kossida S (2013) Computer-aided drug design and biological evaluation of novel anti-Greek Goat Encephalitis agents. *International Journal of Systems Biology and Biomedical Technologies* 2(4): 1-16 (citations: 7)
- 8) [Koumandou VL](#), Wickstead B, Ginger M, van der Giezen M, Dacks JB, Field MC (2013) Molecular paleontology and complexity in the last eukaryotic common ancestor. *Critical Reviews In Biochemistry & Molecular Biology* 48(4):373-396 (IF: 7.97, citations: 69)
- 9) Trimpalis P, [Koumandou VL](#), Pliakou E, Anagnou NP, Kossida S (2013) Gene fusion analysis in the battle against the African endemic sleeping sickness. *PLoS ONE* 8(7):e68854 (IF: 3.11, citations: 2)
- 10) [Koumandou VL](#), Scorilas A (2013) Evolution of the plasma and tissue kallikreins and their alternative splicing isoforms. *PLoS ONE* 8(7):e68074 (IF: 3.11, citations: 15)
- 11) Vlachakis D, [Koumandou VL](#), Kossida S (2013) A holistic evolutionary and structural study of flaviviridae provides insights into the function and inhibition of HCV helicase. *PeerJ* 1:e74 (IF: 2.36, citations: 11)
- 12) [Koumandou VL](#), Boehm C, Horder K, Field MC (2013) Evidence for recycling of invariant surface transmembrane domain proteins in African trypanosomes. *Eukaryotic Cell* 12:330-342 (IF: 3.00, citations: 13)
- 13) Tsagrasoulis D, Danos V, Kissa M, Trimpalis P, [Koumandou VL](#), Karagouni AD, Tsakalidis A, Kossida S (2012) SAFE software and FED database to uncover protein-protein interactions using gene fusion. *Evolutionary Bioinformatics* 8:47-60 (IF: 1.42, citations: 5)
- 14) Dimitriadis D, [Koumandou VL](#), Trimpalis P, Kossida S (2011) Protein functional links in *Trypanosoma brucei*, identified by gene fusion analysis. *BMC Evolutionary Biology* 11:193 (IF: 3.12, citations: 6)
- 15) [Koumandou VL](#), Herman E, Klute M, Nunez-Miguel R, Dacks JB, Field MC (2011) Evolutionary reconstruction of the retromer complex and its function in *Trypanosoma brucei*. *Journal of Cell Science* 124:1496-1509 (IF: 4.59, citations: 57)
- 16) [Koumandou VL](#), Natesan SKA, Sergeenko T, Field MC (2008) The trypanosome transcriptome is remodelled during differentiation but displays limited responsiveness within life stages. *BMC Genomics* 9:298 (IF: 4.05, citations: 66)
- 17) Berdalet E, Peters F, [Koumandou VL](#), Roldán C, Guadayol O, Estrada M (2007) Species-specific physiological response of dinoflagellates to small-scale turbulence. *Journal of Phycology* 43:965-977 (IF: 2.60, citations: 40)

- 18) Field MC, Natesan SKA, Gabernet-Castello C, Koumandou VL (2007) Intracellular trafficking in the trypanosomatids. Review. *Traffic* 8(6):629-39 (IF: 3.91, citations: 29)
- 19) Koumandou VL, Dacks JB, Coulson RMR, Field MC (2007) Control systems for membrane fusion in the ancestral eukaryote; evolution of tethering complexes and SM proteins. *BMC Evolutionary Biology* 7:29 (IF: 3.12, citations: 123)
- 20) Koumandou VL, Howe CJ (2007) The copy number of chloroplast gene minicircles changes dramatically with growth phase in the dinoflagellate *Amphidinium operculatum*. *Protist* 158(1):89-103 (IF: 2.46, citations: 24)
- 21) Koumandou VL, Nisbet RE, Barbrook AC, Howe CJ (2004) Dinoflagellate chloroplasts: where have all the genes gone? Review. *Trends in Genetics* 20:261-267 (IF: 8.93, citations: 46)
- 22) Nisbet RE, Koumandou LV, Barbrook AC, Howe CJ (2004) Novel plastid gene minicircles in the dinoflagellate *A. operculatum*. *Gene* 331:141-147 (IF: 2.42, citations: 24)
- 23) Howe CJ, Barbrook AC, Koumandou VL, Nisbet RE, Symington HA, Wightman TF (2003) Evolution of the chloroplast genome. *Philosophical Transactions of the Royal Society of London, Series B.* 358:99-107 (IF: 3.61, citations: 58)

Book Chapters:

- Koumandou VL, Field MC (2011) The emergence of cellular complexity at the dawn of the eukaryotes: reconstructing the endomembrane system with in silico and functional analyses. In "Evolutionary Biology - Concepts, Biodiversity, Macroevolution and Genome Evolution" pg. 153-167. Published by Springer-Verlag. Editor: Pierre Pontarotti
- Koumandou VL (2008) Sequence similarity search. Book chapter in Greek in "Bioinformatics: possibilities and perspectives" pg. 71-85. Published by the Biomedical Research Foundation of the Academy of Athens. Editor: Sophia Kossida

Conferences & workshops:

- European Biotechnology Congress, 26-28/4/2018, Athens, Greece. Oral presentation: "Genomic analysis of the endosymbiotic bacterium *Candidatus Erwinia dacicola* provides insights for the management of the olive pest *Bactrocera oleae*." Member of the organizing committee.
- 68th Congress of the Hellenic Society for Biochemistry and Molecular Biology (EEBMB), 10-12/11/2017, Athens, Greece.
- 15th Recomb Comparative Genomics Satellite Conference, Barcelona, Spain, 4-6/10/2017. Two poster presentations: "Evolution of b-type cytochromes in prokaryotes" & "Bioenergetic diversity of the human gut microbiome."
- 10th Hellenic Bioinformatics Conference, 6-9/9/2017, Heraklion, Crete, Greece. Oral presentation: "Bioenergetic diversity of the human gut microbiome."
- 67th Congress of the Hellenic Society for Biochemistry and Molecular Biology (EEBMB), 25-27/11/2016, Ioannina, Greece.
- 19th European Bioenergetics Conference (EBEC), 2-7/7/2016, Riva del Garda, Italy. Two poster presentations: "Evolution of the F₀F₁ ATP synthase in light of the patchy distribution of different bioenergetic pathways across prokaryotes" (BBA Bioenergetics 2016 Vol. 1857(Supplement):e55-56) & "Bioenergetic diversity of the human gut microbiome" (BBA Bioenergetics 2016 Vol. 1857(Supplement):e83).

- 66th Congress of the Hellenic Society for Biochemistry and Molecular Biology (EEBMB), 11-13/12/2015, Athens, Greece. Oral presentation: "Bioenergetic diversity of the human gut microbiome." Member of the organizing committee.
- 10th Conference of the Hellenic Society for Computational Biology and Bioinformatics (HSCBB), 9-11/10/2015, Athens, Greece. Two oral presentations: "Evolution of b-type cytochromes in prokaryotes" & "Bioenergetic diversity of the human gut microbiome."
- 40th FEBS Congress "The Biochemical Basis of Life" 4-9/7/2015, Berlin, Germany. Poster presentation: "Evolution of b-type cytochromes in prokaryotes."
- 6th conference of the Hellenic Society "Mikrobiokosmos" 3-5/4/2015, Athens, Greece.
- 65th Congress of the Hellenic Society for Biochemistry and Molecular Biology (EEBMB), 28-30/11/2014, Thessaloniki, Greece. Poster presentation: "Evolution of the F₀F₁ ATP synthase in light of the patchy distribution of different bioenergetic pathways across prokaryotes."
- 9th Conference of the Hellenic Society for Computational Biology and Bioinformatics (HSCBB), 10-12/10/2014, Athens, Greece. Oral presentation: "Evolution of the F₀F₁ ATP synthase complex in light of the patchy distribution of different bioenergetic pathways across prokaryotes."
- EMBO Conference "Microbiology after the Genomics Revolution: Genomes 2014" 24-27/6/2014, Pasteur Institute, Paris, France. Poster presentation: "Evolution of the F₀F₁ ATP synthase complex in bacteria which utilize different bioenergetic pathways."
- 64th Conference of the Hellenic Society for Biochemistry and Molecular Biology (EEBMB), 6-8/12/2013, Athens, Greece. Oral presentation: "A holistic evolutionary and structural study of *Flaviviridae* provides insights into the function and inhibition of *Hepatitis C* virus helicase."
- EMBO/FEBS Lecture Course "Host-Microbe Interactions" 30/8-7/9/2013, Spetses, Greece. Poster presentation: "Evolution of bioenergetic pathways through the study of ATP synthase."
- 7th Conference of the Hellenic Society for Computational Biology and Bioinformatics (HSCBB), 4-6/10/2012, Heraklion, Crete, Greece. Oral presentation: "Evolutionary and functional relationships between plasma and tissue kallikreins."
- Workshop on "Next-Generation Sequencing technologies and Informatics tools for studying Marine Biodiversity and Adaptation", Marbigen project (FP7-REGPOT-2010-1), Hellenic Centre for Marine Research, Herakleion, Crete, 1-3/10/2012.
- COST Workshop "Next generation Sequencing: What's Next?" 1/6/2012, COST Training School on Next Generation Sequencing data analysis 28-31/5/2012 Uppsala, Sweden.
- 4th COST Statseq Workshop "Statistical Challenges of the 1000 genome sequences in plants" 18-19/4/2012, Verona, Italy.
- 62nd Conference of the Hellenic Society for Biochemistry and Molecular Biology (EEBMB), 9-11/12/2011, Athens, Greece. Poster presentation: "Evolution of bioenergetic pathways through the study of ATP synthase."
- 14th Evolutionary Biology Meeting, 21-24/9/2010, Marseilles, France. Oral presentation: "Evolutionary reconstruction of the retromer complex and its function in *Trypanosoma brucei*."
- British Society for Parasitology Spring Meeting, 30/3-1/4/2010, Cardiff, UK. Oral presentation: "Evolutionary reconstruction of the retromer complex and its function in *Trypanosoma brucei*."
- ISSOL International Conference on the Origin of Life, 24-29/8/2008, Florence Italy. Oral presentation: "Evolutionary relationships of bioenergetic pathways."
- 33rd FEBS Congress & 11th IUBMB Conference "Biochemistry of Cell Regulation" 28/6-3/7/2008, Athens, Greece and 8th FEBS-IUBMB Young Scientists Forum, 26-28/6/2008, Loutraki, Greece.

Poster presentation: "Life cycle-dependent remodelling and limited environmental responsiveness in trypanosome membrane transport."

- Gordon Research Conference on the Origin of Life, 20-25/1/2008, Ventura, California, USA.
- Royal Society discussion meeting "Photosynthetic and atmospheric evolution." 12-13/11/2007, London, UK.
- 2nd Kinetoplastid Molecular Cell Biology Conference. 23-26/4/2007. Marine Biological Laboratory, Woodshole, Massachusetts, USA. Poster presentation: "Genome-wide analysis of developmental regulation of trafficking systems in *Trypanosoma brucei*."
- Cold Spring Harbor Laboratory/Wellcome Trust conference on "Genomic Perspectives to Host-Pathogen Interactions" 7-10/9/2006, Wellcome Trust Genome Campus, Hinxton, UK. Oral presentation: "Developmental regulation of the endocytic system in the parasite *T. brucei*."
- Royal Society discussion meeting "Major steps in evolution: evidence, timing and global impact." 26-27/9/2005, London, UK.
- Gordon Research Conference on Marine Microbes. 6-11/6/2004, Roscoff, France. Poster presentation: "Anomalous plastid gene organisation in dinoflagellates."
- 7th International Congress of Plant Molecular Biology. 23-28/6/2003, Barcelona, Spain. Poster presentation: "Aberrant minicircles in the dinoflagellate chloroplast genome."
- Royal Society Discussion meeting on Organelle Functional Genomics. 26-27/6/2002, London, UK. Paper co-author: "Evolution of the chloroplast genome."
- Phycological Society of America, 54th Annual Meeting. 15-19/7/2000. San Diego, California, USA. Oral presentation: "Expression patterns of three putative sexual-specific genes in the centric diatom *Thalassiosira weissflogii*." Journal of Phycology 2000 Vol. 36(3 Supplement):38.
- 2nd European Phycological Congress. 21-25/9/1999, Montecatini Terme, Italy. Co-author: "Identification of genes expressed specifically during sexual reproduction in a marine centric diatom."

Science and Society Activities:

- Invited speaker at Pint of Science, Athens, May 2018. <https://pintofscience.com/>
- Organizer of Cafe Scientifique Athens, a monthly series of free talks open for the public (2013 onwards). <http://tinyurl.com/cafesci-gr>
- Member of the organizing committee of the Athens Science Festival (2014) <http://www.athens-science-festival.gr/>
- Radio interview about bacteria as energy powerhouses at Radio Reboot's What's Up Doc (February 2013). https://www.mixcloud.com/WhatsUpDoc_webradioshow/
- Invited Speaker at the Eugenides Foundation public science talk series for Early Career Researchers (May 2012). "The human genome: what has it taught us so far and what promise does it hold for the future of medicine." <http://vimeo.com/43956568>
- Volunteer at the Cambridge Science Festival, University of Cambridge, UK (2004-2009) in workshops on DNA extraction, and using algae for biofuel production.
- Participant in Standing up for Science media workshop, Institute of Biology, London, UK (May 2007); Communicating with the Public workshop, University of Cambridge (May 2003); Voice of the future, Royal Society of Chemistry, London, UK (March 2002).
- Article in BlueSci, Cambridge's Science Magazine (May 2005, Issue 3, pg 19) "Waters of the Mediterranean". <http://issuu.com/bluesci/docs/bluesci-issue3>
- Teaching Assistant in EMBO Teachers Workshop, Heidelberg, Germany (May 2004).