SHORT CURRICILLUM VITAE Prof. MILTON A. TYPAS

Positions :

Post-Doctoral and Temporar Lecturer, University of London (Queen Elizabeth College) 1975-77.
Lecturer, Athens University 1978-1980.
Tenured Lecturer at Athens University 1980-1986.
Senior Lecturer 1986-1992.
Reader 1992-2000.
Professor Jan. 2001- today.
Visiting Professor, Novartis Research Centre – U.C. San Diego, 2000 (4 months),
Visiting Professor, Cornell University, NY, 2001-2002.

Scholarships and Sabbaticals :

Research Centre Democritus 1970-71 (undergraduate research assistantship)
London University , UK, 1972-1975 (Ph.D. demonstratorship)
London University and Agricultural Research Council, UK, Postdoctoral and Temporar Lecturer 1975-77
1977 (Royal Society of Britain),
1978, 1980, 1981, 1982 (British Council),
1979, 1984 (EMBO),
1983, 1985 (EU),
1990, 1994 (British Council)
Sabbatical leave of absence at King's College, University of London, U.K. (one year, 1989-1990) and 3 months at Julich, Kernforschungsanlage, Germany (1990).
Several months of visiting/collaborating with Institutes in Britain, Germany and France during the last 20 years.
Sabbatical leave of absence for two years in the USA [1999-2002; 18 months at Cornell University, NY and 4 months at the NIMRI Research Centre, San Diego, La Jolla, CA) .

Research Projects :

E.U. Funding : Biotechnology Engineering Programme [BEP-DGXII-EC (1984-1986], Biotechnology Action Programme [BAP-DGXII-EC (1986-89)], Biotechnology [BIOTECH (1990-93)], Human Capital Mobility 1994-96, AIR3-CT94-1352 [1995-98], FAIR6-CT98-4105 [1998-2001], QLK-CT-2001-01391 [2002-2005], Regulation of Biocontrol Agents (REBECA) [FP6-2004-SSP-4 (2005-08)].
Other sources: British Council 1987, 1990, 1994. Kernforschungsanlage, Julich, Deutschland 1992. Cornell University, Biotechnology Institute, 2000-2001.
General Secretariat of Research and Technology, Greece : ΠΡΟΠΕ 1986-88, ΠΕΝΕΔ 1989- 92, ΕΠΕΤ ΙΙ 1995-1997, ΠΕΝΕΔ 1996-1998, ΠΑΒΕ 1997-98, ΕΠΕΤΙΙ 1998-2001, ΕΚΒΑΝ-ΕΠΕΤΙΙ-ΤΡ5 2003-2006, ΕΚΒΑΝ-ΕΠΕΤΙΙ- ΦΠ66 2004-2007.

Administrative activities :

- Executive member of the National Hellenic Research Foundation 1982-1996.
- Elected member of the European Science Foundation 1983-1986.
- National Representative in the European Commission, Committee for Science and Technology Programme 1983-86.
- National Representative for Science and Technology in the United Nations 1982-87.
- Director of the National Documentation Centre (1982-1986) and executive member of the scientific Committee 1987- 1999.
- Member of the Executive Committee of BIOHELLAS (1985-87) and Vice-chairman of the same Biotechnology Company (1987-89).
- Member of Advisory Committees for Science and Technology (CCE) in EU
- Member of the Senate House 1982-1986, 1995-1997.
- Director of Postgraduate studies in the Faculty of Biology 1996-today.
- Chairman Special advisory committee in Biotechnology 1996-today.
- Expert of national delegations in EU, in Science & Research, Biotechnology, Agriculture, 1986-2005.
- Independent expert for evaluation of research proposal in the EU, for DGVI, DGXII and DGXIII, 1982-today. [subjects: Molecular Genetics, Microbial Genetics, Biodiversity, Biosafety, Biotechnology, Bio-energy, Biomass, Bioethanol, Bioconversions, Biological control, Plant-Microbe interactions, etc, projects BIOTECH, FAIR, COST, INTAS, COPERNICUS, THIRD COUNTRIES, STP, MARIE-CURRIE, FP5, FP6, FP7].
- Vice-Chairman of the Faculty of Biology, University of Athens 1995-1999.
- Head of the Department 1997-98, 1999-2000, 2002-today.
- Member of the Research Committee of Athens University (2007-today).
- Scientific advisor of the National Competent Authority for GMOs (1997-2004)
- National Delegation for Biotechnology in the 6th Programme EU, 2002-2006.
- EU expert-advisor for GMOs (1999-today)
- Member of the National Council for Research and Technology 1996-98, 2001-2004.
- Reviewer of over 300 articles during the past 20 years for the following Scientific Journals : Applied and Environmental Microbiology, Archives for Microbiology, Biocontrol Science and Technology, BioMed Central Genomics, BMC Evolutionary Biology, BMC Microbiology, Biotechnology Letters, Canadian Journal of Microbiology, Canadian Journal of Plant Pathology, Current Genetics, Current Microbiology, DNA Sequence, Environmental Microbiology, FEMS Microbiology Letters, FEMS Microbiology Ecology, FEMS Yeast Research, Fungal Genetics and Biology, Gene, Genetics, Genetics and Molecular Biology, Genome Research, Journal of Applied Microbiology, Journal of Bacteriology, Journal of Basic Microbiology Microbiology, Journal of Biohazardous Material, Journal of Biotechnology, Letters in Applied Microbiology, Molecular and General Genetics, Molecular Plant Pathology, Molecular Plant-Microbe Interactions, Mycological Research, Plant Disease, Plasmid, Phytopathology, World Journal of Microbiology and Biotechnology, member of editorial board-(Mycological Research 1990-92, Journal for General Microbiology 1986-88, Euro-Asian Journal of Sustainable Energy and Development Policy 2009-2012).

- Reviewer of review articles/chapters in books (12).
- President of the organizing committees for 10 National and International Conferences. President of various Symposia, Conferences (more than 30 occasions).
- Invited speaker in International Symposia-Conferences (over 40 occasions) and Greek Conferences (around 30).

Research Expertises/experience :

He is heading the group of Microbial-Molecular Genetics and Biotechnology. Research interests are divided into two major lines :

(a) **Fungal Genetics / Biotechnology :** This includes, molecular typing/genetic fingerprinting of fungi with economic importance, such as phytopathogenic and entomopathogenic fungi, based on standard molecular techniques (RFLPs, RAPD, AFLP, DGGE, PFGE, PCR, RT-PCR, DNA/DNA, DNA/RNA hybridizations , immunolabelling, etc). Study of mitochondrial DNA genome structure and function and phylogenetic relationships, the laboratory being one of the most specialized in mitochondrial genome analysis of mitosporic fungi (collection of 10 mtDNA genomes from Ascomycota, one from Basidiomycota and one from Zygomycota from the 34 presently known). Genome analysis of completed fungal genomes. Study of host-parasite relationships using model entomopathogens and phytopathogens. Study of the molecular mechanisms of heterokaryosis in mitosporic fungi. Phylogenetic analysis/implications, biodiversity and biosafety.
More classical approaches like mutagenesis, mutant production/characterization, mitotic recombination analyses, protoplast regenaration, protoplast fusion, transformation of cloning/expression vectors, gene isolation/ characterization, gene-overexpression and the exploitation of parasexual cycle are also routinely used. Gene-replacement and gene-inactivation methods have been developed and are in use for fungi. Lately, an emphasis has been placed on the isolation and study of genes involved in cellulose and ligninocellulose degradation.

(b) **Bacterial Genetics**. Various bacteria are used for the production of enzymes, fine chemicals and polysaccharides of industrial importance. Particular emphasis is placed on the ethanol producing bacterium *Zymomonas mobilis*, which is being used as a model organism for the study of certain genetic problems. The genomes of 6 different strains of the bacterium are currently being analysed and the analysis of the transcriptome of the most important for ethanol production strain is pending (Collaboration with DOE, USA ; PI Dr.K-M.Pappas). The research activities of the group cover the following themes : Chemical and transposon mutagenesis, study of transposable elements (IS and Tn-like elements), conjugal gene transfer (inter- and intra- species conjugation systems), strain construction, plasmid characterization/stability/maintainance/replication/incompatibility mechanisms, construction of suitable cloning vectors, isolation, cloning and characterization of genes.

The lab is equipped with all necessary instruments to contact experiments in Molecular-Microbial Genetics and Biotechnology and also has a RT-PCR and two DNA sequencers.

The research group presently includes the Senior Lecture Dr.K-M.Pappas and the Lecturer Dr. V.N.Kouvelis; the Post doctoral Fellows Drs A.Krimitzas, P.Pramateftaki and E.Pantou; and the Ph.D. students I.Papaioannou and L.Eboigbe.

Teaching

The co-ordinator of three under-graduate courses : (a) Basic Genetics (compulsory), (b) Advance Genetics (choice course), (c) Biotechnology (choice course), and a post-graduate course in Genetics for Ph.D. students.

Ph.D. supervison/examination

Has been the supervisor of 40 Ph.D. theses (18 directly his student, 16 of which have taken their Ph.D.s and 22 through different collaborations). Member of the examination board for more than 120 Ph.D. theses in Greece and 16 abroad (U.K.4, Spain 3, France 3, USA 2, Germany 2, Canada 1 and India 1).

Sequences deposited in Gene Banks

From over 1,000 different sequences deposited the most important are noted below:

(a) genomes

Verticillium lecanii (*Lecanicillium muscarium*) AF884128 (27,184 bp)
Metarhizium anisopliae var. *anisopliae* AF884128 (24,673 bp)
Candida zemplinina (*Candida stellata*) NC 005972 (23,114 bp)
Hanseniaspora uvarum DQ058142 (11,094 bp)
Verticillium dahliae DQ351941 (27,184 bp)
Fusarium oxysporum AY945289 (3,.477 bp)
Beauveria bassiana EU10742 **(**32,263 bp)
Beauveria brongniartii EU100743 **(**33,926 bp)
Zymomonas mobilis plasmid CP4.2 EU709732 (32,623 bp)
Zymomonas mobilis subsp. mobilis ATCC 11163, whole genome NC_013355 (2,124,771 bp; 1883 genes)
Zymomonas mobilis subsp. mobilis ATCC 10988, whole genome shotgun sequencing project ACQU00000 (2.095.199 bp; 1892 genes)
Zymomonas mobilis subsp. mobilis ATCC 11163, plasmid pZA1001 NC_013356 (53,800 bp)
Zymomonas mobilis subsp. mobilis ATCC 11163, plasmid pZA1002 NC_013357 (40,818 bp)
Zymomonas mobilis subsp. mobilis ATCC 11163, plasmid pZA1003 NC_013358 (4,551 bp)

(b) Population studies

Verticillium (252) AY 555875 - AY 556056 ; AY 555847 – AY555952 ; AY 555919 – AY555925; AY 555947 – AY555952 ; DQ351942 - DQ351960
Metarhizium (234), AF516288 – AF616325 ; AF363459 – AF 363479 ; DQ243837 - DQ243889
Lecanicillium (230) EF512850 - EF513080
Beauveria (90 + 114 που αναμένουν acc.no) ; EU086396 - EU086455
Candida zemplinina (28) EU047747 - EU047748 ; EU183506 - EU183529
Zymomonas mobilis (50)

RECENT PUBLICATIONS

1. Typas MA (2000). Molecular characterization of *Verticillium* species. In "Advances in Verticillium research and disease management" eds. EC Tjamos, RC Rowe, JB Heale & DR Flavel, The American Phytopathological Society Press, pp.32-40.

2. Pramateftaki P and Typas MA (2000). The complete rRNA gene complex sequence of *Verticillium dahliae*. In "Advances in Verticillium research and disease management" eds. EC Tjamos, RC Rowe, JB Heale & DR Flavel, The American Phytopathological Society Press, pp.53-58.

3. Kouvelis V and Typas MA (2000). The organization of mitochondrial DNA in *Verticillium lecanii*. In "Advances in Verticillium research and disease management" eds. EC Tjamos, RC Rowe, JB Heale & DR Flavel, The American Phytopathological Society Press, pp.63-68.

4. Pramateftaki P, Antoniou P and Typas MA (2000). The complete DNA sequence of the nuclear ribosomal RNA gene complex of *Verticillium dahliae* : intraspecific heterogeneity within the intergenic spacer region. *Fungal Genetics and Biology* **29** : 19-27.

5. Arvanitis N, Pappas K-M, Afendra A, Kolios G, Typas AM and Drainas C (2000). Characterization and replication properties of the *Zymomonas mobilis* ATCC10988 plasmids pZMO1 and pZMO2. *Plasmid* **44** : 127-137.

6. Pramateftaki P, Lanaridis P and Typas MA (2000). Molecular identification of wine yeasts at species or strain level : a case study with strains from two vine-growing areas of Greece. *Journal of Applied Microbiology* **89** : 236-248.

7. Savvidis A, Kallimanis A, Varsaki A, Koukkou A, Drainas C, Typas MA and Karagouni A (2000). Simultaneous ethanol and bacterial ice nuclei production from sugar beet molasses by a *Zymomonas mobilis* CP4 mutant expressing the *ina*Z gene of *Pseudomonas syringae* in continuous cultures. *Journal of Applied Microbiology* **89** : 1002-1008.

8. Mavridou A, Cannone J and Typas MA (2000). Identification of five group-I introns at three different positions within the 28S rDNA gene of the entomopathogenic fungus *Metarhizium anisopliae* var. *anisopliae*. *Fungal Genetics and Biology* **31** : 79-90.

9. Karapapa V and Typas MA (2001). Characterization of a group-I intron in the nuclear SSU-rRNA gene of *Verticillium longisporum*. *Current Microbiology* **42** : 217-224

10. Galeros M, Pappas K.M, Beletsiotis E and Typas MA (2001). IS*1068* : an IS5-like insertion element from *Zymomonas mobilis*. *Archives of Microbiology* **175** : 323-333.

11. Typas MA, Pantou M and Ghikas D (2001). Genetic fingerprinting tools and comparisons of entomopathogenic fungi. Enhanced Biocontrol Agents and Handling Risks, IOS Press, The Netherlands, Vol.39, ed. M.Vurro, I.Gressel, T.Butt, G.Harman, D.Nuss, D.Sands & R.St.Leger, chapter 19, pp.217-228.

12. Savvides AL, Chalkou KI, Typas MA and Karagouni AD (2001). Enzymes of Enter-Doudoroff and pyruvate decarboxylation pathway in *Zymomonas mobilis* mutants grown in continuous cultures. *Antonie van Leeuwenhoek* **80** : 287-295.

13. Wang C, Typas MA and Butt TM (2002). Detection and characterization of *pr1* virulent gene deficiencies in the insect pathogenic fungus *Metarhizium anisopliae*. *FEMS Microbiology Letters* **213** : 251-255.

14. Pantou M, Mavridou A & Typas MA (2003). IGS sequence variation, group-I introns and the complete nuclear ribosomal DNA of the entomopathogenic fungus *Metarhizium* : excellent tools for isolate detection and phylogenetic analysis. *Fungal Genetics and Biology* **38** : 159-174.

15. Wang C, Li Z, Typas MA and Butt T (2003). Nuclear large subunit rDNA group I intron distribution in a population of *Beauveria bassiana* strains: phylogenetic implications. *Mycological Research* **107** : 1189-1200.

16. Kouvelis VN, Ghikas DV and Typas MA (2004). The analysis of the complete mitochondrial genome of *Lcaniicillium muscarium* (synonym *Verticillium lecanii*) suggests a minimum common gene organization in mtDNAs of Sordariomycetes : phylogenetic implications. *Fungal Genetics and Biology* **41** : 930-940.

17. Wang C, Typas MA and Butt TM (2005). Phylogenetic and exon-intron structure analysis of fungal subtilisins : Support for a mixed model of intron evolution. *Journal of Molecular Evolution* **60** : 238-246.

18. Pantou M and Typas MA (2005). Electrophoretic karyotype and gene mapping of the vascular wilt fungus *Verticillium dahliae*. *FEMS Microbiology Letters* **245** : 213-220.

19. Pantou MP, Strunnikova OK, Shakhnazarova VYu, Cishnevskaya NA, Papalouka VG and Typas MA (2005). Molecular and immunochemical phylogeny of *Verticillium* species. *Mycological Research* **109** : 889-902.

20. Pramateftaki P, Lanaridis P, Kouvelis VN and Typas MA (2006). The mitochondrial genome of the wine yeast *Hanseniaspora uvarum* : a unique genome organization among yeast/fungal counterparts. *FEMS Yeast Research* **6 :** 77-90.

21. Ghikas D, Kouvelis VN and Typas (2006). The complete mitochondrial genome of the entomopathogenic fungus *Metarhizium anisopliae* var. *anisopliae* : gene order and *trn* clusters revealed a common evolutionary course for all Sordariomycetes. *Archives for Microbiology* **185** : 393-401

22. Pantou MP, Kouvelis VN and Typas (2006). The complete mitochondrial genome of the vascular wilt fungus *Verticillium dahliae*: a novel gene order for Verticillium and a diagnostic tool for species identification. *Current Genetics* **50** : 125-136.

23. Pramateftaki P., Kouvelis VN, Lanaridis P and Typas MA (2008). The complete mitochondrial genome sequence of the wine yeast *Candida zemplinina*: intra-species distribution of a novel group-IIB1 intron with eubacterial affiliations. *FEMS Yeast Research*. **8 :** 311-327.

24. Kouvelis VN, Ghikas D, Edgington S, Typas MA and Moore D (2008). Molecular characterisation of isolates of *Beauveria bassiana* obtained from over-wintering and summer populations of Sunn Pests (*Eurygaster integriceps*). *Letters in Applied Microbiology* **46** : 414-420.

25. Georgopoulos A, Typas MA and Demetzos K (2008). The use of liposomes as biosensors. An overview. *Pharmakeftiki* **21** : 22-29.

26. Kouvelis VN, Sialakouma A and Typas MA (2008). Mitochondrial gene sequences alone or combined with ITS region sequences provide firm molecular criteria for the classification of *Lecanicillium* species. *Mycological Research* **112** : 829-844.

27. Pantou MP, Kouvelis VN and Typas MA (2008). The complete mitochondrial genome of *Fusarium oxysporum*: insights into fungal mitochondrial evolution. *Gene* **419** : 7-15.

28. Kouvelis VN, Saunders E, Brettin TS, Bruce D, Detter C, Han C, Typas MA and Pappas KM (2009). Complete genome sequence of ethanol producer *Zymomonas mobilis* NCIMB 11163. *Journal of Bacteriology* **191** : 7140-7041. Epub 2009 Sep 18.

29. Yang S, Pappas KM, Hauser LJ, Land ML, Chen G-L, Hurst GB, Pan C, Kouvelis V, Typas MA, Pelletier DA, Klingeman DM, Chang Y-J, Samatova NF and Brown SD (2009). Improved genome annotation for *Zymomonas mobilis*. *Nature Biotechnology* **27** : 893-894.

30. Ghikas DV, Kouvelis VN and Typas MA (2010). Phylogenetic and biogeographic implications inferred by mitochondrial intergenic region analyses and ITS1-5.8S-ITS2 of the entomopathogenic

fungi *Beauveria bassiana* and *B. brongniartii*. *BMC Microbiology* **10:**174 doi:10.1186/1471-2180-10-174.

31. Goudopoulou A, Krimitzas A and Typas MA (2010). Differential gene expression of ligninocellulolytic enzymes in *Pleurotus ostreatus* grown on olive-oil mill wastewater. *Applied Microbiology and Biotechnology* **88** :541-551. Doi:10.1007/s00253-010-2750-9.

32. Kouvelis VN, Pappas K-M, Wang C, Skrobek A, Typas MA and Butt TM (2010). Assessment of secondary metabolites of fungal Biological Control Agents and comparison/complementation of the Ames *Salmonella*/microsome mutagenicity assay and the VITOTOX test. *Mutation Research* (accepted for publication)

33. Typas MA and Kouvelis VN (2010). Phylogenetic analysis of entomopathogenic fungi. In "Microbial Insecticides: Principles and applications" ed. Borgio JF (accepted, prepared for publication)