

CHARALAMBOS SAVAKIS, MD PHD

**PROFESSOR
EMERITUS
UNIVERSITY OF
CRETE**

**ASSOCIATE RESEARCHER
BIOMEDICAL SCIENCES RESEARCH CENTER 'ALEXANDER
FLEMING'**

B.S.R.C. 'Alexander Fleming'
P.O. Box 74145
16602 Varkiza
GREECE

Tel: +30 210 8976 404 • Fax: +30 210 8976 405 • email:
savakis@fleming.gr

Married, Born 12 March 1949

EDUCATION

1967-1974 *M.D.*, Medical School, University of Athens
1974-1975 *Special Student*, Faculty of Arts and Sciences, Harvard University
1975-1981 *Ph.D. in Cell and Developmental Biology*, Division of Medical Sciences,
Graduate School of Arts and Sciences, Harvard University, USA
Thesis: "Studies on ecdysteroid-inducible polypeptides and their RNAs in a *Drosophila melanogaster* cell line". Advisor: Prof. Peter Cherbas

POSTGRADUATE TRAINING

1981-1982 *Postdoctoral Fellow*, Harvard University, USA
1982-1984 *Postdoctoral Researcher*, supported by an EMBO long-term
fellowship, Department of Genetics, University of Cambridge, UK

ACADEMIC APPOINTMENTS

PAST APPOINTMENTS

1984-2008 *Associate Investigator*, Institute of Molecular Biology and Biotechnology, Foundation
for Research and Technology Hellas (IMBB-FoRTH)
1985-1987 *Assistant Professor of Molecular and Cell Biology*, Division of Basic Medical
Sciences, Medical School, University of Crete
1987-1995 *Associate Professor of Molecular and Cell Biology*, Division of Basic Medical
Sciences, Medical School, University of Crete
1995-2016 *Professor of Molecular Biology and Molecular Genetics*, Division of Basic Medical
Sciences, Medical School, University of Crete

2006-2008	<i>Visiting Professor and Principal Research Fellow, Division of Cell and Molecular Biology, Imperial College London (on sabbatical leave)</i>
2010-2016	<i>President (Scientific Director and Chair of the Management Board) Biomedical Sciences Research Center 'Alexander Fleming'</i>

CURRENT APPOINTMENTS

2016-	<i>Professor Emeritus, University of Crete</i>
2016-	<i>Associate Researcher, B.S.R.C. "Alexander Fleming"</i>

OTHER ACADEMIC POSITIONS

1988-1989	<i>Director, Division of Basic Medical Sciences, Medical School, University of Crete</i>
1997-1999	<i>Director, Division of Basic Medical Sciences, Medical School, University of Crete</i>
1998-2001	<i>Director of Studies, Joint Graduate Program on Molecular Biology and Biomedicine, IMBB-FoRTH, Department of Biology and Medical School, University of Crete</i>

OTHER APPOINTMENTS

2003-2004	<i>President (Chief Executive Officer and Chairman of the Board), Hellenic Medicines Agency (ΕΟΦ)</i>
-----------	---

SCIENTIFIC ACADEMIES

EMBO member since 2000

HONORS AND AWARDS

National Scholarships Foundation (IKY) Scholarship, 1967-68
 Papadakis Scholarship, University of Athens, 1968-1973
 Research Award, FoRTH, October 2000.

COMMITTEE AND BOARD MEMBERSHIPS

- Task Force on Bioinformatics, European Commission, 1987-1989
- Evaluation Panels for research proposals, European Commission, 1990-1997
- Scientific Council, IMBB-FoRTH (elected) 1985-1997, 1999-2004
- Executive Board, European Molecular Biology Network EMBNet (elected) 1994-1996
- Executive Board of the Research Committee (ΕΛΚΕ), University of Crete (elected) 1999-2006
- Co-founder and Non-executive Director, Minos BioSystems Ltd, 1999-2006
- Scientific Council, National Center of Scientific Research "Demokritos", 2000-2003
- Vice-Chair, Hellenic National Council of Research and Technology (ΕΣΕΤ), 2001-2004
- Management Board, European Medicines Evaluation Agency (EMA, *ex officio*), 2003-2004
- EMBC and EMBL Councils (National Delegate for Greece), 2003-2016
- External Advisory Group on Human Resources, Mobility and Marie Curie Actions, European Commission (now Advisory Group, *People Program*), 2003-2010
- International Advisory Committee for Nucleotide Sequence Databases, 2004 -

- Biology and Biotechnology Council of ESET, 2004-2010 (Chairman, 2004-2007)
- Ethics Committee, Foundation for Research and Technology Hellas, 2005-2015
- Chair, EMBL Council (elected) 2007-2009
- European Nucleotide Archive (ENA) Scientific Advisory Board, 2010 – 2018
- International Advisory Committee, International Nucleotide Sequence Database Collaboration (INSDC) 2010 -
- ELIXIR-EUROPE Interim Management Board 2013-2016
- ERC Consolidator Grants evaluation panel 2014
- Vice Chair, EMBC Council, 2015-2016
- National Bioethics Commission 2015 - 2020
- National Commission for Human Rights 2015 - 2022
- ELIXIR-EUROPE Management Board 2016 -
- Ethics Committee “Athena” Research & Innovation Centre 2016 – (Chair since 2021)
- Vice-Chair, National Research & Innovation Council (ΕΣΕΚ), 2017 – 2019
- Head of Node, ELIXIR-GREECE 2018-2020
- Scientific Council, Hellenic Foundation for Research and Innovation (ΕΛΙΔΕΚ) 2020 – 2023

SUMMARY OF RESEARCH

Research in my laboratory has focused mainly on:

- Development of transposon-based transgenesis and mutagenesis systems in insects and in mammals, using the *Minos* mobile element as vector
- Development of novel genetic methodologies to control populations of insects of importance to man, using *Minos*-based technologies
- Understanding the molecular basis of host-symbiont interactions in *Wolbachia*-insect associations and applying *Wolbachia*-induced cytoplasmic incompatibility for insect population control

Minos, a *Tc1*-like Type 2 transposable element of *Drosophila hydei*, was discovered in the Savakis laboratory at IMBB – University of Crete. Work from my group demonstrated that *Minos* can transpose in a variety of invertebrate species, in human cultured cells and in mouse somatic and germ line cells. *Minos*- mediated germ line transformation of the Medfly, *Ceratitis capitata*, a major agricultural pest, was the first demonstration of transposon-mediated transgenesis in insects other than *Drosophila* and *Minos* has been used to transform *Anopheles* mosquito species and the olive fly *Bactrocera oleae* (Dacus). *Minos*-based insertional mutagenesis in *Drosophila melanogaster* is now established as an important tool for genome- wide functional analysis in this model organism.

We have developed systems for insect pest control through genetic engineering, focusing on the Medfly and the olive fly as model organisms for non-*Drosophila* dipterans of economic importance. In this line of work, proof-of-principle has been demonstrated for a novel technology (SIPP, Sensitization of Insect Populations to Pro-insecticides), which can be useful for genetic sexing and insect population control.

In addition, in collaboration with the group of Kostas Bourtzis, now at the Joint FAO/IAEA Programme we have studied the biology of an endosymbiotic bacterium of insects, *Wolbachia pipientis*, which manipulates the reproduction of its hosts, and have investigated the potential use of *Wolbachia* for the control of populations of insect pests.

FUNDING

Co-ordination of 9 European and 15 Greek grants and participation in 7 international and 2 Greek grants, with a total budget of approximately 11,000,000 €.

PUBLICATIONS

ORIGINAL RESEARCH PAPERS

1. Kouvelas E.D., **C. Savakis**, E.T. Tzebelikos, G. Bonatsos, and S. Mitrosilis. 1976. Developmental characteristics of histamine methyl transferase and phenylethanolamine N-methyl transferase of rat. brain. *Experientia* 32: 1136-1138.
2. Wieland S.J., T.O. Fox and **C. Savakis**. 1978. DNA binding of androgen and estrogen receptors from mouse brain: Behavior of residual receptor of *tfm* mutant. *Brain Research* 140: 159-164
3. **Savakis C.**, G. Demetri, and P. Cherbas. 1980. Ecdysteroid-inducible polypeptides in a *Drosophila* cell line. *Cell* 22: 665-674
4. Cherbas P., L. Cherbas, **C. Savakis**, and MMD Koehler. 1981. Ecdysteroid-responsive genes in a *Drosophila* cell line. *Amer. Zool.* 21: 743-750
5. **Savakis C.**, M.M.D. Koehler, and P. Cherbas. 1984. cDNA clones for the ecdysone-inducible polypeptide (EIP) mRNAs of *Drosophila* Kc cells. *EMBO J.* 3: 235-243
6. Chia W., **C. Savakis**, R. Karp, H. Pelham, and M. Ashburner. 1985. Mutation of the *Adh* gene of *Drosophila melanogaster* containing an internal tandem duplication. *J. Mol. Biol.* 186: 679-688
7. **Savakis C.** and M. Ashburner. 1985. A simple gene with a complex pattern of transcription: The *Adh* gene of *Drosophila melanogaster*. *Cold Spring Harbor Symp. Quant Biol.* 50: 505-514
8. Cherbas L., R.A. Schulz, M.M.D. Koehler, **C. Savakis**, and P. Cherbas. 1986. Structure of the *EIP28/29* gene, an ecdysone-inducible gene from *Drosophila*. *J. Mol. Biol.* 189: 617-631
9. **Savakis C.**, M. Ashburner and J.H. Willis. 1986. The expression of the gene coding for alcohol dehydrogenase during the development of *Drosophila melanogaster*. *Devel. Biol.* 114: 194-207
10. Chia W., **C. Savakis**, R. Karp, and M. Ashburner. 1987. *Adhⁿ⁴* of *Drosophila melanogaster* is a nonsense mutation. *Nucleic Acids Res.* 15: 3931
11. Casida J.E., T.J. Class, and **C. Savakis**. 1988. Metabolic activation and detoxification of aliphatic alcohols in *Drosophila melanogaster* and *Ceratitis capitata* in relation to their alcohol dehydrogenase activity. *Pesticide Biochem. Physiol.* 32: 46-54
12. Saunders R.D.C., D.M. Glover, M. Ashburner, I. Sidén-Kiamos, C. Louis, M. Monastirioti, **C. Savakis** and F.C. Kafatos. 1989. PCR amplification of DNA microdissected from a single polytene chromosomal band; comparison with conventional microcloning. *Nucleic Acids Res.* 17: 9027-9037
13. Sidén-Kiamos I., R.D.C. Saunders, L. Spanos, T. Majerus, J. Treanear, **C. Savakis**, C. Louis, D.M. Glover, M. Ashburner and F.C. Kafatos. 1990. Towards a physical map of the *Drosophila melanogaster* genome: Mapping of cosmid clones within defined genomic divisions. *Nucleic Acids Res.* 18: 6261-6270
14. Rina M. and **C. Savakis**. 1991. A cluster of vitellogenin genes in the mediterranean fruit fly *Ceratitis capitata*: Sequence and structural conservation in dipteran yolk proteins. *Genetics* 127: 769-780
Kafatos F.C., C. Louis, **C. Savakis**, D.M. Glover, M. Ashburner, A.J. Link, I. Sidén-Kiamos and R.D.C. Saunders. 1991. Integrated maps of the *Drosophila* genome: Progress and prospects. *Trends in Genetics* 7: 155-161
15. Franz G. and **C. Savakis**. 1991. *Minos*, a new transposable element from *Drosophila hydei*, is a member of the Tc1-like family of transposons. *Nucleic Acids Res.* 19: 6646.
16. Ashburner M., D.M. Glover, R.D.C. Saunders, I. Duncan, D. Hartl, J. Merriam, G. Lee, J. Johnsen, F.C. Kafatos, I. Sidén-Kiamos, C. Louis and **C. Savakis**. 1991. Genome Maps 1991: *Drosophila*

melanogaster. *Science* 254 (Supplement)

17. Zacharopoulou A., M. Frisardi, **C. Savakis**, A. Robinson, P. Tolias, M. Konsolaki, K. Komitopoulou and F.C. Kafatos. 1992. The genome of the Mediterranean fruitfly *Ceratitis capitata*: Localization of molecular markers by *in situ* hybridization to salivary gland polytene chromosomes. *Chromosoma*. 101: 448-455
18. Konsolaki M., M. Sanicola, T. Kozlova, B. Arcà, **C. Savakis**, W.M. Gelbart and F.C. Kafatos. 1992. FLP-mediated intermolecular recombination in the cytoplasm of *Drosophila* embryos. *The New Biologist* 4: 551-557
19. Saunders R.D., M. Ashburner, D. Coulson, D.M. Glover, F.C. Kafatos, C. Louis, J. Modolell, G.A. Rimmington, **C. Savakis** and I. Siden-Kiamos. 1993. Polytene chromosome microdissection and molecular genome mapping in *Drosophila* and other dipterans. *Parassitologia*. 35 Suppl: 99-102
20. **Savakis C.** and R. Doelz. 1993. Contamination of cDNA sequences in databases. *Science* 259: 1677- 1678
21. Gasperi G., D. Kafetzopoulos, A. Christodoulidou, V. Bouriotis and **C. Savakis**. 1994. Isolation and partial characterization of two alcohol dehydrogenase isozymes from the medfly *Ceratitis capitata*. *Insect Biochem. and Mol. Biol.* 24: 87-94
22. Franz G., T.G. Loukeris, G. Dialektaki, C.R.L. Thompson and **C. Savakis**. 1994. Mobile Minos elements from *Drosophila hydei* encode a two-exon transposase with similarity to the *paired* DNA- binding domain. *Proc. Natl. Acad. Sci. USA* . 91: 4746-4750
23. Bourtzis K., A. Nirgianaki, P. Onyango and **C. Savakis**. 1994. A prokaryotic *dnaA* sequence in *Drosophila melanogaster*: *Wolbachia* infection and cytoplasmic incompatibility among laboratory strains. *Insect Mol. Biol.*. 3: 131-142
24. Madueno E., G. Papagiannakis, G. Rimmington, R.D.C. Saunders, **C. Savakis**, I. Sidén-Kiamos, G. Skavdis, L. Spanos, J. Trennear, P. Adam, M. Ashburner, P. Benos, V.N. Bolshakov, D. Coulson, D.M. Glover, S. Goerick. F.C. Kafatos, C. Louis, T. Majerus and J. Modolel. 1995. A physical map of the X chromosome of *Drosophila melanogaster*: Cosmid contigs and sequence tagged sites. *Genetics* 139: 1631-1647
25. Loukeris T.G., B. Arcà, I. Livadaras, G. Dialektaki, and **C. Savakis**. 1995. Introduction of the transposable element *Minos* into the germ line of *Drosophila melanogaster*. *Proc. Natl. Acad. Sci. USA*. 92: 9485-9489
26. Loukeris T.G., I. Livadaras, B. Arcà, S. Zabalou and **C. Savakis**. 1995. Gene transfer into the Medfly, *Ceratitis capitata*, with a *Drosophila hydei* transposable element. *Science* 170: 2002-2005
27. Bourtzis K., A. Nirgianaki, G. Markakis and **C. Savakis**. 1996. *Wolbachia* infection and cytoplasmic incompatibility in *Drosophila* species. *Genetics* 144: 1063-1073
28. Arcà B., S. Zabalou, T. Loukeris, and **C. Savakis**. 1997. Mobilization of a *Minos* transposon in *Drosophila melanogaster* chromosomes and chromatid repair by heteroduplex formation. *Genetics* 145: 267-279
29. Louis, C., E Madueno, J. Modolell, M. M. Omar, G. Papagiannakis, R. D. C. Saunders, **C. Savakis**, I. Sidén-Kiamos, L. Spanos, P. Topalis, Yong Zhang, M. Ashburner, P. Benos, V. N. Bolshakov, P. Deak, D. M. Glover, S. Herrmann and F. C. Kafatos. 1997. One-hundred and five new potential *Drosophila melanogaster* genes revealed through STS analysis. *Gene* 195: 187-193
30. Deak, P., M.M. Omar, R.D.C. Saunders, M. Pál, O. Komonyi, J. Szidonya, P. Maroy, Y. Zhang, M. Ashburner, P. Benos, **C. Savakis**, I. Siden-Kiamos, C. Louis, V.N. Bolshakov, F.C. Kafatos, E. Madueno, J. Modolell, and D.M. Glover. 1997. P element insertion alleles of essential genes on the third chromosome of *Drosophila melanogaster*: Correlation of physical and cytogenetic maps in chromosomal region 86E-87F. *Genetics* 147: 1697-1722

31. Gubb, D., A. Zacharopoulou, I. Livadaras, P. Gourzi, J. Roote, and **C. Savakis**. 1998. Recovery of a marked translocation strain that will facilitate the isolation of balancer chromosomes in the Mediterranean fruit fly, *Ceratitis capitata* *Genome* 41: 256-265
32. Poinot, D., K. Bourtzis, G. Markakis, **C. Savakis**, and H. Merçot. 1998. *Wolbachia* transfer from *Drosophila melanogaster* into *D. simulans*: host effect and cytoplasmic incompatibility relationships. *Genetics*, 150:227-237
33. Gomulski, L.M., K. Bourtzis, S. Brogna, P.A. Morandi, F. Sebastiani, C. Torti, C.R. Guglielmino, **C. Savakis**, G. Gasperi and A.R. Malacrida. 1998. Intron size polymorphism of the *Adh* gene parallels the world-wide colonization history of the Mediterranean fruit fly, *Ceratitis capitata*. *Molec. Ecol.* 7:1729-1741
34. Sun, L., A. Babaratsas, **C. Savakis**, S.L. O'Neill and K. Bourtzis. 1999. Gene organization of the *dnaA* region of *Wolbachia*. *J. Bacteriol.* 181: 4708-4710
35. Benos, P., N. Tavernarakis, S. Brogna, G. Thireos and **C. Savakis**. 2000. Insect transformation marker acquisition: Isolation of a novel alcohol dehydrogenase gene from *Bactrocera oleae* by functional complementation in yeast. *Mol. Gen. Genet.* 263 : 90-95
36. Catteruccia, F., T. Nolan, T. G. Loukeris, C. Blass, **C. Savakis**, F. C. Kafatos, and A. Crisanti. 2000. Germ line transformation of *Anopheles stephensi*, a mosquito vector of human malaria. *Nature* 405: 959-962
37. Klinakis, A.G., T.G. Loukeris, A. Pavlopoulos and **C. Savakis**. 2000. Mobility assays confirm the broad host range activity of the *Minos* transposable element and validate new transformation tools. *Insect Mol. Biol.* 9:269-275
38. Shimizu, K., M. Kamba, H. Sonobe, T. Kanda, A.G. Klinakis, **C. Savakis** and T. Tamura. 2000. Extrachromosomal transposition of the transposable element *Minos* occurs in embryos of the silkworm *Bombyx mori*. *Insect Mol. Biol.* 9:277-281
39. Christophides G.K., I. Livadaras, **C. Savakis** and K. Komitopoulou. 2000. Two medfly promoters that have originated by a recent duplication drive distinct sex, tissue and developmental expression patterns. *Genetics*. 156:173-182
40. Gourzi P., D. Gubb, I. Livadaras, C. Caceres, G. Franz, **C. Savakis** and A. Zacharopoulou. 2000. The construction of the first balancer chromosome for the mediterranean fruit fly, *Ceratitis capitata*. *Mol. Gen. Genet* 264:127-36
41. Klinakis, A.G., L. Zagoraiou, D.K. Vassilatis and **C. Savakis**. 2000. Genome-wide insertional mutagenesis in human cells by the *Drosophila hydei* mobile element *Minos*. *EMBO Reports*. 1: 416-421
42. Arcà B., and **C. Savakis**. 2000. Distribution of the transposable element *Minos* in the genus *Drosophila*. *Genetica*. 108: 263-267
43. Brogna, S., P.V. Benos, G. Gasperi and **C. Savakis**. 2001. The *Drosophila* alcohol dehydrogenase gene may have evolved independently of the functionally homologous medfly, olive fly and flesh fly genes. *Mol. Biol. Evol.* 8: 322-329
44. Christophides G.K., **C. Savakis**, A.C. Mintzas and K. Komitopoulou. 2001. Expression and function of the *Drosophila melanogaster* ADH in male *Ceratitis capitata* adults: a potential strategy for medfly genetic sexing based on gene-transfer technology. *Insect Mol Biol.* 10: 249-254
45. Zagoraiou L., D. Drabek, S. Alexaki, J.A. Guy, A.G. Klinakis, A. Langeveld, G. Skavdis, C. Mamalaki, F. Grosveld and **C. Savakis**. 2001. *In vivo* transposition of *Minos*, a *Drosophila* mobile element, in mammalian tissues. *Proc. Natl. Acad. Sci. USA* 98: 11474-11478
46. Kapetanaki M.G., T.G. Loukeris, I. Livadaras and **C. Savakis**. 2002. High frequencies of *Minos* transposon mobilization are obtained in insects by using *in vitro* synthesized mRNA as a source of transposase. *Nucleic Acids Res.* 30:3333-3340

47. Liepouri F., T.G. Deligeorgiev, Z. Veneti, **C. Savakis**, and H.E. Katerinopoulos. 2002. Near-membrane iminocoumarin-based low affinity fluorescent Ca^{2+} indicators. *Cell Calcium* 31: 221-227
48. Nirgianaki A., G.K. Banks, D. Frohlich, Z. Veneti, H.R. Braig, T.A. Miller, I.D. Bedford, P. G. Markham, **C. Savakis** and K. Bourtzis. 2003. *Wolbachia* infections of the whitefly *Bemisia tabaci*. *Current Microbiology*, 47: 93-101
49. Veneti Z., M.E. Clark, S. Zabalou, T.L. Karr, **C. Savakis** and K. Bourtzis. 2003. Cytoplasmic incompatibility and sperm cyst infection in different *Drosophila*-*Wolbachia* associations. *Genetics* 164: 545-552
50. Drabek D., L. Zagoraiou, T. de Wit, A. Langeveld, Ch. Roumpaki, C. Mamalaki, **C. Savakis** and F. Grosveld. 2003. Transposition of *Minos*, a *Drosophila hydei* transposon, in the mouse germ line. *Genomics*, 8: 108-111
51. Markaki M., R.K. Craig and **C. Savakis**. 2004. Insect population control using female specific pro- drug activation. *Insect Biochem. Mol. Biol.*, 34: 131-137
52. Komitopoulou K., G.K. Christophides, K. Kalosaka, G. Chrysanthi, M.A. Theodoraki, **C. Savakis**, A. Zacharopoulou and A.C. Mintzas. 2004. Medfly promoters relevant to the sterile insect technique. *Insect Biochem. Mol. Biol.* 34: 149-157
53. Veneti Z, M.E. Clark, T.L. Karr, **C. Savakis**, and K. Bourtzis. 2004. Heads or tails: host-parasite interactions in the *Drosophila-wolbachia* system. *Appl. Environ. Microbiol.* 70:5366-5372
54. Gomulski, L.M., S. Brogna, A. Babaratsas, G. Gasperi, A. Zacharopoulou, **C. Savakis** and K. Bourtzis. 2004. Molecular basis of the size polymorphism of the first intron of the *Adh-1* gene of the Mediterranean fruit fly, *Ceratitis capitata*. *J. Mol. Evol.* 58:732-742
55. Zabalou, S., M. Riegler, M. Theodorakopoulou, C. Stauffer, **C. Savakis** and K. Bourtzis. 2004. *Wolbachia*-induced cytoplasmic incompatibility as a means for insect pest population control. *Proc. Natl. Acad. Sci. USA.* 101:15042-15045
56. Metaxakis A., S. Oehler, A. Klinakis and **C. Savakis**. 2005. *Minos* as a genetic and genomic tool in *Drosophila melanogaster*. *Genetics* 171:571-581
57. Koukidou M., A. Klinakis, C. Reboulakis, L. Zagoraiou, N. Tavernarakis, I. Livadaras, A. Economopoulos and **C. Savakis**. 2006. Germline transformation of the olive fly *Bactrocera oleae* using a versatile transgenesis marker. *Insect Mol. Biol.* 15:95-103
58. Brogna, S., K. Bourtzis, L. M. Gomulski, M. Denaxa, A. Babaratsas, G. Gasperi and **C. Savakis**. 2006. Genomic organization and functional characterization of the *alcohol dehydrogenase* locus of *Ceratitis capitata* (Medfly). *Insect Mol. Biol.* 15: 259-268
59. Markaki, M., D. Drabek, I. Livadaras, R.K. Craig, F. Grosveld and **C. Savakis**. 2006. Stable expression of human growth hormone over 50 generations in transgenic insect larvae. *Transgenic Res.* 16: 99-107
60. Lagos, D., M. Koukidou, **C. Savakis** and K. Komitopoulou. 2007. The transformer gene in *Bactrocera oleae*: the genetic switch that determines its sex fate. *Insect Mol Biol* 16: 221-230
61. Meyer H., A. Darrell, A. Metaxakis, **C. Savakis** and J. Ripoll. 2008. Optical Projection Tomography for In-Vivo Imaging of *Drosophila melanogaster*. *Microscopy and Analysis* 22: 19-22
62. Zabalou S., A. Apostolaki, I. Livadaras, G. Franz, A.S. Robinson, **C. Savakis** and K. Bourtzis. 2009. Incompatible Insect Technique: Incompatible Males from a *Ceratitis capitata* (Diptera: Tephritidae) Genetic Sexing Strain. *Entomologia Experimentalis et Applicata*, 132: 232-240
63. Apostolaki A., A. Saridaki, I. Livadaras, **C. Savakis** and K. Bourtzis. 2011. Transinfection of the olive fruit fly with a *Wolbachia* CI inducing strain: a promising symbiont-based population control strategy? *J. Appl. Entomol.* DOI: 10.1111/j.1439-0418.2011.01614.x

64. Saridaki A., P. Sapountzis, H.L. Harris, P.D. Batista, J.A. Biliske, H. Pavlikaki, S. Oehler, **C. Savakis**, H.R. Braig, and K. Bourtzis. 2011. *Wolbachia* prophage DNA adenine methyltransferase genes in different *Drosophila-Wolbachia* associations. *PLoS ONE* 6(5): e1970 doi:10.1371/journal.pone.0019708
65. Bellen H.J., R.W. Levis, Y. He, J.W. Carlson, M. Evans-Holm, E. Bae, J. Kim, A. Metaxakis, **C. Savakis**, K. L. Schulze, R. A. Hoskins and A. C. Spradling. 2011. The *Drosophila* Gene Disruption Project: Progress using transposons with distinctive site-specificities. *Genetics* 188: 731-743
66. Papafotiou G., S. Oehler, **C. Savakis** and K. Bourtzis. 2011 Regulation of *Wolbachia* ankyrin-domain encoding genes in *Drosophila* gonads. *Res. Microbiol* 162: 764-772
67. Kalajdzic P, Oehler S, Reczko M, Pavlidi N, Vontas J, Hatzigeorgiou AG, **Savakis C**. 2012. Use of mutagenesis, genetic mapping and next generation transcriptomics to investigate insecticide resistance mechanisms. *PLoS One*. 2012;7(6):e40296
68. Kalajdzic P, M. Markaki M, S. Oehler, and **C. Savakis**. 2013. Imidacloprid does not induce Cyp genes involved in insecticide resistance of a mutant *Drosophila melanogaster* line. *Food Chem Toxicol* 60: 355-359
69. Arranz A., D. Dong, S. Zhu, **C. Savakis**, J. Tian and J. Ripoll. 2014. In-vivo optical tomography of small scattering specimens: time-lapse 3D imaging of the head eversion process in *Drosophila melanogaster*. *Sci. Rep.* 4: 7325
70. Roussou, I., **C. Savakis**, N. Tavernarakis and A. Metaxakis. 2016. Stage dependent nutritional regulation of transgenerational longevity. *Nutrition and Healthy Aging* 4: 47-54
71. Roussou, I.G., K. Papanikolopoulou, **C. Savakis** and E.M.C. Skoulakis. 2019. *Drosophila* Bruton's Tyrosine Kinase Regulates Habituation Latency and Facilitation in Distinct Mushroom Body Neurons. *J Neurosci.* 39(44):8730-8743

BOOK CHAPTERS, REVIEWS, ETC

1. Cherbas L., P. Cherbas, **C. Savakis**, G. Demetri, M. Manteuffel-Cymborowska, C.D. Yonge and C.M. Williams. 1980. Studies of ecdysterone action in a *Drosophila* cell line. In: Kusrstak/Maramorosh/Dübendorfer (eds.) *Invertebrate Systems In Vitro*, Elsevier/North Holland Biomedical Press, pp. 217-228.
2. Cherbas P., L. Cherbas, G. Demetri, M. Manteuffel-Cymborowska, **C. Savakis**, C.D. Yonge and C.M. Williams. 1980. Ecdysterone hormone effects in a *Drosophila* cell line. In: A.K. Roy and J.H. Clark (eds.) *Gene Regulation by Steroid Hormones*, Springer-Verlag, pp. 278-305.
3. Cherbas P., **C. Savakis**, L. Cherbas, and M.M.D. Koehler. 1982. Steroid-controlled gene expression in a *Drosophila* cell line. In: FO Schmidt, SJ Bird, and FE Bloom (eds). *Molecular Genetic Neuroscience*, Raven Press, New York, pp. 277-288.
4. Fox T.O. and **C. Savakis**. 1982. Nucleic acid affinity chromatography. In: W.H. Scouten (ed) *Solid Phase Biochemistry: Analytical and Synthetic Aspects*, John Wiley Sons Inc., pp. 189-221.
5. Cherbas P., **C. Savakis**, L. Cherbas, and M.M.D. Koehler. 1983. Steroid-controlled gene expression in a *Drosophila* cell line. In: *Gene Structure and Regulation in Development*. Alan L. Liss, New York. pp. 95-111.
6. Louis C., **C. Savakis**, and F.C. Kafatos. 1987. Possibilities for genetic engineering in insects of economic interest. In: A.P. Economopoulos (ed), *Fruitflies: Proceedings of the Second International Symposium*, Elsevier, Amsterdam and New York. pp 47-57.
7. Robinson A.S., **C. Savakis**, and C. Louis. 1988. Status of molecular genetic studies in the medfly, *Ceratitis capitata*, in relation to genetic sexing. In: *Modern Insect Control: Nuclear Techniques and Biotechnology*. International Atomic Energy Agency, Vienna. pp.241-250.

8. Arcà, B. and **C. Savakis**. 1997. The Polymerase Chain Reaction (PCR) and RT-PCR; in *The molecular biology of insect disease vectors: a methods manual*, Crampton, J., Beard C.B., and Louis, C., eds. Chapman and Hall, London pp 245-260.
9. Pavlopoulos, A., S. Oehler, M. Kapetanaki and **C. Savakis**. 2007. The DNA transposon *Minos* as a tool for transgenesis and functional genomic analysis in vertebrates and invertebrates. *Genome Biology* Suppl 1:S2

PATENTS AND PUBLISHED PATENT APPLICATIONS

1. **Charalambos Savakis**, Gerald H. Franz and Athanasios Loukeris. September 20, 1994. "Eukaryotic Transposable Element" U.S. Patent No 5,348,874
<http://www.freepatentsonline.com/5348874.html>
2. **Charalambos Savakis**, Gerald H. Franz, Athanasios Loukeris and Apostolos G. Klinakis. November 24, 1998. "Eukaryotic Transposable Element" U.S. Patent No 5,840,865
<http://www.freepatentsonline.com/5840865.html>
3. **Charalambos Savakis** and Gerald H. Franz. December 12, 2000. "Eukaryotic Transposable Element" U.S. Patent No 6,159,717
<http://www.freepatentsonline.com/6159717.html>
4. **Charalambos Savakis**, Gerald H. Franz, Athanasios Loukeris and Apostolos G. Klinakis. May 1, 2001. "Eukaryotic Transposable Element" U.S. Patent No 6,225,121
<http://www.freepatentsonline.com/6225121.html>
5. **Charalambos Savakis**, Gerald H. Franz and Athanasios Loukeris. October 22, 2002. "Eukaryotic Transposable Element" U.S. Patent No 6,469,228
<http://www.freepatentsonline.com/6469228.html>
6. Roger Craig and **Charalambos Savakis**. February 15, 2001. "Insect Control System" WO0110220 <http://www.freepatentsonline.com/WO2001010220A2.html>
7. Roger Craig and **Charalambos Savakis**. April 4, 2001. "Protein Production System" WO0129204 <http://www.freepatentsonline.com/WO2001029204A2.html>
8. **Charalambos Savakis**. April 26, 2001. "Method for Genetic Manipulation" WO0129205 <http://www.freepatentsonline.com/WO2001029205A2.html>
9. **Charalambos Savakis** and Frank Grosveld. September 27, 2001. "Method of Generating Transgenic Organisms Using Transposons" WO0171019
<http://www.freepatentsonline.com/WO2001071019A1.html>
10. Frank Grosveld and **Charalambos Savakis**. August 15, 2002. "Insertional Mutagenesis Technique" WO062991 <http://www.freepatentsonline.com/WO2002062991A1.html>
11. Roger Craig, **Charalambos Savakis** and Frank Grosveld. July 17, 2003. "Inducible Transposition Transgenic Organism Using Transposon Vector" WO056912
<http://www.freepatentsonline.com/WO2003056912A2.html>
12. **Charalambos Savakis**. November 27, 2003. "Use of Minos in Functional Genomics" WO097826 <http://www.freepatentsonline.com/WO2003097826A1.html>
13. Roger Craig, **Charalambos Savakis** and Apostolos Klinakis. December 2, 2004. "Multi-subunit Protein Production System in Transgenic Insect" WO013171
<http://www.freepatentsonline.com/WO2004013171A2.html>

Sum of the times cited (Scopus): 4380

h- index (Scopus): 35