BORYS WRÓBEL, PEER-REVIEWED PAPERS

1. Wróbel B. (1994) Pamięć na poziomie komórkowym i molekularnym [Memory on the cellular and molecular level]. *Kosmos*, 43, 231-244.

2. Neubauer P., Wróbel B., Węgrzyn G. (1996) DNA degradation at elevated temperatures after plasmid amplification in amino acid-starved *Escherichia coli* cells. *Biotech. Lett.*, 18, 321-326.

3. Wróbel B., Węgrzyn G. (1997) Replication and amplification of □ plasmids in Escherichia coli during amino acid starvation and limitation. *FEMS Microbiol. Lett.*, 153, 151-157.

4. Wróbel B., Węgrzyn G. (1997) Replication of plasmids derived from P1, F, R1, R6K and RK2 replicons in amino acid-starved *Escherichia coli* stringent and relaxed strains. *J. Basic Microbiol.*, 37, 451-463.

5. Wróbel B., Węgrzyn G. (1997) Differential amplification efficiency of pMB1 and p15A (ColE1-type) replicons in *Escherichia coli* stringent and relaxed strains starved for particular amino acids. *Microbiol. Res.,* 152, 251-255.

6. Wróbel B., Węgrzyn G. (1997) Amplification of pSC101 replicons in *Escherichia coli* during amino acid limitation. *J. Biotechnol.*, 58, 205-208.

7. Mikiewicz D., Wróbel B., Węgrzyn G., Płucienniczak A. (1997) Isolation and characterization of a ColE1-like plasmid from *Enterobacter agglomerans* with a novel variant of *rom* gene. *Plasmid*, 38, 210-219.

8. Wróbel B., Węgrzyn G. (1998) Replication regulation of ColE1-like plasmids in amino acid-starved *Escherichia coli*. *Plasmid*, 39, 48-62.

9. Wróbel B., Murphy H., Cashel M., Węgrzyn G. (1998) Guanosine tetraphosphate (ppGpp)-mediated inhibition of the bacteriophage □ p_R promoter activity in *Escherichia coli*. *Mol. Gen. Genetics*, 257, 490-495.

10. Wróbel B., Śrutkowska S., Węgrzyn G. (1998) Biochemical and genetic analysis of □^{W}, the newly isolated lambdoid phage. *Acta Biochim. Pol.*, 45, 251-259.

11. Wróbel B., Herman-Antosiewicz A., Szalewska-Pałasz A., Węgrzyn G. (1998) Polyadenylation of *oop* RNA in the regulation of bacteriophage □ development. *Gene*, 212, 57-65.

12. Szalewska-Pałasz A., Wróbel B., Węgrzyn G. (1998) Rapid degradation of polyadenylated *oop* RNA. *FEBS Lett.*, 43, 70-72.

13. Węgrzyn A., Wróbel B., Węgrzyn G. (1999) Altered biological properties of cell membranes in *Escherichia coli dnaA* and *seqA* mutants. *Mol. Gen. Genetics*, 261, 762-769.

14. Czyż A., Wróbel B., Węgrzyn G. (2000) *Vibrio harveyi* bioluminescence plays a role in stimulation of DNA repair. *Microbiology*, 146, 283-288.

15. Potrykus K., Wróbel B., Węgrzyn A., Węgrzyn G. (2000) Replication of *oriJ*-based plasmid DNA

during the stringent and relaxed responses of *Escherichia coli. Plasmid*, 44, 111-126.

16. Wróbel B., Yosef Y., Oppenheim A.B., Oppenheim A. (2000) Production and purification of SV40 major capsid protein (VP1) in *Escherichia coli* strains deficient for the GroELS chaperone machine. *J. Biotechnol.*, 84, 285-289.

17. Czyż A., Łoś M., Wróbel B., Węgrzyn G. (2001) Inhibition of spontaneous induction of lambdoid prophages in *Escherichia coli* cultures: simple procedures with possible biotechnologial applications. *BMC Biotechnology*, 1, 1.

18. Wróbel B., Węgrzyn G. (2002) Evolution of lambdoid replication modules. *Virus Genes*, 24, 163-171.

19. Czyż A., Łoś M., Wróbel B., Węgrzyn G (2002) Alleviation of problems with lambdoid prophage induction in *Escherichia coli* cultures. W: Life Sciences Technology, World Markets Research Centre, London, str. 1-3.

20. Wang Z., Le G., Shi Y., Węgrzyn G., Wróbel B. (2002) A model for regulation of ColE1-like plasmid replication by uncharged tRNAs in amino acid starved *Escherichia coli* cells. *Plasmid*, 47, 69-78.

21. Wróbel B. (2002) Replikacja plazmidów [Replication of plasmids]. *Kosmos*, 51, 255-272.

22. Wróbel B., Słomiński B., Węgrzyn G. (2003) The optimal eukaryotic signal for translation initiation from non-AUG codons, present upstream of bacteriophage □ *P* cistron, is inactive in *Escherichia coli*. *Cell. Mol. Biol. Lett.*, 8, 305-310.

23. Sanjuán R., Wróbel B. (2005) Weighted Least-Squares Likelihood Ratio Test for branch testing in phylogenies reconstructed from distance measures. *Syst. Biol.*, 54, 218-229.

24. Czarna A., Sanjuán R., González-Candelas F., Wróbel B. (2006) Topology testing of phylogenies using least squares methods. *BMC Evol. Biol.*, 6, 105.

25. Wróbel B., Torres-Puente, M., Jimenez, N., Bracho, M., Garcia-Robles, I., Moya, A. Gonzalez-Candelas, F. (2006) Analysis of the overdispersed clock in the short-term evolution of Hepatitis C Virus: using the E1/E2 gene sequences to infer infection dates in a single source outbreak. *Mol. Biol. Evol.*, 23, 1242-1253.

26. Wysocka A., Konopa G., Węgrzyn G., Wróbel B. (2006) Genomic DNA hybridization as an attempt to evaluate phylogenetic relationships of Ostracoda. *Crustaceana*, 79, 1309-1322.

27. Słomiński B., Całkiewicz J., Golec P., Węgrzyn G., Wróbel B. (2007) Plasmids derived from Gifsy-1/Gifsy-2, lambdoid prophages contributing to the virulence of *Salmonella enterica* serovar Typhimurium: implications for the evolution of replication initiation proteins of lambdoid phages and enterobacteria. *Microbiology*, 153, 1884-1896.

28. Torres-Puente M., Cuevas J. M., Jiménez-Hernández N., Bracho M. A., García-Robles I., Wróbel B., Carnicer F., del Olmo J., Ortega E., Moya A., González-Candelas F. (2008) Genetic variability in Hepatitis C Virus and its role in antiviral treatment response. *J. Viral Hepatitis*, 15, 188-199.

29. Torres-Puente M., Cuevas J. M., Jiménez-Hernández N., Bracho M. A., García-Robles I., Wróbel B., Carnicer F., del Olmo J., Ortega E., Moya A., González-Candelas F. (2008) Using evolutionary tools to refine the new hypervariable region 3 within the envelope 2 protein of Hepatitis C Virus. *Infect. Genet. Evol.*, 8, 74-82.

30. Wróbel B. (2008) Statistical measures of uncertainty for branches in phylogenetic trees inferred from molecular sequences by using model-based methods. *J. Appl. Genet.*, 49, 49-67.

31. Kijewska A., Czarna A., Fernández M., Zdzitowiecki K., Rokicki J, Wróbel B. (2008) Analysis of 5.8S rDNA and internal transcribed spacer 1 (ITS1) sequences of ascaridoid nematodes: phylogenetic signal and hypothesis testing. *Genes Genom.,* 30, 291-306.

32. Cuevas J. M., Torres-Puente M., Jiménez-Hernández N., Bracho M. A., García-Robles I., Wróbel B., Carnicer F., del Olmo J., Ortega E., Moya A., González-Candelas F. (2008) Genetic variability of Hepatitis C Virus before and after combined therapy of interferon plus ribavirin *PLoS ONE*, 26, e3058.

33. Wysocka A., Kostoski G., Kilikowska A., Wróbel B., Sell J. (2008) A molecular framework for the phylogenetic relationships of the *Proasellus* (Crustacea, Isopoda) species group, endemic to the Balkan Lake Ohrid. *Fundam. Appl. Limnol.*, 172, 301-313.

34. Joachimczak M., Wróbel B. (2008) Evolution of 3D development controlled by a gene regulatory network: the complexity of the search space and evolvability. W: *Proceedings of the GWAL-8, Leipzig, Germany (Edited by: K. Klemm, D. Merkle and E. Olbrich), IOS Press, Amsterdam, NL*, 11–22.

35. Joachimczak M., Wróbel B. (2008) Evo-devo in silico: a model of a gene network regulating multicellular development in 3D space with artificial physics. W: *Artificial Life XI: Proceedings of the Eleventh International Conference on the Simulation and Synthesis of Living Systems (Edited by: S. Bullock, J. Noble, R. Watson, M. Bedau), MIT Press, Boston, MA.*

36. Joachimczak M., Wróbel B. (2009) Evolution of 3D development controlled by a gene regulatory network: the complexity of the search space and evolvability. *Adv. Complex Syst.,* 12, 347-369.

37. Joachimczak M., Wróbel B. (2009) Evolution of the morphology and patterning of artificial embryos: scaling the tricolour problem to the third dimension. *Lecture Notes in Computer Science,* 5777, 33-41.

38. Glinkowska M., Łoś, J.M., Szambowska A., Czyż A., Całkiewicz J., Herman-Antosiewicz A., Wróbel B., Węgrzyn G., Węgrzyn A., Łoś M. (2010) Influence of the *Escherichia coli* oxyR gene on □ prophage maintenance. *Arch. Microbiol*., 192: 673-83.

39. Joachimczak M., Wróbel B. (2010) Processing signals with evolving artificial gene regulatory networks. W: *Artificial Life XII: Proceedings of the Twelfth International Conference on the Synthesis and Simulation of Living Systems (Edited by: H. Fellermann, M. Dörr, M.M. Hanczyc, L.L. Laursen, S. Maurer, D. Merkle, P.-A. Monnard, K. Stoy, S. Rasmussen), MIT Press, Boston,*

MA.

40. Joachimczak M., Wróbel B. (2010) Evolving gene regulatory networks for real time control of foraging behaviours W: *Artificial Life XII: Proceedings of the Twelfth International Conference on the Synthesis and Simulation of Living Systems (Edited by: H. Fellermann, M. Dörr, M.M. Hanczyc, L.L. Laursen, S. Maurer, D. Merkle, P.-A. Monnard, K. Stoy, S. Rasmussen), MIT Press, Boston, MA.*

41. Erdei, J., Joachimczak, M., and Wróbel, B. (2011). Ewolucja chemotaksji organizmów jednokomórkowych w dwuwymiarowym srodowisku [Evolution of chemotaxis of unicellular organisms in a 2-dimensional environment]. *Zeszyty Naukowe Wydziału ETI PG* 9:171-178.

42. Joachimczak, M. and Wróbel, B. (2011). Ewolucja sieci genowych kontrolujących wirtualne organizmy jedno- oraz wielokomórkowe [Evolution of gene networks controlling virtual unicellular and multicellular organims]. *Zeszyty Naukowe Wydziału ETI* PG 9:179-184.

43. Wenne R., Handschuh L., Poćwierz-Kotus A., Urbaniak R., Formanowicz P., Całkiewicz J., Brzozowska K., Figlerowicz M., Węgrzyn G., Wróbel B. (2011) The application of microarray technology to the identification of Tc1-like element sequences in fish genomes. *Mar. Biol. Res.,* 7, 466-477.

44. Jakubowska-Deredas M., Jurczak-Kurek M., Richert M., Los M., Narajczyk M., Wróbel B. (2012) Diversity of tailed phages in Baltic Sea sediment: Large number of siphoviruses with extremely long tails. *Res. Microbiol.*, 63: 292-296.

45. Joachimczak, M., Wróbel, B. (2012). Co-evolution of morphology and control of soft-bodied multicellular animats. In Soule, T. et al., editors, Proceedings of the Fourteenth International Conference on Genetic and Evolutionary Computation, GECCO '12, pages 561-568, New York, NY, USA. ACM.

46. Joachimczak, M., Kowaliw, T., Doursat, R., Wróbel, B. (2012). Brainless bodies: Controlling the development and behavior of multicellular animats by gene regulation and diffusive signals. In Adami, C., Bryson, D. M., Ofria, C., and Pennock, R. T., editors, Artificial Life XIII: Proceedings of the Thirteenth International Conference on the Simulation and Synthesis of Living Systems, pages 349-356, Cambridge, MA. MIT Press.

47. Joachimczak, M., Wróbel, B. (2012). Open ended evolution of 3D multicellular development controlled by gene regulatory networks. In Adami, C., Bryson, D. M., Ofria, C., and Pennock, R. T., editors, Artificial Life XIII: Proceedings of the Thirteenth International Conference on the Simulation and Synthesis of Living Systems, pages 67-74, Cambridge, MA. MIT Press.

48. Wróbel B., Joachimczak M., Montebelli A., Lowe R. (2012). The search for beauty: Evolution of minimal cognition in an animat controlled by a gene regulatory network and powered by a metabolic system. *Lecture Notes in Artificial Intelligence* 7426: 198-208

49. Bogdanowicz D., Giaro K, Wróbel B. (2012) TreeCmp: comparison of trees in polynomial time. *Evol. Bioinform.,* 8: 475-487

50. Joachimczak M., Wróbel B. (2012) Evolution of robustness to damage in artificial 3-dimensional development. *BioSystems*, 109: 498-505.

51. Fontana, A., Wróbel, B. (2012). A model of evolution of development based on germline penetration of new "No-Junk" DNA. *Genes*, 3: 492-504.

52. Moskot M., Kotlarska E, Jakóbkiewicz-Banecka J., Gabig-Cimińska M., Fari K., Węgrzyn G., Wróbel, B. (2012). Metal and antibiotic resistance of bacteria isolated from the Baltic Sea. *Int. Microbiol.,* 15: 131-139.

53. Fontana, A., Wróbel, B. (2013). Embryogenesis, morphogens and cancer stem cells: Putting the puzzle together. *Med. Hypoth.*, 81: 643-649.

54. Fontana, A., Wróbel, B. (2013). An artificial lizard regrows its tail (and more): regeneration of 3-dimensional structures with hundreds of thousands of artificial cells. In: Liò , P. *et al.*, editors, Advances in Artificial Life, ECAL 2013, Proceedings of the Twelfth European Conference on the Synthesis and Simulation of Living Systems, pages 144-150, Cambridge, MA. MIT Press.

55. Joachimczak, M., Kowaliw, T., Doursat, R., Wróbel, B. (2013). Controlling development and chemotaxis of soft-bodied multicellular animats with the same gene regulatory network. In: Liò , P. *et al.*, editors, Advances in Artificial Life, ECAL 2013, Proceedings of the Twelfth European Conference on the Synthesis and Simulation of Living Systems, pages 454-461, Cambridge, MA. MIT Press.

56. Erdei, J., Joachimczak, M., Wróbel, B. (2013). Evolving gene regulatory networks controlling foraging strategies of prey and predators in an artificial ecosystem. In: Liò , P. *et al.*, editors, Advances in Artificial Life, ECAL 2013, Proceedings of the Twelfth European Conference on the Synthesis and Simulation of Living Systems, pages 531-537, Cambridge, MA. MIT Press.

57. Gonzalez-Candelas F., Bracho M.A., Wróbel B., Moya A. (2013) Molecular evolution in court: Analysis of a large hepatitis C virus outbreak from an evolving source. *BMC Biology*, 11, 76.

58. Wróbel B., Filippini M., Piwowarczyk J., Kędra M., Kuliński K., Middelboe M. (2013) Low virus to prokaryote ratios in the cold: benthic viruses and prokaryotes in a subpolar marine ecosystem (Hornsund, Svalbard). *Int. Microbiol.*, 16, 45-52

59. Joachimczak, M., Kowaliw, T., Doursat, R., Wróbel, B. (2013). Evolutionary design of soft-bodied animats with decentralized control. *Artif. Life Robotics*, 18, 152.

60. Abdelmotaleb, A., Davey, N., Schilstra, M., Steuber V., Wróbel, B. (2014) Evolving spiking neural networks for temporal pattern recognition in the presence of noise. In: Artificial Life XII: Proceedings of the Fourteenth International Conference on the Simulation and Synthesis of Living Systems (Edited by: Sayama, H., et al.), MIT Press, Boston, MA.

61. Erdei, J., Wróbel, B. (2014) Evolution of animats following a moving target in an artificial ecosystem. In: Artificial Life XII: Proceedings of the Fourteenth International Conference on the

Simulation and Synthesis of Living Systems (Edited by: Sayama, H., et al.), MIT Press, Boston, MA.

62. Fontana, A., Soltoggio, A., Wróbel, B. (2014) POET: an evo-devo method to optimize the weights of large artificial neural networks. In: Artificial Life XII: Proceedings of the Fourteenth International Conference on the Simulation and Synthesis of Living Systems (Edited by: Sayama, H., et al.), MIT Press, Boston, MA.

63. Wróbel, B., Abdelmotaleb, A., Joachimczak, M. (2014) Evolving networks processing signals with a mixed paradigm, inspired by gene regulatory networks and spiking neurons. In: Proceedings of the 7th International Conference on Bio-Inspired Models of Network, Information and Computing Systems. *Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering*, 134, 135-149.

64. Wróbel, B., Joachimczak, M. (2014) Using the Genetic Regulatory Evolving Artificial Networks (GReaNs) platform for signal processing, animat control, and artificial multicellular development. In: Growing Adaptive Machines: Combining Development and Learning in Artificial Neural Networks (Edited by: Kowaliw T, et. al), Studies in Computational Intelligence 557, 187-200.

65. Gołebiewski, M., Deja-Sikora, E., Cichosz, M., Tretyn A., Wróbel, B. (2014) 16S rDNA pyrosequencing analysis of bacterial community in heavy metals polluted soils. *Microb. Ecol.* 67, 635-647.

66. Fontana A., Wróbel B. (2014) Pseudorandomness of gene expression: a new evo-devo theory of ageing. *Current Ageing Science* 7, 48-53.

67. Piwowarczyk J., Wróbel B. (2016) Determinants of legitimate governance of marine Natura 2000 sites in a post-transition European Union country: A case study of Puck Bay, Poland. *Mar. Policy* 71, 310-317.

68. Wróbel B. (2016) Evolution of spiking neural networks robust to noise and damage for control of simple animats. In: Proceedings of the 14th International Conference on Parallel Problem Solving from Nature. *Lecture Notes in Computer Science* 9921, 686-686.