

Professor Gil Segal Publications

A. REFEREED ARTICLES

1. Biran, D., Michaeli, S., Segal, G., and E. Z. Ron. 1992. [Location of the *metA* gene on the physical map of *Escherichia coli*.](#) J. Bacteriol. 174:5753-5754.
2. Segal, G., and E. Z. Ron. 1993. [Cloning, sequencing, and transcriptional analysis of the vegetative sigma factor of *Agrobacterium tumefaciens*.](#) J. Bacteriol. 175:3026-3030.
3. Segal, G., and E. Z. Ron. 1993. [Heat shock transcription of the *groESL* operon of *Agrobacterium tumefaciens* may involve a hairpin-loop structure.](#) J. Bacteriol. 175:3083-3088.
4. Segal, G., and E. Z. Ron. 1995. [The *groESL* operon of *Agrobacterium tumefaciens*, evidence for heat shock-dependent mRNA cleavage.](#) J. Bacteriol. 177:750-757.
5. Segal, G., and E. Z. Ron. 1995. [The *dnaKJ* operon of *Agrobacterium tumefaciens*: transcriptional analysis and evidence for a new heat shock promoter.](#) J. Bacteriol. 177:5952-5958.
6. Segal, G., and E. Z. Ron. 1996. [Heat shock activation of the *groESL* operon of *Agrobacterium tumefaciens* and the roles of the inverted repeat.](#) J. Bacteriol. 178:3634-3640.
7. Segal, G. and H. A. Shuman. 1997. [Characterization of a new region, required for macrophage killing by *Legionella pneumophila*.](#) Infect. Immun. 65:5057-5066.
8. Segal, G., Purcell, M., and H. A. Shuman. 1998. [Host cell killing and bacterial conjugation require overlapping sets of genes within a 22-kb region of the *Legionella pneumophila* genome.](#) Proc. Natl. Acad. Sci. USA. 95:1669-1674.
9. Segal, G. and H. A. Shuman. 1998. [Intracellular multiplication and human macrophage killing by *Legionella pneumophila* are inhibited by conjugal components of IncQ plasmid RSF1010.](#) Mol. Microbiol. 30:197-208.
10. Segal, G., and H. A. Shuman. 1999. [*Legionella pneumophila* utilize the same genes for intracellular multiplication in *Acanthamoeba castellanii* and human macrophages.](#) Infect. Immun. 67:2117-2124.
11. Segal, G., and H. A. Shuman. 1999. [Possible origin of the *Legionella pneumophila* virulence genes and their relation to *Coxiella burnetii*.](#) Mol. Microbiol. 33:669-670.
12. Segal, G., J. J. Russo and H. A. Shuman. 1999. [Relationships between a new type-IV secretion system and the *icm/dot* virulence system of *Legionella pneumophila*.](#) Mol. Microbiol. 34:799-809.

13. Hilbi, H., G. Segal and H. A. Shuman. 2001. [Icm/Dot-dependent upregulation of phagocytosis by *Legionella pneumophila*](#). Mol. Microbiol. 42:603-618.
14. Zusman, T., O. Gal-Mor and G. Segal. 2002. [Characterization of a *Legionella pneumophila* relA insertion mutant and the role of RelA and RpoS in virulence gene expression](#). J. Bacteriol. 184:67-75.
15. Toren, A., G. Segal, E. Z. Ron, and E. Rosenberg. 2002. [Structure-function studies of the recombinant protein bioemulsifier AlnA](#). Environ. Microbiol. 4:257-261.
16. Gal-Mor, O., T. Zusman and G. Segal. 2002. [Analysis of DNA regulatory elements required for the expression of the *Legionella pneumophila* icm and dot virulence genes](#). J. Bacteriol. 184:3823-3833.
17. Gal-Mor, O., and G. Segal. 2003. [The *Legionella pneumophila* GacA homolog \(LetA\) is involved in the regulation of icm virulence genes and is required for intracellular multiplication in *A. castellanii*](#). Microb. Pathog. 34:187-194.
18. Zusman, T., G. Yerushalmi and G. Segal. 2003. [Functional similarities between the icm/dot pathogenesis system of *Coxiella burnetii* and *Legionella pneumophila*](#). Infect. Immun. 71: 3714-3723.
19. Gal-Mor, O., and G. Segal. 2003. [Identification of CpxR as a positive regulator of the icm/dot virulence genes of *Legionella pneumophila*](#). J. Bacteriol. 185:4908-4919.
20. Chen, J., K. Suwan de Felipe, M. Clarke, H. Lu, R. Anderson, G. Segal and H. A. Shuman. 2004. [*Legionella* effectors that promote non-lytic release from protozoa](#). Science. 303:1358-1361.
21. Zusman, T., M. Feldman, E. Halperin and G. Segal. 2004. [Characterization of the *icmH* and *icmF* genes required for *Legionella pneumophila* intracellular growth, genes that are present in many bacteria associated with eukaryotic cells](#). Infect. Immun. 72:3398-3409.
22. Feldman, M., and G. Segal. 2004. [A specific genomic location within the icm/dot pathogenesis region of different *Legionella* species encodes for functionally similar nonhomologous virulence proteins](#). Infect. Immun. 72:4503-4511.
23. Chien, M., I. Morozova, S. Shi, H. Sheng, J. Chen, S. M. Gomez, G. Asamani, K. Hill, J. Nuara, M. Feder, J. Rineer, J. J. Greenberg, V. Steshenko, S. H. Park, B. Zhao, E. Teplitskaya, J. R. Edwards, S. Pampou, A. Georghiou, I. Chou, W. Iannuccilli, M. E. Ulz, D. H. Kim, A. Geringer-Sameth C. Goldsberry, P. Morozov, S. G. Fischer, G. Segal, X. Qu, A. Rzhetsky, P. Zhang, E. Cayanis, P. J. De Jong, J. Ju, S. Kalachikov, H. A. Shuman, and J. J. Russo. 2004. [The genomic sequence of the accidental pathogen *Legionella pneumophila*](#). Science. 305: 1966-1968.

24. Bekerman, R., G. Segal, E.Z. Ron and E. Rosenberg. **2005**. [The AlnB protein of the bioemulsan alasan is a peroxiredoxin.](#) **Appl. Microbiol. Biotechnol.** 66:635-641.
25. Feldman, M., T. Zusman, S. Hagag and G. Segal. **2005**. [Coevolution between non-homologous but functionally similar proteins and their conserved partners in the *Legionella* pathogenesis system.](#) **Proc. Natl. Acad. Sci. USA.** 102:12206-12211.
26. Yerushalmi, G., T. Zusman and G. Segal. **2005**. [Additive effect on intracellular growth by *Legionella pneumophila* Icm/Dot proteins containing a Lipobox motif.](#) **Infect. Immun.** 73:7578-7587.
27. Zusman, T., G. Aloni, E. Halperin, H. Kotzer, E. Degtyar, M. Feldman and G. Segal. **2007**. [The Response Regulator PmrA is a Major Regulator of the *icm/dot* type-IV secretion system in *Legionella pneumophila* and *Coxiella burnetii*.](#) **Mol. Microbiol.** 63:1508-1523.
28. Feldman, M., and G. Segal. **2007**. [A pair of highly conserved two-component systems participates in the regulation of the hyper variable FIR proteins in different *Legionella* species.](#) **J. Bacteriol.** 189:3382-3391.
29. Altman E. and G. Segal. **2008**. [The response regulator CpxR directly regulates the expression of several *Legionella pneumophila* *icm/dot* components as well as new translocated substrates.](#) **J. Bacteriol.** 190:1985-1996.
30. Zusman, T., E. Degtyar and G. Segal. **2008**. [Identification of a hypervariable region containing new *Legionella pneumophila* Icm/Dot translocated substrates using the conserved *icmQ* regulatory signature.](#) **Infect. Immun.** 76: 4581-4591.
31. Rasis, M., and G. Segal. **2009**. [The LetA-RsmYZ-CsrA regulatory cascade, together with RpoS and PmrA, post-transcriptionally regulates stationary phase activation of *Legionella pneumophila* Icm/Dot effectors.](#) **Mol. Microbiol.** 72:995-1010.
32. Degtyar, E., T. Zusman, M. Ehrlich and G. Segal. **2009**. [A *Legionella* effector acquired from protozoa is involved in sphingolipids metabolism and is targeted to the host cell mitochondria.](#) **Cell. Microbiol.** 11:1219-1235.
33. Burstein, D., T. Zusman, E. Degtyar, R. Viner, G. Segal and T. Pupko. **2009**. [Genome-scale identification of *Legionella pneumophila* effectors using a machine learning approach.](#) **PLoS Pathog.** 5(7): e1000508.
34. Hurtado-Guerrero, R., T. Zusman, S. Pathak, A. F. M. Ibrahim, S. Shepherd, A. Prescott, G. Segal and D. M. F. van Aalten. **2010**. [Molecular mechanism of elongation factor 1A inhibition by a *Legionella pneumophila* glycosyltransferase.](#) **Biochem. J.** 426(3):281-292.
35. Rubinstein, D. N., D. Zeevi, Y. Oren, G. Segal, and T. Pupko. **2011**. [The operonic Location of auto-transcriptional repressors is highly conserved in bacteria.](#) **Mol. Biol. Evol.** 28:3309-3318.

36. Viner, R., D. Chetrit, M. Ehrlich and G. Segal. **2012**. [Identification of two *Legionella pneumophila* effectors that manipulate host phospholipids biosynthesis](#). **PLoS Pathog.** 8(11):e1002988.
37. Lifshitz, Z., D. Burstein, M. Peeri, T. Zusman, K. Schwartz, H. A. Shuman, T. Pupko, and G. Segal. **2013**. [Computational modeling and experimental validation of the *Legionella* and *Coxiella* virulence-related Type-IVB secretion signal](#). **Proc. Natl. Acad. Sci. USA.** 110(8): E707-E715.
38. Nevo, O., T. Zusman, M. Rasis, Z. Lifshitz and G. Segal. **2014**. [Identification of *Legionella pneumophila* effectors regulated by the LetAS-RsmYZ-CsrA regulatory cascade, many of which modulate vesicular trafficking](#). **J. Bacteriol.** 196:681-692.
39. Lifshitz, Z., D. Burstein, K. Schwartz, H. A. Shuman, T. Pupko, and G. Segal. **2014**. [Identification of novel *Coxiella burnetii* Icm/Dot effectors and genetic analysis of their involvement in modulating a mitogen-activated protein kinase pathway](#). **Infect. Immun.** 82:3740-3752.
40. Zusman, T., Y. Speiser and G. Segal. **2014**. [Two Fis regulators directly repress the expression of numerous effector-encoding genes in *Legionella pneumophila*](#). **J. Bacteriol.** 196:4172-4183
41. Feldheim S. Y., T. Zusman, Y. Speiser and G. Segal. 2016. The *Legionella pneumophila* CpxRA two-component regulatory system - new insights into CpxR's function as a dual regulator and its connection to the effectors regulatory network. *Mol. Microbiol.* In press (doi: 10.1111/mmi.13290). <http://www.ncbi.nlm.nih.gov/pubmed/26713766>
42. Burstein D., F. Amaro, T. Zusman, Z. Lifshitz, O. Chen, T. Pupko, HA. Shuman and G. Segal. 2016. Genomic analysis of 38 *Legionella* species identifies large and diverse effector repertoires. *Nature Genetics.* In press (doi: 10.1038/ng.3481) <http://www.ncbi.nlm.nih.gov/pubmed/26752266>

B. CHAPTERS IN BOOKS

1. Ron, E. Z., Segal, G., Robinson, M., and D. Graur. Control elements in the regulation of bacterial heat shock response. In: Microbial ecology of infectious disease, ed.: E. Rosenberg. Washington, ASM Press, 1999, pp. 143-152.
2. Segal, G. and H. A. Shuman. Intracellular multiplication of *Legionella pneumophila* in human and environmental hosts. In: Microbial ecology of infectious disease, ed.: E. Rosenberg. Washington, ASM Press, 1999, pp. 170-186.
3. Segal, G. and H. A. Shuman. Genetic analysis of *Legionella pneumophila* intracellular multiplication in human and protozoan hosts. In: *Legionella*, ed.: R. Marre et al. Washington, ASM Press, 2001, pp. 90-96.
4. Segal, G. The Evolution of the *Legionella pneumophila* Icm/Dot pathogenesis system. In: Introduction to the Evolutionary Biology of Bacterial and Fungal Pathogens, ed.: Baquero, César Nombela, Gail H. Cassell and José A. Gutiérrez. Washington, ASM Press, **2007**, pp. 455-464.
5. Segal, G. [Identification of *Legionella* effectors using bioinformatic approaches](#). *Legionella: Methods and Protocols*, ed.: C. Buchrieser and H. Hilbi. New York, Springer Science & Business Media, Humana Press, **2013**, pp. 595-602.

C. REVIEWS

1. Segal, G., and E. Z. Ron. 1996. [Regulation and organization of *groE* and *dnaK* operons in eubacteria](#). FEMS Microbiol. Lett. 138:1-10.
2. Segal, G., and E. Z. Ron. 1998. [Heat shock response in bacteria](#). In: Stress of life from molecules to man, ed.: P. Csermely. Ann. N. Y. Acad. Sci. vol. 851:147-151.
3. Shuman, H. A., Purcell, M., Segal, G., Hales, L., and L. A. Wiater. 1998. [Intracellular multiplication of *Legionella pneumophila*: Human pathogen or accidental tourist?](#) In: Bacterial Infections: Close encounters at the Host Pathogen Interface, ed.: P. K. Vogt and M. J. Mahan. Springer, New York. Curr. Top. Microbiol. Immunol. 225:99-112.
4. Segal, G. and H. A. Shuman. 1998. [How is the intracellular fate of the *Legionella pneumophila* phagosome determined?](#) Trends Microbiol. 6:253-255.
5. Segal, G., M. Feldman, and T. Zusman. **2005**. [The Icm/Dot type-IV secretion system of *Legionella pneumophila* and *Coxiella burnetii*](#). FEMS Microbiol. Rev. 29:65-81.
6. Segal G .**2013**. [The *Legionella pneumophila* two-component regulatory systems that participate in the regulation of Icm/Dot effectors](#). In: Molecular Mechanisms in *Legionella* Pathogenesis. Curr. Top. Microbiol. Immunol. 376: 35-52.