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The only alternative σ factor of *Francisella tularensis* is a genuine heat shock σ factorN. Grall¹, J. Livny², M. Waldor^{2,3}, M. Barel¹, A. Charbit¹, [K. L. Meibom](#)¹¹Université Paris V René Descartes, INSERM U570, Paris, France, ²Harvard Medical School, Channing Laboratories, Brigham and Women's Hospital, Boston, United States, ³Howard Hughes Medical Institute, Boston, United States

The ability of *Francisella tularensis* to replicate within macrophages relies on the tightly regulated expression of a series of genes. Regulation of gene expression in bacteria occurs primarily at the transcriptional level. The association of dedicated alternative sigma factors to the core of the RNA polymerase (RNAP) provides a simple and efficient way for bacteria to rapidly adapt to various environmental changes. The RNAP holoenzyme contains the subunits of the core molecule (two α subunits, the β , β' and ω subunits) and a sigma factor enabling the holoenzyme to specifically recognize promoter elements and initiate transcription at these sites. The regulon of a single sigma factor can comprise hundreds of genes and the number of sigma factors encoded by different bacterial species varies considerably. *In silico* analysis of the *F. tularensis* LVS genome led us to identify, in addition to the genes encoding the RNAP core, one gene encoding the major sigma factor σ^{70} , and a unique gene (*FTL_0851*) encoding a putative alternative sigma factor homolog of the σ^{32} heat shock family (designated *rpoH*). Hence, *F. tularensis* represents one of the minorities of bacterial species that possess only one or no alternative sigma factor in addition to the main factor σ^{70} . We have shown that *FTL_0851* encodes a genuine σ^{32} factor. Transcriptomic analyses of the *F. tularensis* LVS heat stress response allowed the identification of a series of orthologs of known heat shock genes and a number of genes implicated in *Francisella* virulence. A bioinformatic analysis was used to identify genes preceded by a putative σ^{32} -binding site. Our results suggest that RpoH is an essential protein of *F. tularensis*, which positively regulates a subset of genes involved in heat shock response.