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**Analysis of temperature-dependent changes in the metabolism of *Yersinia pestis*.**[1] ALI NAVID, EIVIND ALMAAS, Lawrence Livermore National Laboratory — The gram-negative bacterium *Yersinia pestis* is the aetiological agent of bubonic plague, a zoonotic infection that occurs through the bite of a flea. It has long been known that *Y. pestis* has different metabolic needs upon transition from the flea gut environment (26 $^\circ$C) to that of a mammalian host (37 $^\circ$C). To study this and other outstanding questions about metabolic function of *Y. pestis*, we used the available genomic, biochemical and physiological data to develop a constraint-based flux balance model of metabolism in the avirulent 91001 strain (biovar Mediaevalis) of this organism. Utilizing two sets of whole-genome DNA microarray expression data, we examined the system level changes that occur when *Y. pestis* acclimatizes to temperature shifts. Our results point to fundamental changes in its oxidative metabolism of sugars and use of amino acids, in particular that of arginine. This behavior is indicative of an inefficient metabolism that could be caused by adaptation to life in a nutrient rich environment.

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