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Genome analysis of a salmon pathogen *Piscirickettsia salmonis* reveals insight into metabolism and pathogenesis

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Piscirickettsia salmonis is a Gram-negative intracellular bacterial pathogen isolated from infected farmed salmonids which cause the salmonid piscirickettsia septicaemia (SPS). *P. salmonis* is a member of the class Gammaproteobacteria, classified within order *Thiotrichales* close to *Francisella* and *Legionella* genus. Here, we present the genome sequence analysis of pathogenic strain of *P. salmonis* AUS 005, in order to understand its genomic features and its pathogenic role. The *P. salmonis* genome consists in a single circular chromosome of 3.4 Mp with 1400 Kb in size more in comparison to *Francisella noatunensis* subsp. *Orientalis* strain Toba04. The GC content was 37.37%. The annotation resulted in a total of 2,571 protein-coding gene predictions, with 1,873 well-annotated genes which were identified in a variety of genes associated with pathogenicity, environmental adaptation, metabolic pathways and iron acquisition, as well as transposable elements and insertion sequences (ISs). The metabolic pathways prediction indicates the absence of biosynthetic and catabolic pathways of cysteine and the complete pathways of TCA cycle. Surprisingly, the genome of this immobile bacterium revealed several genes encoding components of flagellum. The availability of the *P. salmonis* genome represents a biotechnological opportunity to understand the molecular mechanisms of pathogenesis and the development of new therapies to counteract the piscirickettsiosis.

Biography

Alejandro Yañez, PhD is Full Professor at Universidad Austral de Chile with Postdoctoral visits at the University of Missouri Kansas City USA and IRB, Barcelona, Spain. At present he is the Director of mention of PhD program of Cell and Molecular Biology of Universidad Austral de Chile and Director and Founder of AUSTRAL Omics, the first center of biotechnology of the south of Chile. He is one of the main referent in the study of fish pathogenic bacteria, *Piscirickettsia salmonis*, being part and Director of several projects in this area, also is member of interdisciplinary center of aquaculture research (INCAR).

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