

## **MASTS Small Grant Report Summary SG131**

**Project title: Comparative genomic analysis of the marine pathogenic bacterium *Francisella noatunensis***

**Researcher (PhD student): Jose Gustavo Ramirez Paredes / Institute of Aquaculture University of Stirling**

With the generous support of the above mentioned grant, I was able to complete a research visit to the Umeå University Hospital in Umeå Sweden from February 28<sup>th</sup> until March 19<sup>th</sup> of 2015 to receive *ad hoc* assistance from Dr. Pär Larsson (an expert on bioinformatics of the bacterial genus *Francisella*) to perform genomic analyses on several isolates of the marine pathogenic bacterium *Francisella noatunensis*.

Prior to this visit (in 2014), the genomes of several isolates of *Francisella noatunensis* (including the British strain STIR-GUS-F2f7 isolated in 2012 from farmed tilapia in the UK) were fully sequenced at the Swedish Defence Research Agency (FOI) in Umeå Sweden, as a part of my PhD studies, using next generation “Illumina Hi-seq platform” technology. The objective of the visit here reported was to collect the raw data of those strains and analyse it by performing extensive comparisons between them and publically available genomes of other member of the genus.

During my stay I was trained by Dr Pär in techniques to handle the sequencing data which included, amongst others, the assembly, annotation and alignment of the genomes. The learning of these techniques allowed me to use genomic-derived parameters from STIR-GUS-F2f7 and the other strains to revise the taxonomy of the species *Francisella noatunensis*.

The results of the analyses performed during this visit, used in combination with other taxonomical techniques, indicated that STIR-GUS-F2f7 and all the other *Francisella noatunensis* strains isolated from warm water fish species i.e. *F. noatunensis* subsp. *orientalis* represented a new bacterial species for which the name *Francisella orientalis* was given.

Additionally the description of *F. noatunensis* (causative agent of systemic granulomatous disease in wild and farmed Atlantic cod around the British Isles and Scandinavia) was emended and the creation of a new subspecies within this taxon i.e. *Francisella noatunensis* subsp. *chilense* (which affects farmed Atlantic salmon and other wild fish species in Chile)

was proposed by myself. All the results obtained during this visit are part of my PhD thesis and will be shortly presented as a paper on a pertinent scientific journal.

As established on the application the money of the MASTS Small Grant was used to cover the flights and trains tickets in the following way:

<b>Item</b>	<b>Cost</b>
Taxi from Stirling to Edinburg airport	£60.00
Flight ticket from Edinburgh to Stockholm	£146.70
Overnight hotel in Stockholm	£89.00
Train from Stockholm to Umeå	£115.72
Train from Umeå to Stockholm	£70.00
Taxi from Edinburgh airport to Stirling	£60.00
<b>Total</b>	<b>£540.72</b>
<b>Claim to MASTS</b>	<b>£500.00</b>

As can be seen, the visit to Dr. Pär at the Umeå University Hospital was very productive and had a really positive impact on my PhD and this was only possible thanks to the invaluable support of this grant. To close this report, please find below a letter of confirmation of my visit from Dr. Pär Larsson.

Sincerely yours

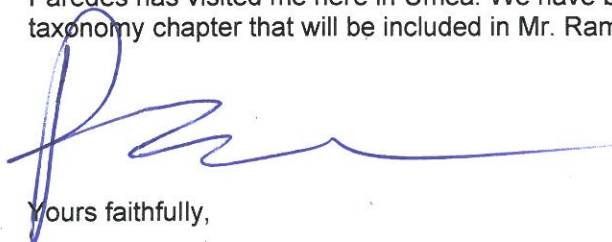
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**Regarding José Gustavo Ramirez Paredes**

**To whom it may concern,**

This letter is to confirm that José Gustavo Ramirez Paredes has been visiting Umeå university hospital / Umeå University, Dept. of Pathology from February 27 until Mars 19 in order to conduct research for his doctoral thesis project.

Gus and I established a collaboration about two years ago. At that time, I was working at the Swedish Defence Research Agency and we supplied Mr Ramirez Paredes with genomic sequences for environmental and veterinary *Francisella* isolates. About a year ago I changed positions but Mr. Ramirez Paredes and I have nevertheless remained in contact. During the recent weeks Mr. Ramirez Paredes has visited me here in Umeå. We have been working together on bioinformatics for a taxonomy chapter that will be included in Mr. Ramirez Paredes' thesis.



Yours faithfully,

Pär Larsson, PhD

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