Reviewer's report

Title: Role of extracytoplasmic function sigma factors in biofilm formation of Porphyromonas gingivalis

Version: 2 Date: 18 October 2014

Reviewer: Kiyonobu Honma

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Major Compulsory Revisions

The authors described about role of genes which encoding ECF sigma factors on biofilm formation of P. gingivalis ATCC 33277. In the manuscript, the authors unveiled two ECF sigma factor coding genes may effect to P. gingivalis biofilm formation by gene knockdown and complementation by shuttle vector insertion. Interestingly, two of P. gingivalis ECF mutant strains showed extremely high biofilm than the parent strain.

I think maneuver of this study is properly chosen and results are very clear. However discussion is weak to explain about functions of the genes which showed high biofilm formation by inactivation.

P5, L 136-137  What database did you referred to obtain gene gene ID of ECF sigma factors?

P6, L143 I understand “the function” in the manuscript means “biofilm formation”. It is more better if you can write it clearly.

P9, L215-216 Do you have any particular reason to use type-I collagen coated plate for the assay?

P10, Fig.1., Have mutants PGN_0319, 0450 and PGN_1740 never reached to same OD value with PG33277 or PGN_0274 mutant?

Did you find any stationary phase extension in tested strains?

P10 L247, I recommend to put “of all tested strain” between “the biofilm mass” and “was dissolved” to avoid misunderstanding. I also recommend show biofilm data by eluted out with ethanol as the supplement data. I think it is more convincible than “data not shown”.

P13 L310 The authors referred article which described about relationship with PGN_1740 inactivation and fimS expression at transcription level. I would ask you whether you checked fins expression on the mutants at proteome level or not. If you think about fimS expression in PGN_1740 mutant is enhanced by gene inactivation, you have to discuss about role of P. gingivalis fimS on biofilm formation. Please read this paper PMID: 20061484.
I strongly recommend to try SDS-PAGE or 2D-PAGE for comparison of protein profile between parent strain and mutants.

Do you have any predicted metabolic pathway of PGN_0274? Are you thinking PGN_0274 takes a similar kind of role with PGN_0088?

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Needs some language corrections before being published

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests.