Conclusions
1. The novel open reading frame designated as orf243 was cloned and expressed both in *E.coli* and *Pseudomonas aeruginosa* PAO1161.

2. The Orf243 was found to be a *meta*-fission product hydrolase with unique substrate range and catalytic properties. Hence it is named as MfphF (*Meta*-fission product hydrolase form *Flavobacterium* sp. ATCC27551).

3. The MfphF is found to be homotetramer with a molecular mass of 120 kDa and show optimum activity at pH 8.5 and temperature 75°C.

4. In the culture of *E.coli* and *Pseudomonas aeruginosa* PAO1161 where *mfphF* is expressed the concentration of *p*-nitrophenol (PNP) is decreased indicating its degradation. However MfphF did not degrade PNP under *in vitro* conditions.

5. The *opd* and *mfphF* were brought under the transcriptional and translational control of the broad host range vector pMMB206 in the form of an operon.

6. MfphF interacts with Parathion hydrolase (PH) to form a multi enzyme complex.

7. The size of the complex was found to be 150 kDa. Based on the protein content of these two enzymes, specific activity, the MfphF and PH are assumed to be found in the complex in equimolar ratio.

8. *Pseudomonas aeruginosa* PAO1161 is metabolically engineered to degrade methyl parathion and its recalcitrant hydrolytic product *p*-nitrophenol.