



Madurai Kamaraj University
Centre of Excellence in Genomic Sciences
School of Biological Sciences
Palkalai Nagar, Madurai 625 021

Prof. P. GUNASEKARAN

Phone : 0452-2458478

Senior Professor and Head,

Fax : 0452-2459181

Dept. of Genetics

E-mail : gunagenomics@gmail.com

CERTIFICATE

This is to certify that this thesis entitled “**Computational and functional genomic analysis of beta-lactamases, beta-galactosidase and cellulose synthase operon in *Zymomonas mobilis***” submitted by **Mr. S. SHEIK ASRAF** for the degree of Doctor of Philosophy in Microbiology to Madurai Kamaraj University is based on the results of studies carried out by him under my guidance and supervision. This thesis or any part thereof has not been submitted elsewhere for any other degree.

Madurai

Prof. P. GUNASEKARAN

May 2012