

Acknowledgements

This study was carried out at Molecular Biology Unit, National Centre for Cell Science (NCCS), Pune. First of all, I would like to thank Padmashree Dr. G.C. Mishra, Director, NCCS, for providing me this unique educational opportunity to carry out my research work at NCCS. This project was funded by a grant from Department of Biotechnology (DBT), and a fellowship by Council of Scientific and Industrial Research (CSIR), India. I thank both these organizations for financial support.

I devote my deepest gratitude to my principal supervisor, Dr. Yogesh S Shouche, whose expert knowledge and kind support have been essential for this work. I thank him for his help, advice and guidance. His ideas and tremendous support had a major influence on this thesis. I really appreciate his understanding and sincere attitude towards young students while guiding us to the fascinating world of science.

I wish to express my respect to my collaborator Dr. C.G. Suresh, National Chemical Laboratory (NCL), for providing me guidance and facilities to work in the difficult field of enzyme kinetics. He has been actively interested in my work and has always been available to advise me. I am very grateful for his patience, motivation, enthusiasm, and immense knowledge in Biochemistry. I am very much thankful to his students Poorva, Uma, Urvashi and Nishant for their cooperation, kind behavior and help while my stay at NCL. I am equally grateful to Dr. Shama Barnabas, NCL, for her constant encouragement, immense support and her real enthusiasm towards mitochondrial research. I also want to thank Dr. M.I. Khan, NCL, for giving me the opportunity to carry out some experiments of my work in his laboratory.

I wish to express my warm and sincere thanks to my second collaborator Dr. Sharmila Bapat, NCCS, for her precious support and kind guidance. She was the one who first introduced me to the field of cell biology. My scientific discussions with her made me to learn a lot about cell biology and cancer biology. Her sincerity and dedication towards this work had a great impact on this research. It had been a great privilege to work with such a good scientist and personality. Thank you, Madam for your help and constant support. I would also thank all her students, particularly Neeti Sharma for

her help in experiments related to EBV transformations. I would like to thank Avinash Mali for excellent technical assistance in reviving and storage of cell lines.

I warmly thank Dr. M.S. Patole, NCCS, for his valuable advice and encouragement. My warm thanks are due to Dr. Anjali Shiras, NCCS, for being a committee member of my PhD registration and pre-synopsis submission. I also thank her for allowing me to use instruments and other facilities of her laboratory.

I am grateful to our Physicians Dr. Mumta Muranjan (KEM Hospital, Mumbai), Dr. Vrajesh Udani (P.D. Hinduja Hospital, Mumbai) and Dr. Shilpa Kamat (Wadia Hospital for Children, Mumbai) for providing patient samples for my research work. I am also grateful to patients and their families for their participation in this study.

I wish I would never forget the company I had from my fellow research scholars of my laboratory. I enjoyed the atmosphere, their friendship, and their support. My thanks to Kaushal Sharma, Jay Siddharth, Lokesh Sharma, Shrikant Pawar, Dheeraj Dhotre, Girish Kukarni, Arvind Gupta, Pankaj Verma, Prashant Pandey, Kaustub Ghokale, Shashikant Sharma, Deepak Patil, Viduthali RR, Shakti Charan, Dr. Bipin Salunke, Vishal Kalel, Uma Shanker, Sachin Surve, Sandeep Walujkar and Rakesh Chandode. It was a pleasure to work with all these people and to benefit from their knowledge. Among the senior laboratory members, I am thankful to Dr. Dayanada KM and Mahesh Dharne, whose advice either personal or scientific was always helpful during my stay at NCCS.

Special thanks are due to Sarang Satoor for extending timely help in carrying out some important computational work and sequencing backup related to this thesis. Many thanks to other technical staff of NCCS namely Hemagni Shikare, Swapnil Walke, and Aswani Atre, associated with FACS and Confocal microscopy facilities. Thanks are also due to Anjali Patekar of media section and Bhimashankar Utage of washing section.

I am much obliged to Raamesh Raghavan for his help in statistical analysis. I am thankful to Ashraf Rangrez, Sajad Ahangar, Prasad Surakasi and Himanshu Kumar, who were closely associated with this work. Many thanks are due to M.Sc dissertation

students; Tilotma Dhar, Amit Bhargava and Anupam kumar, who worked on short term projects related to this research.

I will be failing in my duty if I do not mention the laboratory staff and administrative staff of NCCS for their timely help. Particularly, I am obliged to Mr. Vijay Jinralkar and Yogesh Sawakhande of Accounts Section, Mrs. Namjoshi and Ms. Kavita of Academic Section for their immense help.

For the non-scientific side of my thesis, I would like to thank all my Kashmiri friends at Pune University for enriching my life over these years and ensuring I did not turn into an antisocial lab rat. Among these, I would like to thank Shabir Hassan, Mohsin Bhat, Jehangir Khan, Showkat Wani, Younis Malik, and Javeed Malik. My limitless thanks to Shaheen Showkat for supporting me, emotionally and occasionally throughout this experience. I cannot forget the company I had from my previous and present room partners; Abdur Rub, Dayananda KM and GaneshKumar. I thank all the three for making my stay a pleasant one.

I owe my loving thanks to my parents. Without their encouragements and understanding, it would have been impossible for me to finish this work. My special gratitude is due to my brother, my sisters and their families for their loving support. Thanks are also due to my maternal and paternal uncles for their constant encouragement to pursue higher education. My loving thanks and best wishes to the kids of our family; Najamul Sehar, Seerat Altaf, Ifra Farooq and Hamza Qayoom, whose love has an indirect impact on the progress of this work.

Finally, I would like to thank all whose direct and indirect support helped me completing my thesis in time. I learned a lot during this time and I am convinced that this knowledge will help me in the future.

Aijaz Ahmad Wani