

ACKNOWLEDGEMENTS

Submission of my thesis puts a cessation to a struggling phase of an altogether different learning process and rememinds me about the beautiful quote "Perseverance is the key to success". When my journey began I had never imagined that I would be able to reach the stage where I am at present. In my long quest of some scientific answers I was immensely been supported by many people in their unique ways for which this became a lifetime experience. When I sit back and reminisce about those people I would like to extend my gratefulness towards them and acknowledge them from the bottom of my heart.

First of all I would like to extend my gratitude to my Research Guide Prof. G. Naresh Kumar. From the very inception I am indebted towards him as he undertook me in his wing when I was a callow and was struggling hard to earn a pat of appreciation, self confidence and encouragement on my back when I was in real need. He bestowed immense faith in me which strengthened my confidence and boosted up my morale. I was smitten by his candor and candidness and appreciated the freedom he gave me to work in the Lab as I want. During our various discussions his cognizance of scientific insight made me bow with respect and made me feel very proud that I got an opportunity to work under such a wonderful personality. Few people in the world would be lucky enough to work with sucsh an excellent guide as well a good human being. Thank you very much Sir.

I would like to express my deep gratitude to Prof. Sarita Gupta, for being a constant source of encouragement. Time to time healthy criticism and suggestions of yours really helped making me intellectually stronger. Also thank you for allowing me to use the lab facilities whenever I required.

I am sincerely grateful to Dr.G Archana, Dept of Microbiology and biotechnology Centre for her timely guidance and excellent suggestions at annual seminars which helped me a lot in improving my experiments. Thanks a lot for being so supportive as and when required. Above all ,I will always remember your mouth watering dishes during group meet at home. Than you mam for being so caring.

My heartfelt gratitude towards Prof. Rasheedunnisa Begum for her constant encouragement and support. Your extensive comments and suggestions during annual seminars really helped me a lot to improve myself.

Dr. S. Acharya needs a special mention for his instant motivation and healthy discussions everywhere in the department as well as in tea sessions. I also got the opportunity to interact with him during my teaching assistantship in the department. Thank you Sir for guiding me whenever I approached to you.

I would like to thank Dr. C. Ratnaprabha for her support and allowing me to use her lab facilities. Thanks to Dr. Jayshree Pohnerkar who were always silent but a constant source of encouragement for me. Thanks to Dr. Puspa Robin for her support all the time.

Dr. LaxmiPriya and Dr. Devesh Suthar has been a special figure during my teaching assistantship in the department through which I got an opportunity to interect with them and come closure. I will always

admire the punctuality and passion of Dr. LaxmiPriya mam towards for any kind of work. There are a lot to learn from both of you. Thank you mam and thank you, Sir.

Thanks to Dr. Mrinalini Nair, Department of microbiology and Biotechnology Centre for her initial training. I also extend my deep gratitude to Prof. Anjana Desai for patiently hearing my seminars and for her expert comments that really helped.

I would also like to show appreciation to the the Office Staff including Pethe Sir, Akshitaben, Rameshbhai Shaileshbhai, Manishbhai, Balwant bhai, Sandeep and all other staff members for their standing help and guidance in all the official matters. Thank you so much Bhartiben, for settling the project accounts smoothly and ensuring timely payment of the fellowship and also for your sisterly care all the time. Thanks to Anilbhai for helping me out with lab maintenance and make it an organized place to work in. I specially thank Mr. Jeetendra Dave, Mr. Ansul and all the corporate people for patiently listening to our sudden but urgent demands for chemicals/fine-chemicals and trying their levels best to deliver the order in time.

I sincerely acknowledge the Department of Biotechnology (DBT), Govt of India for the JRF and SRF.

I wish to express my warm and sincere thanks to Dr. Sanjay Jha, Asst prof. Navsari Agricultural University (NAU), without whome, I definitely would not have completed this tough journey and left bag and baggage for home. Platinum confidence glowing anytime in his face really gave energy to work hard. Thanks a lot Sir, for allowing me to use the HPLC and Green house facility without which my last objective would not have completed by now. Thanks to Dr. Sumant Jha and Dr. M.K.Mahatma (NAU) for their extreme guidance during the experiments. Thanks to Ms Raina, Mr. Vanraj for their support whenever I required.

I deeply acknowledge Prof. H. Duckworth, university of Manitoba, Canada for providing me the NADH insensitive plasmids, also thanks to Prof. Lynda Thomashow and Prof Mark Sylvi, USA, for providing me Pseudomas strains.

Well, can not wait more to write about my lab, my second home. It was a real pleasure and lifetime learning experience to work with so many people with different individual identity and interect with them, the maxmum time in a day. I was lucky enough to have wonderful seniors in the lab including Dr. Vikash Sharma, Dr. Gopith Shah, Dr. Divya Patel, Dr. Jisha Elias, Dr. Adity Buch. I was always a follower of Jisha mam and Aditi mam whose dedication towards their work inspired me a lot. Would like to extend my heartfelt thanks to our lab Alumni Dr. Karunakaran (KK), Dr. Prasant Kunjariya with whome I was in constant touch. It was a pleasure having seniors cum colleague like Dr. Prasant Kumar, Mr Chanchal Kumar and Mr. Jitendra wagh. Thanks for all your support without which this journey would have been really difficult. Thaks to Ms Kavita Yadav (battchi) for her help and support during my stay in the lab. The Lab is really blessed with juniors like Sumit, Asish, Archana Vjwal and neonate Roma. Thanks to all for your support and making M.M.B.L. a workable place. I wish you all the best and hope you all take M.M.B.L to the top and sky should be the limit.

I would like to express heartfelt thanks all the MSc. dissertation students who worked with me including Ketan, kedar, Silvia, Paulomi, Hitharth and Ajeeta. Thanks to Kisu, Riddhi, Sneha, Sriram, Ayush,

Deepak, Jyoti for your contribution to the lab and making it a healthy place to work. Thanks to Sonika and Anad for constant inspiration and support all the time.

This mammoth journey would not have completed without the support of my comrades, friends and Research colleagues. It was a pleasure having seniors like Dr. Sajil M, Dr, Hemandra V., Dr. Keyur D., Dr. Maulik Thakkar, Dr. Hiren Modi, Dr. Jyotika Rajawat, Dr. Heena Mir, Dr. Iqbal V., Dr. Vijay M., Dr. Shirayu Pandya, Dr Niraj Bhatt, Dr Pradeep Mishra, Dr. Prakash Pillai and Dr. Sanket Soni who guided all the time and encouraged for systematic research that helped a lot. Thanks for sharing the most fun-filled moments with us which will be always cherised.

My buddies Mrinal (Bhai), Nidheech (Betu) and Rusikesh (Chotu) been a backbond to me. They were always available to me in difficult times and provided immense support, whether its about requirement of chemicals, instruments, experimental planning, late night stay in the lab and been a constant support. You guys rock and simply awesome.

Thanks to Naresh (Baba) and Mitesh for their constant help and support all the time. Heartfelt thanks to Mrs. Purna and 'The Swapnalis', I find no words to thank both of you for moral support and specially Swapnali for her grand salute throughout. Thanks to Tusar, Akhilesh, Anubha, Muskan, Sucheta, Krisma, Radha, Abhay, Komal, Ankita varsha, Bhrinda, Shoaib for being supportive all the time. Special thanks to Ankita for her constant help and support all the time. I am thankful to the beginners in the department for making the department a perect place to work.

Friends like Prasant, Jagat and Chandraprakash made the journey easy going. Thanks Prasant for guidance and help all the time. Thanks Jagat for supporting me and being with me like a shadow in difficult moments. Thanks to Chandraprakash (Guruji) for his support and guidance.

My heartfelt thanks Mahima, Soshina and Santosh. Words become few to express thanks to u guys. Thanks to Dr. Bishnu Prasad and Mr. Harshuk Tank for constantly encouraging me and givin me guidance whenever I approach. Thanks to Dr. Arif Khan, Dr. Kuldeep patel, Dr. marpe Bam, Dr. Sandeep Godowana, Priya Mam, Ruchi mam, Murli Sir, Dr. Sumant, Subramaniyam(Subbu), Anup, Sohail bhai, Vikash, Gaurav, Akhil, Abhik, Akhilesh, Hasim for time to time support and encouragement. Thanks to Dr. Ansarullah for his support.

Thanks to Dr. Ananta Madhab Barua, Assoc. prof. Assam Agricultural University and family for constantly supporting me to go ahead and do well. Thanks to Manisha Chodhury, Deepali Dutta, Nabajyoti Deka for their constant encouragement. Thanks to all my teachers of Tezpur University Assam who gave me a real trining during MSc. and made me capable to reach up to here. Thanks to Digants baishya, Ameet Verma, Ravi, Yash, Amit, Ranjan, Mayuri, Aurelia, Rakesh Abhishek all were my classmate during MSc. Thank you all for constant encouragement till now.

My sincere thanks to Dr. U. M. upadhyai, Sigma Institute of Pharmacy, for providing financial support by appointing me as a visiting lecturer during my PhD tenure. Thank you so much Sir.

Thanks to Dr. Sudhir K, Rai for sending me research papers any time I ask for. Thanks to Aunty for serving me tiffin and keeping me healthy.

Sincere thanks to Basu bhai and Kirit bhai faculty of Science for the help in clearing bills and office related matters. Special thanks to Milin bhai, Head office, M.S. University for his tremendous help all the time.

My heartfelt thank also goes to Prof. J. Y. Masson, Quebec, Canada for listening to my presentation and critically analyzing my work during his visit to the department.

Gives me immense pleasure to introduce Dr. Sunil Ch. Sharma, Dr. Krishna Sharma, Mr. Alakesh Parasor (Papu da) and Ms. Anindita Parasor (My fiancé) which have been a incessent source of support and encouragement Thanks to them. You all are a part of my success.

My Sincere thanks to Dr. Dependra Adhikary (Dangor Khura) and family for the guidance and time to time support starting from my childhood.

Above all, I owe all my success to my family: my parents, Dada and Bou, Baideu-Bhindeu and nephew Ayan. They have constantly been a source of inspirations no matter whatever situation befall me they stood behind me to support and encourage me. The word "Thank You" would be too small to define their hard work and sacrifices to see me in this state as of today. Seeing their zeal I could keep on going in my Research life and complete the journey successfully.

And the list goes on... I apolozise to all whose name I missed here but that does not mean ignorance but unintentional. Hence, thanks to each and everyone.

Last but not the least I would like to thank Almighty God for giving me the strength to stand up to all the expectations of my parents and teachers

Hemanta Adhikary