

# CURRICULUM VITAE

## KEY ACHIEVEMENTS

NO	SELECTED KEY ACHIEVEMENTS
1.	Published more than 130 papers in refereed and ISI journals, 8 IPs filed, 1 product commercialised  (Current H index = 31, citation >2000).
2.	Recipient of more than RM5.5 million grants as Program leader, Project leader and co-researcher.
3.	Graduated 8 PhD and 17 MS students as the main supervisor and > 50 postgraduate students as a co-supervisor.
4.	Advisor to the Tunku Kurshiah College winning debate team (2008) and Science project team (winners at the National Level and International INTEL Invention Competition, USA 2011).
5.	Set-up and Head of the Culture Collection Unit, UPM (registered WFCC) (2009-2013). Set-up and Chair of the Institutional Biosafety Committee, UPM (2009-13)
6.	Two-term President of the Malaysian Society for Microbiology. Current President of the Malaysian Society of Lactic Acid Bacteria. Sec-General for the Asian Federation of Societies for Lactic Acid Bacteria and Malaysian Rep to the Union of International Microbiology Societies.
7.	Established and managed RM30Million for MyPAIR – Malaysian Research and Alliances in Research program (2019). Established international research collaborations for MOE with the 3 British Research Councils (NERC, STFC, MRC), Japan International Collaboration Agency (JICA), JSPS, France Ministry of Higher Education and Research.
8.	Co-author of the Malaysian Education Blueprint (Higher Education) 2015-2025 (Shift 2 and Shift 7). Chairman, working committee for Shift 7 of the Blueprint (Innovation Ecosystem) 2015-2019.
9.	Managed the strategic and operational processes of >RM2.5 Billion total research grants (2014 -2019) and more that 30 thousand proposals. Lead the teams to defend and secure Research grants (Fundamental Research Grant Schemes) for the Ministry of Education (Higher Education); 2015, RMK11 (2016 – 2020).
10.	Steering committee for the development of the Malaysian Code of Responsible Conduct in Research (MCRCR) for National Science Council, 2017. Steering committee for the development of the MTUN blueprint, 2018.



Raha Abdul Rahim, PhD  
Professor of Microbiology (microbial genetics)  
Universiti Putra Malaysia

Raha graduated with a Degree in Microbiology from Oklahoma State University, USA and proceeded to do her MS degree at the University of Oklahoma. She joined Universiti Putra Malaysia (UPM) in June 1991 as a tutor at the Department of Biotechnology and completed her PhD in Molecular Genetics at the University of Strathclyde, Glasgow.

Her main research interest is the Development of Lactic acid bacteria for delivery of useful proteins; plasmid biology, vaccine delivery and cell factory systems of lactic acid bacteria. She is also involved in other research including identification of genetic markers and authentication of halal products by molecular methods. She has supervised and co-supervised more than 50 post-graduate students, published more than 130 papers in peer-reviewed journals and filed several Intellectual Property rights. She is also consultant to several government agencies and Biotech-related industries.

Raha has held several administrative post in UPM; as the Director of UPM's Research Management Center, Deputy Dean of Research at the Faculty of BioTech, UPM's Biosafety Chair for Genetically Modified Organisms, Head of the Cell and Molecular Biology Department and Coordinator of the Culture Collection Unit, IBS, UPM.

Raha is currently the Vice-Chancellor of UTeM, a public university focusing on technology enhancement and producing highly skilled technologists, since June 16<sup>th</sup>, 2019. Prior to that, she was seconded to the Ministry of Education Malaysia as the Director, Institution of Higher Education Excellence Planning Division Department of Higher Education, April 2014 – 15 June, 2019. As the Director, she was in-charge of the overall Innovation Ecosystem as stipulated in the Malaysian Higher Education Blueprint 2015-2025. Her division specifically managed MoE's research & development programs that are the Research Universities (RU), Higher Institutions' Centers of Excellence (HICOEs) and MoE Fundamental Grant Scheme (FRGS). The amount of research grants managed by the division since 2014 is in the range of RM350 – RM400 million per year with the number of proposals bidding for the grants at 4000 – 7000 per year. In addition, she also coordinated the RM30 million matching international and industrial grants (MyPAIR - 2019), R&D databases (MyRA and MyGRANTS) and facilitated activities relating to the promotion of R&D products from the Institutions of Higher Learning, Malaysia.

Raha is presently the President of the Malaysian Society of Lactic Acid Bacteria (MSLAB). She was a past President of the Malaysian Society for Microbiology (MSM) and is a continuing EXCO member. She is also affiliated to several other professional societies such as the Malaysian Society for Molecular Biology and Biotechnology and the Malaysian Genetics Society. At the international stage, she is a member of the American Society for Microbiology (ASM) and was the Sec-general to the Asian Federation of Societies for Lactic Acid Bacteria (AFSLAB).

**NAME**

Raha Abdul Rahim (Raha A.R.; Rahim R.A.; Abdul Rahim R.; Rahim A.R.)

**ADDRESS**

Office of Vice Chancellor  
Universiti Teknikal Malaysia Melaka  
Hang Tuah Jaya  
76100 Durian Tunggal  
Melaka

Tel : 06-2701011

Fax : 06-2701021

Email : [raha@utem.edu.my](mailto:raha@utem.edu.my) / [vc@utem.edu.my](mailto:vc@utem.edu.my)

Department of Cell and Molecular Biology  
Faculty of Biotechnology and Biomolecular Sciences  
Universiti Putra Malaysia, 43400 UPM Serdang  
Selangor, Malaysia

Tel: 603-8947-1049/7513

Fax: 603 – 89467510

E-mail: [raha.rahim55@gmail.com](mailto:raha.rahim55@gmail.com), [raha@upm.edu.my](mailto:raha@upm.edu.my)

**FIELD OF SPECIALIZATION**

Microbial Genetics/Molecular Biology

**DATE OF BIRTH**

May 5<sup>th</sup>, 1963

**ACADEMIC QUALIFICATIONS**

Year	Institution	Qualification
1987	Oklahoma State University, USA	BSc (Microbiology)
1990	University of Oklahoma, USA	MSc (Microbial Genetics)
1995	Strathclyde University, UK	PhD (Molecular Biology)

**PROFICIENCY IN BAHASA MELAYU AND ENGLISH**

Bahasa Malaysia – SPM	A2
Bahasa Inggeris – SPM 122	A1
Bahasa Inggeris – Cambridge 121	A2

**CURRENT APPOINTMENTS**

NO	POSITION	TERM
1.	<b>Vice Chancellor</b> – Universiti Teknikal Malaysia Melaka	June 2019 – June 2022
2.	<b>Director</b> – Institutions of Higher Education Excellence Planning Division, Department of Higher Education, Ministry of Education, Malaysia	April 2014 – June 2019
3.	<b>Board of Governor</b> , USM	February 2018 – June 2019
4.	<b>Professor</b> , UPM	Since 2007
5.	<b>President</b> , Malaysian Society for Lactic Acid Bacteria	Since 2015
6.	<b>Secretary General</b> Asian Federation of Societies for Lactic Acid Bacteria	Since 2013
7.	<b>Associate Researcher</b> Institute of Bioscience, UPM	Since 2000

8.	<b>Lecturer</b> Department of Cell and Molecular Biology, UPM	Since 1995
----	--	------------

#### PREVIOUS APPOINTMENTS

NO	POSITION	TERM
1.	<b>Director</b> – Research Management Center UPM	Oct 2012 – March 2014
2.	<b>Evaluation committee</b> – Mahathir Science Award	2012 - 2013
3.	<b>Chairman</b> , Institutional Biosafety Committee UPM	2010 - 2014
4.	<b>Program Review Panel</b> , MQA	2009 - 2014
5.	<b>Head</b> , Culture Collection Unit, IBS	2008 - 2014
6.	<b>Deputy Dean</b> <b>(Research and Post Graduate Studies)</b> , Faculty of Biotechnology and Biomolecular Sciences	Jan2012- Sept 2012
7.	<b>Head</b> , Department of Cell and Molecular Biology	2007-2011
8.	<b>Deputy Director</b> – RMC UPM	2005-2007
9.	<b>President</b> Malaysian Society for Microbiology	2004 - 2006
10.	<b>Head</b> Fermentation Technology Unit Institute of Bioscience UPM	2003-2005
11.	<b>Tutor</b> Department of Biotechnology UPM	1991 –1995

#### TEACHING EXPERIENCE

No	Course
1.	Course coordinator for the following undergraduate and graduate courses;
2.	Cell and Molecular Biology
3.	Principles of Biotechnology
4.	Genetic Engineering
5.	Introduction to Microbial Biotechnology

6.	Techniques in Molecular Biology
7.	Industrial Microbiology
8.	Research Methodology

**UNDERGRADUATE/POSTGRADUATE COURSES TAUGHT IN THE LAST TEN YEARS**

Year	Course/code	Credit (No. of contact hours)	Remark
2001/02	Principles of Biotechnology (BTK 300)	2+0	Course Coordinator/ Lecturer
2002/03	Principles of Biotechnology (BTK 300)	2+0	Course Coordinator/ Lecturer
	Cell and Molecular Biology (BTK 303)	4+0	
	Genetic Engineering (BTK 351)	2+1	
2003/04	Cell and Molecular Biology (BTK 303)	3+0	Course Coordinator/ Lecturer
	Cell and Molecular Biology (BTE 3501)	4+0	
	Genetic Engineering (BTK 351)	2+1	
	Genetic Engineering (BTE 4501)	2+1	
	Introduction to Biotechnology (BTE 3001)	2+0	
2004/05	Cell and Molecular Biology (BTE 3501)	4+0	Course Coordinator/ Lecturer
	Genetic Engineering (BTE 4501)	2+1	
	Introduction to Biotechnology (BTE 3001)	2+0	
	Introduction to Biotechnology (BTE 3001)	2+0	
	Techniques in Molecular Biology (BTK4302)	3+1	
2009/10	Cell and Molecular Biology (BTK 3403)	3+1	Course Coordinator/ Lecturer
	Introduction to Microbial Biotechnology (BTK 3301)	2+1	
	Genetic Engineering (BTK3201)	3+1	
	Techniques in Molecular Biology (BTK 4302)	3+1	

Year	Course/code	Credit (No. of contact hours)	Remark
2010/11	Cell and Molecular Biology (BTK 3201)	3+1	Course Coordinator/ Lecturer
	Introduction to Microbial Biotechnology (BTK 3301)	2+1	
	Genetic Engineering (BTK 3203)	3+1	
	Techniques in Molecular Biology (BTK 4302)	3+1	
	Industrial Microbiology (BTK 4301 )	3+1	
	Research Methodology (BBS5901)	3+0	
2011/12	Genetic Engineering (BTK 3203)	3+1	Course Coordinator/ Lecturer
	Industrial Microbiology (BTK 4301 )	3+1	

#### SUPERVISION OF POSTGRADUATE STUDENTS

DEGREE/STATUS	TOTAL
<b>PhD Student Graduated</b>	<b>23</b>
As Main Supervisor	8
As Co-Supervisor	15
<b>PhD Student On-going</b>	<b>6</b>
As Main Supervisor	3
As Co-Supervisor	3
<b>MS Student Graduated</b>	<b>43</b>
As Main Supervisor	18
As Co-Supervisor	25
<b>MS Student On-going</b>	<b>8</b>
As Main Supervisor	3
As Co-Supervisor	5

**A. POSTGRADUATE RESEARCH DEGREE AS MAIN SUPERVISOR**

NO	NAME	DEGREE	TITLE OF THESIS	STATUS
1.	Loke Chui Fong	MS	Molecular Characterization of Salmonella by Plasmid Profiling and Pulsed Field Gel Electrophoresis	Graduated 1997
2.	You Li Ling	MS	Partial Characterization and Some Properties of a Thermophilic Bacterium Isolated from a Petroleum Reservoir in Sarawak, Malaysia	Graduated 1999
3.	Ng Perk Tsong	MS	Cloning and Expression of VP1 in <i>Lactococcus lactis</i>	Graduated 1999
4.	Ernie Eileen Rizlan Ross	MS	Isolation and Characterization of a Lactococcal Plasmid and Preliminary Construction of a <i>Lactococcus – E. coli</i> Shuttle Vector	Graduated 2001
5.	Loke Chui Fung	PhD	Construction of DNA Vaccine Delivery System	Graduated 2003
6.	Latifah Saiful Yazan	PhD	Cytotoxic Properties of Anthraquinones (Nordamnacanthal and damnacanthal) from Roots of <i>Morinda elliptica</i>	Graduated 2004
7.	Yiap Beow Chin	PhD	Functional Characterization of <i>YIRO10W (DSN1)</i> and <i>YOR228C</i> in <i>S. cerevisiae</i>	Graduated 2004
8.	Nadimpalli Ravi Sankara Varma (India)	PhD	Development of Surface Anchoring System to Display Protein on the <i>L. lactis</i> Cell Surface	Graduated 2006
9.	Adelene Auyong	MS	MADS Box Genes of Oil Palm	Graduated 2006
10.	Aida Azrina Azmi	MS	Detection of Food Adultration by Molecular Techniques	Graduated 2007
11.	Hosseinali Sasan (Iran)	PhD	Cloning Characterization of Virulence Gene Aerolysin and Serine Protease from <i>A. hydrophila</i>	Graduated 2008
12.	Nur Adeela Yasid	MS	Construction of a Novel Subunit Vaccine against NDV	Graduated 2008
13.	Hooi Wei Yeng	MS	Development of <i>L. lactis</i> as a Host Strain and Plasmid characterization	Graduated 2009



NO	NAME	DEGREE	TITLE OF THESIS	STATUS
14.	Tan Boon Hooi	MS	Expression and Characterization of Superoxide Dismutase Protein from <i>L. lactis</i>	Graduated 2009
15.	Leslie Lau Eng Ti	PhD	A Study on Gene Expression During Oil Palm Tissue Culture via the Generation of Expressed Sequenced Tags (ESTS) and DNA Microarray Analysis	Graduated 2009
16.	Ali baradaran (Iran)	MS	Development of secretory <i>Lactococcus lactis</i> vectors with characterized heterologous signal peptide from <i>Pediococcus pentosaceus</i>	Graduated 2010
17.	Haryanti Binti Toosa	PhD	Cloning and Expression of Recombinant Vaccine against Cholera.	On-going
18.	Noreen Suliani binti Mat Nanyan	MS	Improvement of folate production in <i>Lactococcus lactis</i> by manipulation of its folate biosynthesis pathway -	Graduated 2011
19.	Vithya a/p Velaithan	MS	Development of secretory expression system using synthetic signal peptides spa and spd for protein production in <i>Escherichia coli</i>	Graduated 2012
20.	Adelene Song Ai Lian	PhD	Development of <i>Lactococcus lactis</i> for production of plant secondary metabolites	Graduated 2012
21.	Ernie Eileen binti Rizlan Ross	PhD	Development of surface display system in <i>Lactococcus</i> as vaccine delivery for fish	On-going
22.	Tannaz Jalilsood (Iran)	PhD	Improvement of biofilm forming capacity on lactic acid bacteria using bacterial signaling system	Graduated
23.	Shamsiah binti Zakaria	MS	Analysis of bacteriocin release protein (brp) for excretion of useful protein in <i>Escherichia coli</i>	On-going
24.	Muhammad Azmi bin Samsudin	MS	The effect of phosphoglucosomerase ( <i>hasE</i> ) gene on the quality of hyaluronic acid production through different expression strategies in <i>Escherichia coli</i>	Graduated 2014
25.	Omid Bayat (Iran)	MS	Cloning and expression of ifn-alpha in <i>Lactococcus lactis</i>	Graduated 2013

NO	NAME	DEGREE	TITLE OF THESIS	STATUS
26.	Mohd Shawal Thakib bin Maidin	MS	Isolation and characterisation of <i>Lactobacillus</i> plasmid and its development into <i>Lactobacillus-Lactococcal</i> bi-shuttle vector	Graduated 2013
27.	Menaga a/p Subramaniam	MS	Cloning and expression of b-CGTase in <i>Lactococcus lactis</i>	Graduated 2013
28.	Stella Siaw Xiu Joan	MS	Cell surface display of pandemic H1N1 influenza A virus antigen in <i>Lactococcus lactis</i>	Graduated 2014
29.	Abdullah Munir bin Roslan	MS	Construction of <i>Lactococcus lactis</i> integration vector For enhancing the production of vitamin B biosynthesis	Graduated 2016
30.	Ali baradaran (Iran)	PhD	Development of <i>Lactococcus lactis</i> vaccine vectors against breast carcinomas	Graduated 2015
31.	Sarah Safwah Md Sabidi	MS	Comparative analysis of polysaccharide encapsulated <i>Lactobacillus plantarum</i> and <i>Lactococcus lactis</i> with cell wall anchored heterologous protein	Graduated 2017
32.	Inanurdiani Koko	MS	Engineering of food grade synthetic integrative vector for <i>Lactococcus lactis</i> based on phiLC3 integrating system	On-going
33.	Mohd Hairul Abdul Rahim	PhD	Expression of genes involved in the mevalonate pathway from orchids in Lactococcal and yeast systems	On-going
34.	Nor Fadillah Khairul Annuar	PhD	Characterization of collagen binding proteins from bacteria	On-going
35.	NurAqlili	PhD	Mutagenesis of signal peptides for improved secretion of heterologous proteins in <i>L. lactis</i>	On-going
36.	Nurul Aishah	MS	Engineering <i>Lactococcus lactis</i> as a cell factory for the production of plant anticancer compounds, limonene and perillyl alcohol	On-going
37.	Lee Chai Yan	MS	Modulatory effects of selected amino acids on the transcripts associated with protective genes and immunity in poultry	Submitted thesis

**B. POSTGRADUATE RESEARCH DEGREE AS CO-SUPERVISOR**

NO	NAME	DEGREE	TITLE OF THESIS	STATUS
1.	Norlia Basherudin	MS	DNA Fingerprinting of <i>Theobroma cacao</i>	Graduated 1996
2.	Sharifah Alawiah	PhD	Study of Flowering Genes in Palm Oil	Graduated 1997
3.	Sahilah Abdul Mutalib	MS	Conjugal Transfer of Antibiotic Resistance and Plasmid among <i>Escherichia coli</i> 0157 Isolated from Imported Frozen Beef	Graduated 1997
4.	Nur Asma Ariffin	MS	Genetic Variation Between and Within Three Varieties of Domesticated Tiger Barb ( <i>Puntius tetrazona</i> ) using RAPD Markers	Graduated 1999
5.	Shar Mariam Mohamed	PhD	Cytotoxic Effects of Methylgerambulin and Bis-(Methylhiomethy)-Disulphide (SB) on T-Lymphoblastic Leukemic Cell Line (CEM-SS)	Graduated 2000
6.	Vasanthakumari Neela	MS	Molecular and Immunological Characteristics of <i>Vibrio cholerae</i> and <i>Vibrio alginolyticus</i>	Graduated 2000
7.	Khalid Ghazi Daifalla Fandi	PhD	Purification, Characterization and Molecular Studies of F6PPK from Bifidobacteria	Graduated 2001
8.	Sahilah Abdul Mutalib	PhD	Molecular Characterization of <i>Salmonella serovars</i> Isolated from Poultry	Graduated 2001
9.	Nurfilza Ahmat	MS	Cloning and Expression of VP2 Gene of Chicken Anemia Virus Strain CUX-1 in <i>Lactococcus lactis</i> MG1363	Graduated 2001
10.	Chang Li Yen	MS	Cloning and Expression of the Xylanase Gene from <i>B. coagulans</i> and the M Gene of Newcastle Disease Virus in <i>Lactococcus lactis</i>	Graduated 2001
11.	Lesley Maurice Bilung	MS	Isolation and Molecular Characterization of <i>Listeria</i> Species in Poultry meat	Graduated 2001

NO	NAME	DEGREE	TITLE OF THESIS	STATUS
12.	Haryanti Toosa	MS	RAPD Analysis, Plasmid Profiles, Antibiotic Resistance and Occurrence of the <i>van</i> Genes in <i>Enterococcus</i> species Isolated from Human and Poultry	Graduated 2001
13.	Rebecca Robert Rantty	MS	Molecular Analysis of the <i>EMM</i> Gene of Group A <i>Streptococcus</i> Strain D1323	Graduated 2001
14.	Lim Yang Mooi	PhD	Anti-Tumour Promoting Activity of Selected Malaysian Vegetables and Fruits and Identification of Anti-Tumour Promoting and Antioxidant Compounds from <i>Coleus tuberosus</i> , Benth (Ubi Kemili)	Graduated 2002
15.	Ho Hooi Ling	MS	Effect of Medium Different Media Formulation and Growth Condition on the Growth and plasmid Stability of a Recombinant <i>Lactococcus lactis</i> AM3	Graduated 2002
16.	Ng Chyan Leong	MS	Expression of Recombinant Human Renin as a GST and HIS Fusion Protein in <i>E. coli</i>	Graduated 2002
17.	Tan Li Lung	MS	Development of a Novel Local Isolated Aquatic Yeast as a Protein Expression Vector	Graudated 2002
18.	Mickey AK Vincent	MS	Isolation and Molecular Characterization of <i>Vibrio cholera</i> in meat	Graduated 2002
19.	Hajjah Endang Purwati Rahayuningsih	PhD	Molecular Characterization of <i>Listeria</i> spp. Isolated from Beef, Chicken and Fermented Fish in Malaysia	Graduated 2003
20.	Tin Tin Myaing	PhD	Detection of Antibiotic Residues and Isolation of Antibiotic Resistant <i>Escherichia coli</i> from Chicken Meat and Chickens in Malaysia	Graduated 2003
21.	Abeer Hassan Sahtout	PhD	The Prevalence of White Spot Disease in <i>Penaeus Monodon</i> in Relation to Environmental Changes and the Occurrence of Apoptosis	Graduated 2003
22.	Lim Leng Choo	MS	Characterization of a Sulfur Amino Acid lyase from <i>Citrobacter freundii</i> (KP25)	Graduated 2003

NO	NAME	DEGREE	TITLE OF THESIS	STATUS
23.	Wan Somarny Bt. Wan Md. Zain	MS	Molecular Studies of <i>Vibrio cholerae</i> Strains Isolated from Local Outbreak	Graduated 2003
24.	Fennie Fong Kah Ling	MS	Identification of Proto-oncogene Sequences involving <i>ras</i> genes Associated with Pollution in Malaysian Flatfishes from the Straits of Malacca	Graduated 2004
25.	Kwan Yen Yen	MS	A Catalogue of Oil Palm Expressed Sequence Tags (ESTs) from A floral cDNA Library and the Analysis of Two MADS Box Genes	Graduated 2004
26.	Vasantha Kumari Neela	PhD	Utilization of Molecular System for the Identification and Typing of Clinically Relevant Multiple Drug Resistant <i>Staphylococcus aureus</i>	Graduated 2005
27.	Nguyen Chau Thanh Tung	MS	Comparison of DNA Extraction Methods in the Detection of Genetically Modified Food Using Polymerase Chain Reaction	Graduated 2005
28.	Elham Omer Mahagoub	MS	Development of Chicken Anaemia Virus (CAV) Diagnosis Kits, Epidemiological and Serological Survey of (CAV) in Malaysia	Graduated 2005
29.	Taznim Begam Mohd. Mohidin	MS	Study of Specific Interactions Between Nipah Virus Nucleocapsid - (N) Protein and Phohpo-(P) using the Yeast Two-Hybrid System	Graduated 2006
30.	Lew Kok Cheong	MS	Development of Fed-Batch Fermentation Technique for the Cultivation of <i>B. subtilis</i>	Graduated 2006
31.	Nagesh Dernissie	PhD	Genetic Diversity and Characterization of Selected Plant Growth Promoting Rhizobacteria from Food Legumes of the Central Highlands of Ethiopia	Graduated 2006
32.	Fatemeh Jahanshiri	PhD	Mapping of the Functional Domains of the Newcastle Disease Virus Phosphoprotein	Graduated 2006
33.	Ngyuyen Phuoc Dang	PhD	Sequence and Functional Analysis if Salinity Tolerance Genes Isolated from the Mangrove Plant, <i>Acanthu ebrateacus</i> (Sea Holy)	Graduated 2006

NO	NAME	DEGREE	TITLE OF THESIS	STATUS
34.	Lim Kean Jin	MS	ESTs for Banana (pisang rastali)	Graduated 2006
35.	Christina Vimala Suppramaniam	MS	Isolation of Gene that Encode for Plantaricin in <i>Lactobacillus plantarum</i>	Graduated 2006
36.	Jacklyn Ng Wei Sze	MS	Characterization of Methicillin-Resistant <i>Staphylococcus aureus</i> (MRSA) Isolated from Cats and Dogs	Graduated 2006
37.	Lim Chin Ming	PhD	Development of Industrial Probiotic Culture Production with Maximum Activity and Stability	Graduated 2006
38.	Tengku Elida Tengku Zainal Mulok	PhD	Production of L-lactic Acid from Kitchen Waste using Recombinant <i>E. coli</i>	Graduated 2008
39.	Nagi AlHaj	PhD	Development of a PCR Based Technique for Identification of <i>E. coli</i>	Graduated 2009
40.	John Laurence William	PhD	<i>Staphylococcus aureus</i> Carrying by the Football Players during Training Indoor and Outdoor	Graduated 2007
41.	Premalatha a/p Pakirisamy	PhD	Inoculant Formulation, Application and Inoculant Colonization Pattern for Plant Growth-Promoting Rhizobacteria ( <i>Bacillus</i> sp.) in Association with a Non-Legume	Graduated 2007
42.	Lim Yin Sze	PhD	The Study of Probiotic Characteristics of <i>Lactobacillus plantarum</i> Species Isolated from Local Foods	Graduated 2008
43.	Ang Kok Nian	MS	Degradation of Lignocelulosic Agro-waste <i>Laccase</i> from Locally Isolated Fungus (White-rot <i>Basidomycetes</i> )	Graduated 2008
44.	Mohd Zaini Nanyan	MS	Scaling Up Fermentation Process by Using <i>Bacillus</i> sp. as a Probiotic in Aquaculture Industry	On-going
45.	Siti Sarah Osman	MS	Development of a Virulent <i>P. multocida</i> B2 with a Deletion in the GDHA Gene	Graduated 2008
46.	Anuradha a/p Karunakaramoorthy	MS	Effects of recombinant <i>Lactococcus lactis</i> and bacteriocin UI4 in the protection of tilapia ( <i>Oreochromis niloticus</i> ) against <i>Aeromonas hydrophila</i>	Graduated 2009

NO	NAME	DEGREE	TITLE OF THESIS	STATUS
47.	Dzarifah Mohd. Dzulperi	MS	Development of Avirulent <i>Pasteurella multocida</i> B2: Deletion of ABA392 DNA Fragment	Graduated 2008
48.	Hana Farizah	MS	Expression of <i>Vibrio</i> O-antigen Transport Biosynthesis Genes in Lactococcus Vector	Graduated 2011
49.	Morteza Shojaei Moghadam	MS	Molecular characterization of bacteriocinogenic <i>Lactobacillus plantarum</i> strains isolated from malaysian food	Graduated 2009
50.	Seyed Sadegh Mousavi	MS	Influence of medium formulation and cultural conditions on folate production by lactic acid bacteria	Graduated 2010
51.	Sayed Hameed Mahmoudian	PhD	Prediction of Breast Cancer relapse time in continuous scale based on type-2 tsk fuzzy model	Graduated 2010
52.	Reza	PhD	Title	Graduated 2010
53.	Norfarina bt Muhamad Nor	MS	Improvement of folate biosynthesis by <i>Lactobacillus plantarum</i> I-UI4 using response surface methodology	Graduated 2011
54.	Sharmila Dewi Natarajan	MS	Optimization of bioethanol production from yeast isolated from <i>Nypa sap</i> using response surface methodology	Graduated 2012
55.	Mohd Azuraiddi Osman	MS	Ehipippia production and genetic biodiversity on tropical cladoceran <i>Moina micrura</i> Kurz	Graduated 2012
56.	Farzaneh Heidarnia	MS	Metabolic regulation analysis of recombinant <i>Lactococcus lactis</i> carryng aerolysin gene based on gene expression and enzyme activities	Graduated 2011
57.	Azin Amiri	MS	Improvement of cyclodextrin glycosyltransferase biosynthesis by recombinant <i>Lactococcus lactis</i> NZ:NSP:CGT	Graduated 2013
58.	NorKhalidah bt Jamali	MS	Optimisation of nutritional and cultural conditions for the production of bacteriocin by locally isolated strains, <i>Lb plantarum</i> TL1	Graduated 2014

NO	NAME	DEGREE	TITLE OF THESIS	STATUS
59.	Anuradha a/p Karunakaramoorthy	PhD	Effects of metabolites produced by locally isolated lactic acid bacteria on tilapia, <i>Oreochromis niloticus</i>	Graduated 2015
60.	Nur Elina binti Abdul Mutalib	PhD	Lactococcal vector construction incorporating internal ribosome entry site (ires) for protein delivery in avian cells	Graduated 2015
61.	Ho Wan Yong	PhD	Induction of apoptosis by <i>Elephantopus scaber</i> L. ethanolic extract and effects of its interaction with tamoxifen on human breast cancer MCF-7 spheroids	Graduated 2012
62.	Yee Lian Ngit	PhD	Metabolic engineering of <i>phaZ</i> AND <i>phaC</i> genes in <i>Comamonas</i> sp EB172 for polyhydroxyalkanoates production.	Graduated 2012
63.	Siti Balkhis binti Ibrahim	MS	Growth optimization of recombinant <i>Lactococcus lactis</i> carrying domain 1 of aerolysin gene	Graduated 2012
64.	Jeevanathan a/l Kalyanasundram	MS	Construction and characterization of a <i>Lactococcus lactis</i> in-trans surface display system harbouring murine glycosylated tyrosinase related protein-2	Graduated 2015
65.	Anhar Danial	PhD	Development of novel mucosal vaccine for tuberculosis using protein surface display system of <i>Lactococcus lactis</i>	Graduated 2018
66.	Zubaida Hassan	MS	Isolation, characterization and anti-tumour effects of potential probiotic bacteria from human breast milk	Graduated 2015
67.	Lim Ee Lin	MS	Analyses of putative genes involved in the defense mechanism of <i>Gracilaria changii</i> in response to agarose and agarolytic bacteria treatments.	Graduated 2014
68.	Jocelyn	MS	Glycosylation of influenza antigen surface display on <i>Lactococcus lactis</i> elicits protective immune responses	Graduated 2016
69.	Taha	PhD	Carbon nanoparticles as replacement for gold in fluorescence resonance energy transfer for detecting virus	Graduated 2016



NO	NAME	DEGREE	TITLE OF THESIS	STATUS
70.	Laavana a/p M.Kumar	MS	Influence of biofilm-forming lactic acid bacteria against selected pathogenic bacteria	Graduated 2016
71.	Tan Huey Kheng	MS	Purification and characterization of cytobiotic produced by <i>Lactobacillus plantarum</i> I-UL4 on human breast cancer cell line (MCF-7)	Graduated 2018
72.	Khulood Hamid Dakheel	PhD	Mechanism of methicillin-resistant <i>Staphylococcus aureus</i> biofilm degradation by bacteriophages	2018
73.	Nurhidayatul Asma Mohamad	PhD	Real-Time PCR-based detection and quantification of porcine adulteration in processed gelatin and gelatin capsule	2017

#### SUPERVISION OF UNDERGRADUATE STUDENTS - 39 BACHELOR SCIENCE

No	Name	Title	Year	Status
1.	Bazli Syah Ahmad	Nordamnacanthal-Induced Programmed Cell Death (Apoptosis) in PN6 Cells	1997	Graduated
2.	Muhamad Firdaus Bin Sher Mohamed	Screening and Isolation of Cadmium Resistant Bacteria from Industrial Effluent	1997	Graduated
3.	Boon @ Embun Bte Eli	Characterization of Plasmids Extracted and Antimicrobial Resistant of <i>Salmonella enteritidis</i> isolates	1997	Graduated
4.	Yong Kum Cheng	The Cytotoxic Activity of Nordamnacanthal Compound against Heat Treated PN6 Cell	1998	Graduated
5.	Chang Li Yen	Effects of Damnacanthal and Nordamnacanthal on HeLa and NIH 3T3 Cells	1998	Graduated
6.	Nor HairulNizam Wahid	Effect of Heat on PN6 Cell Line	1998	Graduated
7.	Nurniwalis Abdul Wahab	Construction of Genomic Library for <i>L. lactis</i> MG1363 and <i>Bifidobacteria asteroides</i>	1998	Graduated
8.	Zalyna Yusof	Identification of Bacteria UPM1 and UPM3	1998	Graduated
9.	Chew Elaine	Isolation and Characterization of Selected Lactococcal Plasmids from Chicken Cecum	1999	Graduated

No	Name	Title	Year	Status
10.	Leslie Low Eng Ti	Optimization of Disruption Methods for the Isolation of Intracellular Proteins from a Hyperthermophilic Bacteria	1999	Graduated
11.	Rowina Hartini Monamad Yusof	Characterization of Plasmids Isolated from <i>Bifidobacter</i>	1999	Graduated
12.	Amos Tan	Cloning of VP3 Gene of a Local Isolate into Expression Vector pMG36e	1999	Graduated
13.	Madiah Zawawi	Cloning and Expression of VP1 (Cux-1) in <i>E. coli</i>	1999	Graduated
14.	Saliza Zamani	Subcloning of Xylanase Gene into Plasmid Vector pMG36e	1999	Graduated
15.	Khaw Aik Kia	Construction of a Restriction Map of a Cryptic Plasmid Isolated from <i>Lactococcus</i>	2000	Graduated
16.	Chong Chea Chin	Towards the Construction of Genomic Library of <i>Lactococcus lactis</i> B88.	2000	Graduated
17.	Goh Sor Keim	Studies of a Recombinant <i>Lactococcus lactis</i> under Different pH and Temperature Conditions	2000	Graduated
18.	Gan Bong Hwa	Screening for Bacteriocin Producing <i>Lactococcus lactis</i> Isolated from Chicken Intestine and RAPD Studies	2001	Graduated
19.	Khairul Nizam Hj. Kamaruddin	Curing Studies in <i>Lactococcus lactis</i> using Acridine Orange and Acriflavin	2001	Graduated
20.	Chong Kok Kei		2001	Graduated
21.	Lum Won Yen	Isolation and Cloning of AcmA, a Major Autolysin Gene from <i>Lactococcus lactis</i>	2001	Graduated
22.	Nurul Hafizah Islar	Antibiogram and Determination of Minimum Inhibitory Concentration (MIC) of <i>Lactobacillus spp.</i> Isolated from Chicken Intestine	2001	Graduated
23.	Rosuraya Abdullah	Cloning of the ctx Gene from <i>Vibrio cholerae</i> into pMG36e	2001	Graduated
24.	Hooi Wei Yeng	Cloning and Characterization by Sequencing of Superoxide Dismutase Gene from <i>Lactococcus lactis</i> B61	2002	Graduated
25.	Rusni Abdul Kadir	Plasmid Profiling and Determination of Minimum Inhibitory Concentration (MIC) of <i>Lactobacillus spp.</i> Isolated from Chicken Intestine	2002	Graduated

No	Name	Title	Year	Status
26.	Rosnah Sahilan	RAPD Analysis of <i>Lactococcus spp.</i>	2002	Graduated
27.	Mazrina Ahmad Kamal	Isolation of Organisms from Soil Around the Roots of Lemon-Grass having Potential of Producing Anti- <i>Staphylococcus</i> Substances	2002	Graduated
28.	Tan Boon Hooi	Cloning and Expression of <i>Lactococcus lactis</i> M4 Superoxide Dismutase (SOD) Gene in <i>E. coli</i> BL21(DE3) pLysS	2003	Graduated
29.	Engku Ahmad Nazri Engku Ariff	The Use of Repetitive Sequence-PCR and Randomly Amplified Polymorphic DNA-PCR for Discrimination of <i>Listeria spp.</i>	2003	Graduated
30.	Ang Ley Poh	Cloning of <i>eprA1</i> Gene from <i>Aeromonas hydrophila</i> into <i>Escherichia coli</i>	2004	Graduated
31.	Lionel In Lian Aun	Cloning of <i>Elastase (AhyB)</i> Gene from <i>Aeromonas hydrophila</i> into <i>Escherichia coli</i>	2004	Graduated
32.	Nur Azimah Osman	Screening for L-LDH Gene in The Genomic Library of <i>Enterococcus gallinarum</i> EB1	2005	Graduated
33.	Khadijah Hanim Abdul Rahman	Cloning of Sequences Coding for the Cell Wall Binding Domain of <i>nisP</i> gene in <i>E. coli</i> .	2005	Graduated
34.	Hisyam Bin Abdul Hamid	Cytotoxic Effects of Damnacanthal Towards Human Mammary Carcinoma Cell Line (MDA-MB-231)	2005	Graduated
35.	Seng Liang	Amplification and Cloning of VP1 and VP2 Genes of Chicken Anemia Virus (CAV) into pSVac	2005	Graduated
36.	Ooi Choong Li	Mammary Carcinoma Cells (MDA-MB-231)	2005	Graduated
37.	Mohd. Termizi Bin Yusof	Preliminary Studies on Antibody Produced by Mice Fed with Recombinant Lactococcal	2005	Graduated
38.	Nik Mohd. Afizan Bin Nik Abd. Rahman	Strength Studies of Recombinant <i>E. coli</i> Strain Harboring <i>nisP</i> Protein	2005	Graduated
39.	Marini Ibrahim	Construction of Genomic Library for <i>Enterococcus gallinarum</i> EB1 for Screening the L-Lactate Dehydrogenase Gene	2005	Graduated
40.	There have been more than 30 undergraduate students under my supervision since 2005-2014. There had also been undergraduate students doing their final year projects from UM, UMP, UTM, UIA, Sedaya, Cantho University Vietnam, Yala University Thailand, and others.			

**EXPERIENCE AS POSTGRADUATE THESIS EXAMINER**

<b>EXTERNAL</b>				
<b>NO</b>	<b>NAME</b>	<b>TITLE</b>	<b>DEGREE</b>	<b>INSTITUTIONS</b>
1.	Saidi Jaafar	Pulse Field Gel Electrophoresis (PFGE) Analysis of <i>Pasteurella multocida</i> Serotype B:2 Genome	MS (2005)	Universiti Malaya
2.	Hasniza Ramli	Cloning and Expression of Glucoamylase cDNA from <i>Amylomyces rouxii</i> in <i>E.coli</i>	MS (2006)	Universiti Teknologi Malaysia
3.	Nor Haslinda Abdul Aziz	Genotyping and Identification of High-Risk Human Papilloma Virus from Cervical Specimens using Polymerase Chain Reaction Approach	MS (2007)	Universiti Malaya
4.	Yam Hock Chai	Characterization of nifBHDK Genes of <i>Paenibacillus polymyxa</i>	MS (2007)	Universiti Sains Malaysia
5.	Marilyn Jaai@Edward	Isolation, Purification and Molecular Characterization of Alpha Amylase from <i>Bacillus Amyloliquefaciens</i>	MS (2007)	Universiti Malaysia Sarawak
6.	Suzana Misbah	Molecular Characterization and Proteomic Studies if Multiple Antibiotic Resistance <i>Acenitobacter baumannii</i>	MS (2008)	Universiti Malaya
7.	Phang Sze How	Cloning and Expresson of a <i>Salmonella entericar serovar typhi</i> DNA Fragment	MS (2008)	Universiti Malaya
8.	Yam Hok Chai	Characterization of Nitrogen Fixation Genes ( <i>nif</i> ) from <i>Paenibacillus polymyxa</i>	MS (2009)	Universiti Sains Malaysia
9.	Kesaven a/I Bhubalan	Characterization and the application of polyhydroxyalkanoate synthase of Chromobacterium sp USM2 for the production of biodegradable plastic	PhD (2009)	Universiti Sains Malaysia
10.	Yuen Chee Wah	Characterization of the Bulkhoderia pseudomallei wzm gene involved in export of capsular polysaccharide	MS (2009)	Universiti Sains Malaysia
11.	Tri Puji Priyanto	Analisis fungsi subunit katalitik protein kinase bersandarkan cAMP dan gen-gen khusus apresorium yang di ekspres semasa morfogenesis <i>Colletotrichum gloeosporioides</i>	PhD (2009)	Universiti Kebangsaan Malaysia

EXTERNAL				
NO	NAME	TITLE	DEGREE	INSTITUTIONS
12.	Muhd Danish Daniel bin Abdullah	Mengkaji komuniti bakteria yang berasosiasi dengan dinoflagelat yang toksik yang di jumpai di perairan Malaysia	PhD (2009)	Universiti Kebangsaan Malaysia
13.	Tee Soo Yee	Family 11 Xylanase (AfxynG1) from <i>Aspergillus fumigatus</i> RT-1: Expression and Biochemical Characterization of the Recombinant Enzyme	MS (2010)	Universiti Teknologi Malaysia
14.	Chandrika Murugaiah	Construction and evaluation of multigene mutants of <i>Vibrio cholera</i> 0139	PhD (2010)	Universiti Sains Malaysia
15.	Noor Azah Jema'on	Genome sequence survey of alkaliphilic <i>Bacillus lehensis</i> G1 and candidate genes involved in pH homeostasis	MS (2010)	Universiti Teknologi Malaysia
16.	Hussin Alwan Rothan Al -Maamuri	Constuction and expression of human adinopectin in prokaryotic and eukaryotic expression systems and the study of its effect on selected blood parameters and expression of related genes	PhD (2011)	Universiti Malaya
17.	Laith Abulhassan Mohammad Jawad	Molecular cloning, phylogenetic analysis, and expression of two immune related genes, serum amyloid A (SAA) and C-reactive protein (CRP) from Asian seabass ( <i>lates calcarifer</i> )	PhD (2011)	Universiti Kebangsaan Malaysia
18.	Gan Han Ming	Identification of catabolite genes for 4-aminobenzenesulfonate biodegradation by hydrogenophaga sp PBC and <i>ralstonia</i> sp PBA.	PhD (2011)	Universiti Teknologi Malaysia
19.	Kogubalan a/I Ilan Sollan	MCM-41 as support for immobilization of NAR-1 bacterial consortium in the biodegradation of remazol black B	MS (2011)	Universiti Sains Malaysia
20.	Poh Keng Chong	Cloning, expression and preliminary characterization of selected hypothetical proteins form <i>Klebsiella pneumonia</i> MGH 78578	MS (2012)	Universiti Sains Malaysia
21.	Noor Munyati Othman	Pengekpresan dan pencirian hidrolase daripada <i>Rhodococcus ruber</i> (UKMP-5M)	MS (2012)	Universiti Kebangsaan Malaysia
22.	Hadini bin Mokhsin	Title	MS (2012)	USM
23.	Syaidatul Najiah Zakaria	Cloning, expression and site directed mutagenesis of single chain FV of C3A8 hybridoma against breast	MS (2012)	Universiti Sultan Zainal Abidin

EXTERNAL				
NO	NAME	TITLE	DEGREE	INSTITUTIONS
		MCF-7 carcinoma cells in <i>Pichia pastoris</i>		
24.	Frederick Adzitey	Prevalence, antibiotic resistance and genetic diversity of <i>Campylobacter</i> species, <i>Salmonella</i> serovars and <i>Listeria monocytogenes</i> isolated from ducks, their rearing and processing environment in Penang, Malaysia	PhD (2012)	USM
25.	Mardani Abdul Halim	Development of thermostable variants of <i>Zymomonas mobilis</i> alcohol dehydrogenase by directed evolution	MS (2012)	USM
26.	Fatemeh Shahhosseini	Molecular studies of <i>Chalcone synthase</i> in <i>Boesenbergia rotunda</i>	PhD (2012)	UM
27.	Kamariah bt Hassan	Elucidation of PHA biosynthesis regulatory elements in <i>Pseudomonas</i> sp. USM 4-55	PhD (2013)	USM
28.	Theresa Yap Wan Chen	Title	MS (2013)	UKM
29.	Siti Mariam Mawarni Ramli	In Vitro Selection of RNA Aptamers that Specifically Bind to 50kDA Outer Membrane Protein of <i>Salmonella enterica</i> serovar Typhi	MS (2016)	USM
30.	Zarita Zakaria	Molecular and Enzymatic Studies of Fibrinolytic Enzyme from <i>Bacillus</i> SP.	PhD (2014)	UTM
31.	Parastoo Tajzadeh	Characterisation of Transpeptidase and Transglycosylase Domains of Penicillin-Binding Protein from <i>Burkholderia pseudomallei</i> and Their response to Antibacterial Agents	PhD (2014)	UKM
32.	Hazirah Abdol Wahab	Pengubahsuaian Genetik Terhadap Jujukan Isyarat Rembesan Homolog BAgI Meningkatkan Pengekspresan Ekstrasel Beta-galaktosidase di Dalam <i>Aspergillus Niger</i>	MS (2016)	UKM
33.	Balqis Abdul Ghani	Development of Industrial Strain for the Production of poly (3-hydroxybutyrate-co-3-hydroxyhexanoate)	PhD (2016)	USM
34.	Ng Fui Ling	Interaction between the bacteria clonal colonies	PhD (2019)	USM

**EXPERIENCE AS POSTGRADUATE THESIS EXAMINER**

<b>INTERNAL EXAMINER</b>				
<b>NO</b>	<b>NAME</b>	<b>TITLE</b>	<b>DEGREE</b>	<b>UNIVERSITY</b>
1.	Ainu Husna Suhaimi	Determination of the Nucleotide Sequence of a Thermostable Xylanase Gene from <i>Baillus coagulans</i> ST-6	MS	Faculty of Science and Environmental Studies
2.	Mojtaba Khayyam Nekouei	Germplasm Collection and Molecular Characterization of Endophyte Fungi in Iranian Tall Fescue	PhD	Faculty of Food Science and Biotechnology
3.	Suhaili Abdul Hamid	Cloning and Expression of Alkaline Protease	MS	Faculty of Science and Environmental Studies
4.	Au Siang Loong	Isolation and Characterization of cDNA Clones Encoding ADP-Glucose Pyrophosphorylase (AGP) from Sago Palm ( <i>Metoxylon sago</i> )	MS	Faculty of Food Science and Biotechnology
5.	Sugumaran Manickam	The Cloning and Characterization and Antisense Cassette Construction for some Pigmentation Genes from <i>Oncidium</i>	MS	Faculty of Food Science and Biotechnology
6.	Chin John Hun	Molecular Cloning Sequencing and Expression of an Organic Solvent-Tolerant Lipase Gene from <i>Bacillus Sphaericus</i> 205Y	MS	Faculty of Science and Environmental Studies
7.	Ooi Wai Ling	Prevalence and Molecular Characterization of Vancomycin-Resistant Enterococci Isolated from Poultry, Raw Vegetables and Clinical Sources	PhD	Faculty of Science and Environmental Studies
8.	Kwan Yen Yen	A Catalogue of Oil Palm ESTs from a Floral cDNA Library and the Analysis of Two Mads Box Genes	MS	Faculty of Food Science and Biotechnology
9.	Sushil Kaur A/P N. Gurnam Singh	Development of Diagnostic DNA Probe for the Detection of <i>Escherichia coli</i> O157:H7	MS	Faculty of Food Science and Biotechnology

INTERNAL EXAMINER				
NO	NAME	TITLE	DEGREE	UNIVERSITY
10.	Siti Norita Mohamad	Optimization of Mannan-Degrading Enzymes Production by <i>Aspergillus niger</i> in Fermentation Using Shake Flasks and 2L Stirred Tank Fermenter	MS	Faculty of Food Science and Biotechnology
11.	Sew Yun Shin	Characterization of Allergens from the Dust Mite, <i>Tyrophagu putrecentiae</i>	MS	Institute of Bioscience
12.	Nor Suhaila Yaacob	Perfomance of Solvent (Acetone-Buthanol-Ethanol) Fermentation by <i>Clostridium sacharobutylicum</i> Strain P262 and NCIMB8052 Using Free and Immobilized Cells System	MS	Institute of Bioscience
13.	Jeffrey Lim Seng Heng	Screening of <i>Actinomyces</i> from Soils and Endophytic Fungi from Medicinal Plants in Malaysia for Bioactive Compounds	MS	Faculty of Food Science and Biotechnology
14.	Mohd Abdullah Eltaweel	Production, Expression and Characterization of Heat-Stable Organic Solvent Tolerant Lipase from <i>Bacillus sp.</i> Strain 42	PhD	Faculty of Biotechnology and Biomolecular Sciences
15.	Lalitha Ambigai	The Nucleocapsid Protein in Newcastle Disease Virus as a Carrier for the VP1 Polypeptides of Enterovirus 71	MS	Faculty of Biotechnology and Biomolecular Sciences
16.	Rafidah Saadun	Improvement of the Solubility of the VP2 Hypervariable Region of Infectious Bursal Disease Virus by Fusion to the NP Protein of Newcastle Disease Virus	MS	Faculty of Biotechnology and Biomolecular Sciences
17.	Nurhasmimi Hussein	Subcloning of the Xylanase Gene of <i>Fibrobacter succinogenes</i> S85 from the Recombinant Xylanolytic Plasmid pBX6 Using Polymerase Chain Reaction	MS	Faculty of Biotechnology and Biomolecular Sciences



No	Name	Title	Degree	University
18.	Wong Siew Tung	Development of a DNA Vaccine against Enterovirus 71	MS	Faculty of Medical and Health Sciences
19.	Noor Suhana Adzahar	The Interaction Sites of Newcastle Disease Virus L protein Conserved Domains with P and NP Proteins	MS	Faculty of Biotechnology and Biomolecular Sciences
20.	Shalihah Mahamad	Cloning, Sequencing and Expression of an Organic Solvent Tolerant Protease from <i>Bacillus pumilus</i> 115B	MS	Faculty of Biotechnology and Biomolecular Sciences
21.	Yap Fei Ling	Development of a DNA Vaccine against Human Breast Cancer	MS	Faculty of Medical and Health Sciences
22.	Raha Ahmad Raus	Development of a Panel of Monoclonal Antibodies Against Protein of Newcastle Disease Virus and its Application in the Study of NP-P Interactions	PhD	Faculty of Biotechnology and Biomolecular Sciences
23.	Syahanim bt Shahwan	Isolation and Characterization of Oleo-co Desaturase Gene from Oil Palm ( <i>Elaeis Guineensis</i> )	MS	Faculty of Biotechnology and Biomolecular Sciences
24.	Balkis Bt Haji A.Talip	Molecular Characterization of Infectious Bronchitis Virus	MS	Veterinary Medicine
25.	Ahmad Faizal Abdul Razis	Cloning and Expression of Recombinant Human Epidermal Growth Factor Cultured in <i>E. coli</i>	MS	ITMA
26.	Abdul Masani Md Yunus	Production of Biodegradable Plastics in Transgenic Arabidopsis and Oil Palm	MS	Faculty of Biotechnology and Biomolecular Sciences
27.	Mohd. Shukuri bin Mohamad Ali	Studies of a cold active bifunctional lipase from antarctic microorganism strain pi12	PhD	Faculty of Biotechnology and Biomolecular Sciences
28.	Zuhaida Asra Ahmad	Construction of single chain fragment variable fragment (scfv) antibody against mcf-7 breast cancer cells by phage display technology	MS	Institute Bioscience

No	Name	Title	Degree	University
29.	Ong Swee Tin	Structural analysis of the nucleocapsid proteins of nipah virus and newcastle disease virus	PhD	Faculty of Biotechnology and Biomolecular Sciences
30.	Lee Chin Mei	Molecular Approaches for Identification, Characterisation and Quantification of Probiotic Lactobacillus Strains for Poultry	PhD	Institute Bioscience
31.	Nurmas Idayu Mashan	Antibacterial activity of seaweed extract and elucidation of essential genes in inhibited <i>Staphylococcus aureus</i>	MS	Faculty of Medicine and Health Sciences
32.	Norfarrah Mohamed Alipiah	Antibacterial activity of sea-cucumber extract and elucidation of essential genes in inhibited <i>Staphylococcus aureus</i>	MS (2013)	Institute Bioscience
33.	Nadine HayudiniNogralles	Oral immunization of cholera DNA vaccine employing a microencapsulation	PhD (2013)	Faculty of Medicine and Health Sciences
34.	Fatemeh Baran Talab	Identification and expression of differentially expressed proteins biomarkers for prognosis in acute myeloid leukemia	PhD (2013)	Faculty of Medicine and Health Sciences
35.	Ira Amira Rosti	Recovery and purification of epidermal growth factor from fermentation broth using expanded bed chromatography	MS (2013)	Institute Bioscience
36.	Salman Sahab Athshan	Applying molecular and proteomics tools for characterization and identification of various clone types of biofilm-producing <i>Staphylococcus aureus</i> clinical isolates	PhD (2013)	Faculty of Medicine and Health Sciences
37.	Norhafizah Ahmad Kamaruddin	Expression, characterization and structural modification for a cold-adapted, organic solvent from <i>Staphylococcus epidermidis</i> AT2	PhD (2014)	Biotechnology and Biomolecular Sciences

**ADMINISTRATIVE DUTIES – International Level**

NO	NATURE OF DUTIES/RESPONSIBILITIES	YEAR
1.	<b>Secretary General</b> of Asian Federation of Societies for Lactic Acid Bacteria (AFSLAB)	2013 -2018
2.	<b>EXCO member of AFSLAB</b> , Asian Federation of Societies for Lactic Acid Bacteria (AFSLAB)	Since 2005
3.	<b>Country representative</b> – International Union of Microbiology Societies	2011 - 2013
4.	<b>Member</b> , Japanese Society for the Promotion of Science (JSPS)	2002 – 2005
5.	<b>Member</b> , Japan International Cooperation Agency Alumni Society of Malaysia (JICA )	1997 – 2005

**ADMINISTRATIVE DUTIES – National Level**

NO	NATURE OF DUTIES/RESPONSIBILITIES	YEAR
1.	<b>Director</b> , Higher Institutions' Excellence Planning Division, Dpt of Higher Education, Ministry of Education, Malaysia (MOE).	2014 - 2019
2.	<b>Chairman</b> , working committees for research programs at MOE	2014 - 2019
3.	<b>President</b> , Malaysian Society for Microbiology (MSM)	2004- 2006
4.	Member of <b>National Technical Advisory Committee for Food Safety Procedures</b> 1985 (JTPM)	2005 – 2006
5.	<b>Panel</b> to Assess Application for Development of MS Bioteknologi Program, UTM	2005
6.	<b>Technical Panel</b> to Assess IRPA, EAR Application - MARDI (Biological Sciences).	2005-2006
7.	<b>Member</b> of the National Discussion Group on 'Research Priority in Biotechnology'	2005
8.	National Biosafety Working Committee	2013 - 2014
9.	<b>Project Leader</b> , IRPA Top Down Project – Development of Recombinant Bacteria for Delivery of Useful Proteins	2003 - 2006
10.	<b>Sub-Project Leader</b> – IRPA Top Down Project – EPO	2002 – 2006
11.	<b>Sub-Project Leader</b> – IRPA Top Down Project – EV71	2002 – 2005
12.	<b>Auditor</b> - Malaysian Society for Molecular Biology and Biotechnology (MSMBB)	2003 - 2007
13.	<b>Vice president</b> MSM	2004 - 2005

NO	NATURE OF DUTIES/RESPONSIBILITIES	YEAR
14.	<b>Faculty Representative</b> to the Ministry of Health on GMO	2003-2004
15.	<b>Treasurer</b> MSM	2001 – 2003
16.	<b>Co-Project leader</b> – IRPA Top Down Project – Development of Recombinant Bacteria for Vaccine Delivery	1997 – 2002
17.	<b>Sub-project leader</b> – Institutional research grants (MGI, IPhARM)	2007-2013
18.	<b>Panel for MQA</b>	2009-2013
19.	Exco Malaysian Society for Microbiology	2007-current

#### ADMINISTRATIVE DUTIES – University Level

NO	NATURE OF DUTIES/RESPONSIBILITIES	YEAR
1.	<b>Director</b> of Research Management Center, UPM	Oct 2012 – March 2014
2.	<b>Chairman</b> of Institutional Biosafety committee UPM	2010 - 2014
3.	<b>Unit Head</b> – Microbial Culture Collection Unit, Institute of Biosciences, UPM	2008 - 2014
4.	<b>Deputy Dean</b> , Faculty of Biotechnology and Biomolecular Sciences	2012
5.	<b>Head</b> , Department of Cell and Molecular Biology, FBSB	2007-2011
6.	<b>Head</b> , panel for selection of research grant applications for RUGS, ERGS, FRGS	2011-2012
7.	<b>Auditor</b> for COPPA UPM	2011
8.	<b>Deputy Director</b> of Research Management Center, UPM	2005 – 2007
9.	<b>Member</b> of Research Committee, UPM	2005 – 2007
10.	<b>Member</b> of UPM Selection Committee for National and International Exhibitions and Competition	2005 - 2011
11.	<b>Editor</b> to UPM Research Bulletin, Synthesis	2005 – 2007
12.	<b>Editor</b> to UPM's Annual Report Publication	2005 – 2007
13.	<b>Member</b> of University's Biosafety Committee	2005
14.	<b>Unit Coordinator</b> , Laboratory of Fermentation Technology, IBS, UPM	2004
15.	<b>Member</b> of PPA	Since 2002
16.	<b>Chairman</b> of Thesis Examination Committee (Postgraduate School)	

**ADMINISTRATIVE DUTIES – Faculty Level**

YEAR	NATURE OF DUTIES/RESPONSIBILITIES
2012	<b>Deputy Dean Research and Innovation</b>
2008 - 2014	<b>Unit Head</b> – Microbial Culture Collection Unit, Institute Biological Sciences, UPM
2007 -2011	<b>Head of Department</b> – Department of Cell and Molecular Biology, Faculty of Biotechnology and Biomolecular Sciences, UPM (committee member for Research and Innovation, Curriculum etc.etc.)
2005	<b>Starting November 2004 - 2005 (FBSB)</b>
	<b>Internal Auditor</b> of MS ISO 9001:2000
	<b>Ahli Jawankuasa</b> Pepandu MS ISO 9001:2000
	<b>Member</b> of Quality Assurance MS ISO 9001:2000 Committee
	<b>Member</b> of Research Committee
	<b>Member</b> of Curriculum Committee
	<b>Member</b> of Bulletin@Putra Committee (Nov. – May)
	<b>Board Editor</b> of Research Bulletin (BioTechCommunication)
2004	<b>Until Nov. 2004 (FSB)</b>
	<b>Committee Member</b> of Post Graduate Seminar
	<b>Chairman</b> for MS Molecular Biology Course Development
	<b>Lab Manager</b> MKT
	<b>Member</b> of Safety and Health Committee (FSMB)
	<b>Member</b> of Postgraduate Committee (FBSB)
2003	<b>Member</b> of Postgraduate Seminar Committee
	<b>Member</b> of Curriculum Committee
	<b>Chairman</b> for MS Molecular Biology
2002	<b>Member</b> of Postgraduate Seminar Committee
	<b>Member</b> of Curriculum Committee
	<b>Chairman</b> for MS Molecular Biology
2000	<b>Chairman</b> of the Organizing Committee for the Workshop on “Application of DNA Technology on Crime Investigations”
	<b>Organizing Committee</b> and <b>Lecturer</b> for the Seminar and Workshop on “Continuous Culture, Theories and Applications”
	<b>Faculty Representative</b> for the UPM’s MS. Genetics Program
	<b>Member</b> of the Faculty Committee on Curriculum
1999	<b>Member</b> of the Faculty Committee for the Re-Evaluation of the Biotechnology Program
	<b>Member</b> of the Discussion Group on “Research Priority in Biotechnology”
	<b>Member</b> of the Organizing Committee for a Workshop on Animal Biotechnology
	<b>Member</b> of the Social Committee for Microbiology Seminar
1998	<b>Member of the Curriculum Committee for BSc. Molecular Biology</b>
	<b>Advisor</b> to Students’ Project – ‘Longest Sandwich’
1997- 2000	<b>Member of the Organizing Committee for the Workshop on ‘Molecular Tools for Biotechnology’ Series I – IV</b>
1997	<b>Member</b> of the Curriculum Committee for B.Sc. Molecular Biology

YEAR	NATURE OF DUTIES/RESPONSIBILITIES
	<b>Secretary, Organizing Committee</b> for Masters Class in `New Technologies for the Measurement of Biodiversity.
	<b>Secretary, Organizing Committee</b> for the 3 <sup>rd</sup> Symposium on Trends in Biotechnology
1996-98	<b>Advisor</b> to the Faculty of Food Science and Biotechnology Students' Association
1996-97	<b>Treasurer for `Kelab Kebajikan', FSMB</b>

**RESEARCH EXPERIENCE: >20 years**

**RESEARCH ACTIVITIES – Recipient of More than 10 Grants from UPM, IRPA and Other National and International Bodies Amounting to More than RM5 Million.**

<b>1. Name of Grant</b>	<b>Seed Money UPM</b>
Title	To Study the Molecular Effects of Anthraquinone Isolated from <i>Morinda elliptica</i> on Human Cell Lines
Allocation	<b>RM 15,000</b>
Period	1996-1997
Role	<b>Project leader</b>
Output	3 Proceedings, 1 PhD student
Remarks	The ability of anthraquinone isolated from <i>Morinda elliptica</i> (mengkudu) to kill cancer cells was studied at the molecular level. Anthraquinone was found to be able to cause CEM-SS cell death by apoptosis
<b>2. Name of Grant</b>	<b>Seed Money UPM</b>
Title	RFLP Analysis of Genomic DNA Extracted from <i>Salmonella</i> Species Isolated from Poultry
Allocation	<b>RM5,000</b>
Period	1996-1997
Role	<b>Project leader</b>
Output	1 MS Student, 1 Journal, 1 Proceeding
Remarks	Pulsed field gel electrophoresis and plasmid profiling studies were carried out on DNA extracted from <i>Salmonella</i> species isolated from poultry. This study showed the prevalence of <i>Salmonella</i> in poultry industries in Malaysia.
<b>3. Name of Grant</b>	<b>IRPA Top Down (TM-02-07-01) UPM/MARDI</b>
Title	Development of Continuous Culture for the Production of Fermentation Media for Food Ingredient Production
Allocation	<b>RM211, 500</b>
Period	1997 – 2001
Role	<b>Co-researcher</b>
Output	1 MS Student, 1 Proceeding

<b>RESEARCH ACTIVITIES – Recipient of More than 10 Grants from UPM, IRPA and Other National and International Bodies Amounting to More than RM5 Million.</b>	
Remarks	Fermentation media was formulated using the continuous culture to produce novel food ingredients for animal feed.
<b>4. Name of Grant</b>	<b>IRPA (09-02-04-0152)</b>
Title	Production and Characterization of Thermostable Enzymes of Hyperthermophilic Bacteria Isolated from Oil-Wells
Allocation	<b>RM170, 000</b>
Period	2000 – 2003
Role	<b>Co-researcher</b>
Output	1 MS Student, 1 Journal, 2 Proceedings
Remarks	A hyperthermophilic microbe isolated from oil well was studied for enzyme production. The study involved breaking down the cell wall and isolation of DNA and proteins from the microbe.
<b>5. Name of Grant</b>	<b>IRPA Top Down (01-02-04-T002) UPM/VRI</b>
Title	Construction of Recombinant Bacteria for Vaccine Delivery
Allocation	<b>RM1,350,000</b>
Period	1996-2001
Role	<b>Project leader</b>
Output	3 MS Students, 2 journal publications, 5 Proceedings, 2 Awards
Remarks	The bacterium <i>Lactococcus lactis</i> was isolated from chicken caecum and cow's milk to be developed into a protein/vaccine carrier. Identification of the strains were carried out by RAPD and 16s RNA. Plasmids were isolated and genes coding for viral epitopes were cloned and expressed in <i>E. coli</i> and <i>L. lactis</i> .
<b>6. Name of Grant</b>	<b>IRPA Top Down ABCC (09-02-04-006-BTK/ER/024) UPM/UKM/UTM</b>
Title	Development of Recombinant Bacteria for Delivery of Useful Protein
Allocation	<b>RM 1,662,600</b>
Period	2003-2005
Role	<b>Project leader</b>
Output	1 PhD and 2 MS Students, 4 Journal Articles, 10 Proceedings, 2 Patents, 5 Awards at National Level
Remarks	Extension of the previous project. Plasmids and promoters from <i>L. lactis</i> was isolated and studied. Novel vectors were constructed for both <i>E. coli</i> and <i>L. lactis</i> . A surface display system was developed for <i>L. lactis</i> .
<b>7. Name of Grant</b>	<b>IRPA Top Down PNBCC (06-02-05-002-BTK/ER/011) USM/UPM</b>
Title	Production of Recombinant Pharmaceuticals in Pilot Scale Bioreactor
Allocation	<b>RM 300,000</b>
Period	2002-2006
Role	<b>Sub - Project leader</b>

<b>RESEARCH ACTIVITIES – Recipient of More than 10 Grants from UPM, IRPA and Other National and International Bodies Amounting to More than RM5 Million.</b>	
Output	1 MS Student, 2 Proceedings, 1 Bulletin, 1 Award at UPM
Remarks	EPO was cloned into pCDNA plasmid and transfected into CHO cells. Expression was studied by SDS-PAGE and Western blot. The recombinant cells were then grown in animal cell bioreactor systems.
<b>8. Name of Grant</b>	<b>IRPA Top Down MBCC (06-02-09-001-BTK/TD/002) UNIMAS/UPM/UM/USM</b>
Title	Development of Vaccine Delivery Platforms for Tropical Infectious Diseases
Allocation	<b>RM 450,000</b>
Period	2002-2005
Role	<b>Sub - Project leader</b>
Output	1RA, 1 paper, 2 Proceedings
Remarks	Several delivery platforms were utilized to deliver recombinant vaccines. Genes coding for EV71 epitopes were cloned and expressed in <i>L. lactis</i> . Immunological studies were carried out to check the immune response of mice against EV.
<b>9. Name of Grant</b>	<b>EAR</b>
Title	Development of Nisin Inducible Expression Vector in <i>Lactococcus</i>
Allocation	<b>RM 230,000</b>
Period	2002-2004
Role	<b>Project leader</b>
Output	1RA, 1 Journal, 1 Proceeding
Remarks	The inducible nisin promoter was cloned into available plasmid and Green fluorescence protein was cloned downstream of the promoter and used a reporter protein. Expression of the GFP was shown in <i>L. lactis</i> .
<b>10. Name of Grant</b>	<b>EAR</b>
Title	Development of Local <i>Lactococcus</i> Recombinant Bacteria Against Cholera
Allocation	<b>RM 289,000</b>
Period	2002-2004
Role	<b>Project leader</b>
Output	1MS, 1 paper in ISI journal
Remarks	The ctx and zot genes of <i>Vibrio cholera</i> were subcloned into available <i>L. lactis</i> plasmids and expressed. The level of expression and stability of the plasmids was not satisfactory and the intention to do animal trials was not carried out.
<b>11. Name of Grant</b>	<b>IRPA (09-02-04-0113)</b>
Title	Production of Yeast Protein Through Fermentation of Recombinant Yeast Using Sago Starch as Low Carbon Source
Allocation	<b>RM170, 000</b>
Period	1999-2001



<b>RESEARCH ACTIVITIES – Recipient of More than 10 Grants from UPM, IRPA and Other National and International Bodies Amounting to More than RM5 Million.</b>	
Role	<b>Co-researcher</b>
Output	1 PhD Student, 2 papers in ISI journals
Remarks	Recombinant yeast harboring the gene coding for amylase was obtained from Japan. The production of alpha amylase was studied using sago starch as the growth medium for the recombinant microbe.
<b>12. Name of Grant</b>	<b>IRPA Top Down FBCC (01-02-10-002-BTK/ER/39) UMS/UPM/USM</b>
Title	Utilization of Microorganisms and Their Metabolites for the Improvement of the Fermentation Process of Selected Malaysian Fish - and Vegetables/Fruit – Based Foods
Allocation	<b>RM 990,000</b>
Period	2004 – 2006
Role	<b>Co-researcher</b>
<b>Output</b>	1 MS student, 1 paper
<b>13. Name of Grant</b>	<b>Toray</b>
Title	The Mechanisms of Damnacanthol-Induced Apoptotic Cell Death in the T-Lymphoblastic Leukaemia Cells (CEM-SS)
Allocation	<b>RM 30,000</b>
Period	2005 – 2006
Role	<b>Co-researcher</b>
Output	1 MS student, 1 paper in ISI journal
<b>14. Name of Grant</b>	<b>MAKNA</b>
Title	The In Vivo Anti-Tumour Promoting Activity of Bacteriocins from Lactic Acid Bacteria on Chemical Carcinogenesis in Mice Skin
Allocation	<b>RM30, 000</b>
Period	2005 - 2006
Role	<b>Co-researcher</b>
Output	1 MS student, 1 proceeding
<b>15. Name of Grant</b>	<b>FRGS(05-10-07-365FR)</b>
Title	Molecular Elucidation of an Extracellular Hydrolase for a Lactococcal Expression System
Allocation	<b>RM 65,000</b>
Period	2006-2009
Role	<b>Project leader</b>
Output	The cell wall binding fragment and signal peptide of <i>Pediococcus acidilactici</i> UB6 was identified. New gene sequence deposited into GenBank – EU652943
<b>16. Name of Grant</b>	<b>MGI-MOSTI(07-05-MGI-GMB011)</b>
Title	Development of excretory expression system for enzyme/protein production in bacteria and fungi
Allocation	<b>RM 373,718</b>
Period	2007-2009

<b>RESEARCH ACTIVITIES – Recipient of More than 10 Grants from UPM, IRPA and Other National and International Bodies Amounting to More than RM5 Million.</b>	
Role	<b>Sub-project leader</b>
Output	Two different vectors were constructed for projects 1a and b respectively. The signal peptide sequences will be patented and we expect to publish at least 2 papers in peer-reviewed journals from the work. 2 MS students, 2 papers published in ISI journals
<b>17. Name of Grant</b>	<b>Top Down –MOSTI(09-02-04-006 BTK/ER/024)</b>
Title	Development of recombinant bacteria for delivery of functional proteins
Allocation	<b>RM635, 600</b>
Period	2007-2009
Role	<b>Project leader</b>
Output	<p>UPM/Malaysia became known as a centre for research in Lactic acid bacteria, specifically on the development of plasmid vectors and <i>Lactococcus lactis</i> as host for delivery of useful proteins in biotechnological industries.</p> <ul style="list-style-type: none"> <li>• 5 publications in ISI journals, <i>L. lactis</i> plasmid pAR141 full sequence – DQ288662</li> <li>• <i>L. lactis</i> plasmid pAR141 RepA gene sequence – ABB89944</li> <li>• <i>L. lactis</i> plasmid pAR141 RepB gene sequence – ABB89945, 1PhD graduated – Post Doc at Virginia Tech</li> <li>• 1 PhD graduated – Lecturer in Iran</li> <li>• 1 PhD – ongoing</li> <li>• 1 MS – graduated – working in Biotech Industry in Malaysia</li> <li>• 4 MS ongoing</li> <li>• 2 RAs</li> </ul> <ul style="list-style-type: none"> <li>• 2 Malaysian patents filed</li> </ul>
<b>18. Name of Grant</b>	<b>MGI-MOSTI ( 09-05-GMI-GMB003)</b>
Title	Development of <i>Lactococcus lactis</i> as cell factory through vector construction and manipulation of Vitamin B biosynthesis
Allocation	<b>RM257,000</b>
Period	2010-2011
Role	<b>Sub-project leader</b>
Output	2 MS students, publications
<b>19. Name of Grant</b>	<b>IFN-MOSTI (09-05-IFN-BPH-005)</b>
Title	Mapping the dynamics of genetic variations of Malaysian Influenza viruses towards the development of new diagnostic and therapeutic strategies
Allocation	<b>RM 250,000</b>
Period	2010-2011
Role	<b>Sub-project leader</b>
Output	2 MS students, publications
<b>20. Name of Grant</b>	<b>RUGS Initiative 1</b>

<b>RESEARCH ACTIVITIES – Recipient of More than 10 Grants from UPM, IRPA and Other National and International Bodies Amounting to More than RM5 Million.</b>	
Title	Development of surface displayed <i>Lactococcus lactis</i> as vaccine delivery
Allocation	<b>RM200,000</b>
Period	2011-2012
Role	<b>Project leader</b>
Output	1 PhD student, publications
<b>21. Name of Grant</b>	<b>Sciencefund MOSTI</b>
Title	Engineering Synthetic Biological Platform for Bacterial Surrogates
Allocation	<b>RM258,000</b>
Period	Dec 2012-2014
Role	<b>Project leader</b>
Output	1 PhD and 1MS, publications
<b>22. Name of Grant</b>	<b>FRGS</b>
Title	Mutagenesis and impact of signal peptide SPK1 for secretion of heterologous proteins in <i>Lactococcus lactis</i>
Allocation	<b>RM115,000</b>
Period	Dec 2013-2015
Role	<b>Project leader</b>
Output	1 MS, publications
<b>23. Name of Grant</b>	<b>Newton Fund</b>
Title	Research management and governance – to review current research management, governance and policy formulation framework and identify the needs for improvement
Allocation	88, 743 pounds (RM576,830)
Period	2015-2017
Role	Project leader
Output	Support for the visit of 20 officers from MOE and several participating universities to visit relevant agencies in UK. In addition, a report identifying gaps of research management, governance and policy formulation in Malaysia, and future recommendations was produced.

**INTELLECTUAL PROPERTY RIGHTS (IPR) – 6 Filed Patents and 1 Product to be commercialized**

<b>1. Invention Name</b>	A System for Controlled Docking of Anchor Fusions to the Cell Wall Surface of Microorganisms
Patent Filing No	PI20044832
Filing Date	22 November 2004
Filing Country	Malaysia
Name	Raha A.R., Nadimpalli Varma, K. Yusoff, H.L.Foo
<b>2. Invention Name</b>	A Process and Kit for Isolating and Purifying Biological Materials
Patent Filing No	PI20044831
Filing Date	22 November 2004
Filing Country	Malaysia
Name	Raha A.R., Yiap, B.C.
<b>3. Invention Name</b>	A Process for Producing Bacteriocin from <i>Lactococcus lactis</i>
Patent Filing No	PI2002295
Filing Date	15 June, 2004
Filing Country	Malaysia
Name	Foo, H.L., Loh T.C., Lim Y.T., Raha A.R., Gulam, R.
<b>4. Invention Name</b>	A Process for Producing Bacteriocin from <i>Lactobacillus plantarum</i>
Patent Filing No	PI20042296
Filing Date	15 June, 2004
Filing Country	Malaysia
Name	Foo H.L, Loh T.C., Gulam R., Raha A.R.
<b>5. Invention name</b>	A Lactococcal Bicistronic Vector System for Gene Delivery and Method of Preparation Thereof
Patent Filing No	PI 2013701635
Filing Date	2013
Filing Country	Malaysia
Name	Nurulfiza M.I., Raha A.R., Noorjahan B.M.A. and Nur Elina A.M.
<b>6. Invention Name</b>	<i>Lactococcus lactis</i> dual expression vector
Patent Filing No	PI2015701147
Filing Date	10 April, 2015
Filing Country	Malaysia
Name	Raha A.R., Badaradan, A., Yusoff, K., Shafie, N., Sarah, S., and Othman, S.S.
<b>5. Product (to be commercialized) :</b>	<b>Triomic™, a DNA, RNA and Protein Extraction Kit</b>
Industrial Partner	An R & D Status Company
Commercialization	Licensing (Trademark – 6006520)

**PUBLICATIONS: a. More than 100 papers published in Refereed Journals. H Index = 23 (Dec 2018)**

1. Burdon, R.H., Gill, V., Boyd, P. and **Raha, A.R.** (1996). Hydrogen Peroxide and Sequence-Specific DNA Damage in Human Cells. *FEBS Letters* 383: 150-154.
2. **Raha, A.R.**, Boyd, P.A., Ainslie, W. and Burdon, R.H. (1996). Human Heat Shock Protein Gene Polymorphisms and SIDS. *Archives of Disease in Childhood* 115-120.
3. Radu, S., Rusul, G. and **Raha, A.R.** (1996). Plasmids and Resistance to Antimicrobial Agents in Cytotoxic and Haemolytic *Aeromonas hydrophila* Clinical Isolates. *Tropical Biomedicine* 13: 17-23.
4. Radu, S., Rusul, G., Sahilah, A.M., Zainuri, A., **Raha, A.R.** and Salmah, I. (1997). Antibiotic Resistance and Plasmid Profile of *Aeromonas hydrophila* Isolates from Cultured Fish, *Telapia (Telapia mossambica)*. *Letters in Applied Microbiology* 24: 479-482.
5. Radu, S., Rusul, G., Karim, M.I.A., **Raha, A.R.** and Napis, S. (1997). Association of Virulent Phenotype of *Salmonella Enteritidis* with an 85 Kilobase R Plasmid. *Journal of Bioscience* 8: 22-25.
6. Radu, S., Rozila, A., Rusul, G., Zainuri, A., **Raha, A.R.** and Sahilah, A.M. (1997). Antibiotic Resistance and Plasmid Profiles of *Escherichia coli* in Raw Milk and Beef. *Journal of Malaysian Applied Biology* 26 (2): 77-81.
7. Radu, S., Sahilah, A.M., Gulam, R., **Raha, A.R.**, Rozila, A. and Samuel, L. (1998). Beef as a Source of Multi-Resistant *Escherichia coli* O157 Harbours Transferable Plasmid and Resistance Phenotype. *Journal of Bioscience* 9: 20-27.
8. Yazid, A., Shuhaimi, M., Ali, A.M., **Raha, A.R.**, Ernie Eileen, R.R., Rowina, H. and Abdullah, N.A.N (1999). Antimicrobial Susceptibility and Plasmid Profile of Bifidobacteria Isolated from Infant Stool. *Pakistan Journal of Biological Sciences* 2(2): 555-558.
9. Loke, C.F., **Raha, A.R.**, Rusul, G., Radu, S. And Yusoff, K. (1999). Antimicrobial Susceptibility and Plasmid Profiles of *Salmonella Enteritidis* Isolates from Human and Poultry. *Journal of Malaysian Applied Biology* 28: 29-37.
10. Choo, L.L., Tamura, T., **Raha, A.R.**, Ali, A.M., Ghazali, H.M., Inagaki, K. and Tanaka, H. (2000). A Colorimetric Screening Method for Microorganisms Having Methionine  $\gamma$ -Lyase Activity. *Asia Pacific Journal of Molecular Biology and Biotechnology* 8(1): 95-97.
11. Neela, V., Shamsudin, M.N., Somarny, W., Rozita, R., **Raha, A.R.** and Radu, S. (2000). Application of Randomly Amplified Polymorphic DNA Markers (RAPD) to Distinguish Isolates of *V. cholera* and *V. alginolyticus*. *Asia Pacific Journal of Molecular Biology and Biotechnology* 8(2): 131-136.

12. Fandi, K.G., Ghazali, H.M., Yazid, A.M. and **Raha, A.R.** (2000). Purification and Characterization of Fructose-6-phosphate Phosphoketolase from *Bifidobacterium asteroides*. *Asia Pacific Journal of Molecular Biology and Biotechnology* 8(2): 137-146.
13. Endang, P., Son, R., Zaiton, H., O, W.L. and **Raha, A.R.** (2000). Plasmid-Mediated Streptomycin Resistance of *Listeria monocytogenes*. *Malaysian Journal of Medical Sciences* 7: 14-22.
14. **Raha, A. R.**, Yusoff, K. M., Sipat, A.B., Lila, A., Omar, A. R., Ng, P. T., Ahmat, N., Amos, T., and Leenhouts, K. (2000). Recombinant Lactococcal system for expression of major VP genes of Chicken Anemia Virus'. *Proceedings of the 2<sup>nd</sup> International Conference on Advances in Strategic Technologies vol. II, (ISBN 983-9152-70-X)*. pp. 1409-1418.
15. Haryanti, T., Son, R., Gulam, R., Abdul Reezal, A.L., **Raha, A.R.**, Noorlis, A. and Ooi, W.L. (2000). Detection of Vancomycin-Resistant *Enterococcus spp.* (VRE) from Poultry. *Malaysian Journal of Medical Sciences* 7: 14-22.
16. Fandi, K.G., Ghazali, H.M., Yazid, A.M. and **Raha, A.R.** (2001). Purification and N-terminal Amino Acid Sequence of Fructose-6-phosphate from *Bifidobacterium longum* BB536. *Letters in Applied Microbiology* 32: 235-239.
17. Radu, S., Haryanti, T., **Raha, A.R.**, Reezal, A., Maznah, A., Akma, N.H., Gulam, R. and Nishibuchi, M. (2001). Occurrence of the *vanA* and *vanC2/C3* Genes in *Enterococcus* Species Isolated from Poultry Sources in Malaysia. *Diagnostic Microbiology and Infectious Disease* 29: 145-153.
18. Neela, R., Mariana, N.S., Somarny, W., Rozita, R., **Raha, A.R.** and Radu, S. (2001). Detection and Molecular Characterization of the *ZOT* gene in *V. cholerae* and *V. alginolyticus* Isolates. *Southeast Asian Journal of Tropical Medicine and PublicHealth* 32(1): 100-104.
19. Zaiton, H., Endang, P., Radu, S., **Raha, A.R.** and Gulam, R. (2001). Prevalence of *Listeria spp* and *Listeria monocytogenes* in Meat and Fermented Fish in Malaysia. *Southeast Asian Journal of Tropical Medicine and Public Health* 32(2): 2671-2676.
20. Endang, P., Zaiton, H., Gulam, R., **Raha, A.R.** and Radu, S. (2001). Optimizing Recovery of *Listeria* Species from Imported Frozen Beef. *Pakistan Journal of Biological Sciences* 4(12): 1547-1549.
21. **Raha, A.R.**, Ross, E., Yusoff, K., Manap, M.Y. and Ideris, A. (2002). Characterisation and Molecular Cloning of an Erythromycin Resistance Plasmid of *Lactococcus lactis* Isolated from Chicken Cecum. *Journal of Biochemistry, Molecular Biology and Biophysics* 6(1): 7-11.
22. Somarny, W.M.Z., Mariana, N.S., Neela, V., Rozita, R. and **Raha, A.R.** (2002). Optimization of Parameters for Accessory Cholera Enterotoxin (Ace) Protein Expression. *Journal of Medical Science* 2(2): 74-76.
23. Somarny, W.M.Z., Mariana, N.S., Neela, V., Rozita, R. and **Raha, A.R.** (2002). Differentiation of Pathogenic *Vibrio* Species by RAPD. *Journal of Medical Science* 2(4): 165-169.

24. Fong, F., Shariff, M., Mohd Azmi, M.L. and **Raha, A.R.** (2002). Sequence Analysis and Phylogenetic Study of Partial Ki-Ras exon 1 Proto-Oncogene in Flatfishes from the Straits of Malacca. *Tropical Marine Environment: Charting Strategies for the Millenium* 651-660.
25. Myaing, T.T., Saleha, A.A., Arifah, A.K. and **Raha, A.R.** (2002). Public Health Aspects of Antibiotics Used in Farm Animals. *Journal of Agricultural Forestry, Livestock and Fishery Sciences, Myanmar* 145-160.
26. Neela, V., Mariana, N.S., Amghalia, M.S.E., Halimaton, H., Rosli, R., Radu, S. and **Raha, A.R.** (2003). Development of a Single Tube PCR System for the Identification of *Staphylococcus aureus* and the Simultaneous Detection of Clinically Relevant Antibiotic Resistant Strains. *Jurnal Biosains* 14
27. William, J.L., Radu, S., Aziz, S.A., **Raha, A.R.**, Cheah, Y.K., Liwan, A. and Lihan, S. (2004). Prevalence of *Staphylococcus aureus* Carriage by Young Malaysian Footballers during Indoor Training. *British Journal of Sports Medicine* 38: 12-14.
28. Varma, N.R.S., **Raha, A.R.**, Ross, E., Mariana, N.S. and Yusoff, K. (2004). Inducible Expression of Green Fluorescence Protein in *Lactococcus lactis*. *Current Science* 87(9): 1185-1187.
29. Yiap, B.C., Wong, C.M.V.L., Hirzun, M.Y. and **Raha, A.R.** (2004). Gene Dosage Variation of YIR010W (DSN1) in *Saccharomyces cerevisiae* Caused Growth and Nuclear Anomalies. *Pakistan Journal of Biological Sciences* 7(9): 1499-1504.
30. Yiap, B.C., Wong, C.M.V.L., Hirzun, M.Y. and **Raha, A.R.** (2004). Extra Dose of DSN1 (Yir010wp) Expressed from Episomal Plasmid in Normal *Saccharomyces cerevisiae* Diploid Wild Type has Augmented Growth Rate and Altered Budding Pattern, Suggesting its Growth Stimulating Property. *Asia Pacific Journal of Molecular Biology and Biotechnology* 12: 43-47.
31. Aida, A.A., Che Man, Y.B., Wong, C.M.V.L., **Raha, A.R.** and Son, R. (2005). Analysis of Raw Meats and Fats of Pigs Using Polymerase Chain Reaction for Halal Authentication. *Meat Science* 69: 47-52.
32. Liew, S.L., Ariff, A.B., **Raha, A.R.** and Ho, Y.W. (2005). Optimization of Medium Composition for the Production of a Probiotic Microorganism, *Lactobacillus rhamnosus*, Using Response Surface Methodology. *International Journal of Food Microbiology* 102: 137-142.
33. **Raha, A.R.**, Varma, N.R.S., Yusoff, K., Ross, E. And Foo, H.L. (2005). Cell Surface Display System for *Lactococcus lactis*: A Novel development for Oral Vaccine. *Applied Genetics and Molecular Biotechnology* 68: 75-81.
34. Neela, V., Mariana, N.S., Radu, S., Zamberi, S., **Raha, A.R.** and Rosli, R. (2005). Use of RAPD to Investigate the Epidemiology of *Staphylococcus aureus* Infection in Malaysian Hospitals. *World Journal of Microbiology and Biotechnology* 21: 245-251.

35. Loke, C.F., Omar, A.R., **Raha, A.R.** and Yusoff, K. (2005). Improved Protection from Velogenic Newcastle Disease Virus Challenge Following Multiple Immunization with Plasmid DNA Encoding for F and HN genes. *Veterinary Immunology and Immunopathology* 106: 259-267.
36. Lesley, M.B., Son, R., Abdul Rani, B., **Raha, A.R.**, Suhaimi, N., Wong, C.M.V.L., Gwendelynne, B.T. and Nishibuchi, M. (2005). Detection of *Vibrio parahaemolyticus* in Cockle (*Anadara granosa*) by PCR. *FEMS Microbiology Letters* 252: 85-88.
37. **Raha, A.R.**, Chang, L.Y., Sipat, A., Yusoff, K. and Haryanti, T. (2006). Expression of a Thermostable Xylanase Gene from *Bacillus coagulans* ST-6 in *Lactococcus lactis*. *Letters in Applied Microbiology* 42: 210-214.
38. **Raha A.R.**, Hooi, W.Y., Mariana N.S., S. Radu and Yusoff K. (2006). DNA Sequence Analysis of a Small Cryptic Plasmid from *Lactococcus lactis* subsp. *lactis* M14. *Plasmid* 56:53 – 61.
39. Liew, S. L., Rosfarizan, M., **Raha, A. R.**, Ho, Y. W and Ariff, A. B. (2006). Improved production of live cells of *Lactobacillus rhamnosus* by continuous cultivation using glucose-yeast extract medium. *The Journal of Microbiology*: 439 - 446.
40. Liew S. T., Ariff, A. B, Rosfarizan, M and **Raha, A. R.** (2006) Improvement of GC and HPLC Analyses in Solvent (acetone-butanol-ethanol) Fermentation by *Clostridium saccharobutylicum* using a Mixture of Starch and Glycerol as Carbon Source. *Journal of Biotechnology and Bioprocess Engineering* 11: 293 – 298.
41. Soliman, I.O.M., Lila, M.A.M., Saad, M.Z. and **Raha, A.R.** (2006). Production of a Recombinant VP1 Protein of the Chicken Anemia Virus for the Development of an Enzyme-Linked Immunosorbent Assay. *Journal of Food, Agriculture and Environment* 4: 50 – 55.
42. Nguyen P.D., Chai-Ling Ho, Jeniffer A.H., Michael C.V.L.W, and **Raha A. R.** (2006). Generation and analysis of Expressed Sequence Tags from the Mangrove Plant, *Acanthus ebracteatus* Vahl. *Tree Genetics and Genomes* 2: 196 – 201.
43. S.O. Sarah, M. Zamri-Saad, Z. Zunita, **A. R. Raha**(2006). Molecular Cloning and Sequence Analysis of *gdhA* gene of *Pasteurella multocida*B:2. *Journal of Animal Veterinary Advances* 5 (12): 1146 – 1149.
44. Y.B. Che Man, A.A. Aida, **A.R. Raha**, and R. Son (2007). Identification of Pork Derivatives in Food Products by Species Specific Polymerase Chain Reaction (PCR) for Halal Verification. *Food Control* (18) 885 – 889.
45. Teo, S-S., Ho, C-L., Teoh S., Lee, W.W., Tee, J-M., **Raha A.R.**, Phang, S-M (2007). Analyses of expressed sequence tags from an agrophyte, *Gracilaria changii* (Gracilariales, Rhodophyta). *European Journal of Phycology* 42(1): 41-46.



46. Teo K-M., Ho C-L., Lee, W.W., **Raha A.R.** and Phang S-M (2007). Analyses of expressed sequence tags from *Sargassum binderi* (Phaeophyta). *Journal of Phycology* 43: 528-534.
47. Aida, A.A., Che Man, Y.B., **Raha, A.R.** and Son, R. (2007). Detection of Pig Derivatives in Food Products for Halal Authentication by Polymerase Chain Reaction-Restriction Fragment Length Polymorphism. *Journal of the Science of Food and Agriculture* 87: 569-572.
48. Alhaj, N., Mariana, N. S. **Raha, A. R.**, and Z. Ishak. 2007. Prevalence of antibiotic resistance among *Escherichia coli* from different sources in Malaysia. *International Journal of Poultry Sciences*. 6:293-297. (ISSN: 16828356)
49. Alhaj, N., Mariana, N. S. **Raha, A. R.**, and Z. Ishak. 2007. Development of Polymerase Chain Reaction and Dot Blot Hybridization to Detect *Escherichia coli* Isolates from Various Sources. *Research Journal of Microbiology* 2:926-932.
50. Alhaj, N., Mariana, N. S. **Raha, A. R.**, and Z. Ishak. 2007. Phenotypic and Genotypic Characterization of Antimicrobial Resistance among Diarrheagenic *Escherichia coli*. *Research Journal of Medical Sciences* 1: 245-250.
51. Alhaj, N., Mariana, N. S. **Raha, A. R.**, and Z. Ishak. 2007. Simultaneous Detection of Enteropathogenic *E. coli* and Shiga Toxin-Producing *E. coli* by Polymerase Chain Reaction. *Journal of Applied Sciences*. 7(17) 2531-2534.
52. Wong, Y.-Y., Ho, C.-L., Teo, S.-S., Nguyen P.D., Teo, S.-S., Harikrishna, J.A., Wong, M. V.-L., and **Raha A. R.** 2007. Isolation of salinity tolerant genes from the mangrove plant, *Bruguiera cylindrical* (L.) Blume by using suppression subtractive hybridization (SSH) and bacterial functional screening. *Aquatic Botany* 86: 117-122.
53. Yeap S.K., Alitheen, N.B., Ali, A.M., Omar, A.R., **Raha A.R.**, Suraini A.A., and Muhajir, A.H. 2007. Effect of *Rhaphidophora korthalsii* methanol extract on human peripheral blood mononuclear cell (PBMC) proliferation and cytolytic activity toward HepG2. *Journal of Ethnopharmacology* 114: 406 – 411.
54. Nguyen, P.D., Ho C.L., HArikrishna, J.A., Wong, M.C.V.L. and **Raha A.R.** 2007. Functional screening for salinity tolerant genes from *Anthacus ebracteatus* Vahl using *Escherichia coli* as host. *Trees* 21, 515-520.
55. Ho C-L, Nguyen PD, Harikrishna JA and **Raha A.R.** (2008) Sequence analysis and characterization of vacuolar-type H<sup>+</sup>-ATPase proteolipid transcript from *Acanthus ebracteatus* Vahl. *DNA Sequence* 19, 73-77.

56. Haryanti T., Mariana N.S., LATifah S.Y., and **Raha A.R.** 2008. Controlled expression of cholera toxin B subunit from *Vibrio cholera* in *Escherichia coli*. *Pakistan Journal of Biological Sciences* 11(3), 1718-1722.
57. Nagi Ahmed Alhaj, N.S. Mariana, **A.R. Raha**, and Ishak, Z. 2008. Detection of Diarrheagenic *Escherichia coli* Isolated Using Molecular Approaches. *Research Journal of Microbiology*. 3:359-367.
58. Nagi Ahmed Alhaj, N.S. Mariana, **A.R. Raha**, and Ishak Z. 2008. Development of a PCR Primer and a Marker Band for Detection of *E. coli* from Various Sources Based on Arbitrary Primer Set. *Research Journal of Biological Sciences*. 3:1327-1332.
59. Nguyen P.D., Ho C-L, Teo S-S, Harikrishna J.A. and **Raha A.R.** 2008. Sequence and transcript analyses of antioxidant genes from *Acanthus ebracteatus* Vahl. *Tree Genet. Genomes* 4, 705-713.
60. Nagi Ahmed Alhaj, N.S. Mariana, **A.R. Raha**, and Ishak Z. 2008. Application of Horse Shoe Crab Turbidity Bass in the Development of a Sensitive Detection Assay for Gram Negative. *Research Journal of Biological Sciences*. 3:1387-1391.
61. Mas Jaffri M., K. Yusoff, **Raha A.R.**, and Hussein M.Z. 2009. Successful transfer of plasmid DNA into In vitro cells transfected with an inorganisc plasmid-Mg/AL-LDH nanobiocomposite material as a vector for gene expression. *Nanotechnology* 20, 1-11.
62. Mei-Ling Chong, **Raha Abdul Rahim**, Yoshihito Shirai, Mohd Ali Hassan. 2009. Biohydrogen production by *Clostridium butyricum* EB6 from palm oil mill effluent. *International Journal of Hydrogen Energy* 34:764-771.
63. Jee Weng Tan, Kwai Lin Thong, Nirmala Devi Arumugam, Wai Lian Cheah, Yih Wei Lai, Kek Heng Chua, **Raha Abdul Rahim**, Sabaratnam Vikineswary 2009. Development of a PCR Assay for the Detection of *nifH* and *nifD* Genes in Indigenous Photosynthetic Bacteria. *International Journal of Hydrogen Energy* 34(17) : 7538-7541.
64. Mei-Ling Chong, Nor'Aini Abdul Rahman, Phang Lai Yee, Suraini Abd Aziz, **Raha Abdul Rahim**, Yoshihito Shirai, Mohd Ali Hassan. 2009. Effects of pH, glucose and iron sulphate concentration on the yield of biohydrogen by *Clostridium butyricum* EB6. *International Journal of Hydrogen Energy* 34:8859-8865.
65. H. Mahmoodian, M. Hamiruce Marhaban, **R. A. Rahim**, R. Rosli, M. Iqbal Saripan. 2009. A Combinatory Algorithm of Univariate And Multivariate Gene Selection. *Journal of Theoretical and Applied Information Technology*. 113-118.

66. Hooi Wei Yeng, Mariana Nor Shamsudin and **Raha Abdul Rahim**. 2009. Construction of an expression vector for *Lactococcus lactis* based on an indigenous cryptic plasmid. *African Journal of Biotechnology*. 8 (21): 5621-5626.
67. Chai-Ling Ho, Seddon Teoh, Swee –Sen Teo, **Raha Abdul Rahim**, Siew-Moi Phang. 2009. Transcriptomic analysis of *Gracilaria changii* (Rhodophyta) in response to low irradiance. *Marine Biotechnology*. 11: 513-519.
68. Hamid Mahmoodian, M. H. Marhaban, **R. Abdul Rahim**, R. Rosli and I. Saripan. 2009. New Entropy-Based Method for Gene Selection. *IETE Journal of Research*. 55:162 – 165.
69. Faridah, Q. Z., Ng, B. Z., **Raha, A. R.**, Umi, K. A. B. and Khosravi, A. R. 2009. Differential expressions of putative genes in various floral organs of the Pigeon orchid (*Dendrobium crumenatum*) using GeneFishing. *African Journal of Biotechnology*. 8 (21): 2443-2453.
70. Zulkifli. Y., Alitheen, N.B., Son, R., **Raha, A.R.**, Samuel, L., Yeap, S.K. and Nishibuchi, M.2009. Random amplified polymorphic DNA-PCR and ERIC PCR analysis on *Vibrio parahaemolyticus* isolated from cockles in Padang, Indonesia. *Malaysian Journal of Microbiology* 141-150.
71. Nurul H. Idris, Nagi A. Al-Haj, Mariana N. Shamsudin and **Raha A. Rahim**. 2009. Evaluation of Safe Attenuated *Vibrio alginolyticus* for Oral Vaccination of *Lates calcarifer* Against Vibriosis. *Research Journal of Biological Sciences* 4 (4): 509-513.
72. Teo S-S, Ho C-L, Teoh S, **Raha A.R.** and Phang S-M. 2009. Transcriptomic analysis of *Gracilaria changii* (Rhodophyta) in response to hyper- and hypo-osmotic stresses. *J. Phycol.* 45, 1093–1099.
73. Ho WY, Ky H, Yeap SK, **Raha A.R.**, Omar AR, Ho CL, and Alitheen N.B. 2009. Traditional practice, bioactivities and commercialization potential of *Elephantopus scaber* Linn. *J. Med. Plants Res.* 3, 1212-1221.
74. Nagi A. Al-Haj, Mariana, N.S. , **Raha, A.R.**, Somarny, W.M.Z., Suang, S.L.L. and F.Z. Hana. 2009. Cloning Sequencing and Characterization of Lipopolysaccharides Genes of *Vibrio alginolyticus*. *Research Journal of Biological Sciences* 4 (4): 472-476.
75. Amghalia , E. , Nagi A. Al-Haj, Mariana, N. S., Son R., Rosli R., Neela, V. and **A. R. Raha**. 2009. Multiplex PCR Assays for the Detection of Clinically Relevant Antibiotic Resistance Genes in *Staphylococcus aureus* Isolated from Malaysian Hospitals. *Research Journal of Biological Sciences* 4 (4): 444-448, 2009.
76. Lim, S.H.E., Jahanshiri, F., Jalilian, F.A., **Abdul Rahim, R.**, Sekawi, Z., and Yusoff, K. 2010. Glycosylation is not necessary for recognition of the fusion glycoprotein domain of the human respiratory syncytial virus by a polyclonal antibody. *Acta Virologica* 54: 181-187.

77. Meisam Tabatabaei, Mohd Rafein Zakaria, **Raha Abdul Rahim**, Norhani Abdullah, Andre-Dennis, G. Wright, Yoshihito Shirai, Mehdi Shamsara, Kenji Sakai and Mohd Ali Hassan. 2010. Comparative study of methods for extraction and purification of environmental DNA from high-strength wastewater sludge. *African Journal of Biotechnology* 9(31): 4926-4937.
78. Siti Nor Ani Azaman, Ramakrishna Nagasundara Ramanan, Joo Shun Tan, **Raha Abdul Rahim**, Mohd Puad Abdullah ad Arbakariya B. Ariff. 2010. Screening of the optimal induction parameters for periplasmic producing interferon alpha2B in *Escherichia coli*. *African Journal of Biotechnology* 9(38): 6345-6354.
79. Siti Nor Ani Azaman, Ramakrishna Nagasundara Ramanan, Joo Shun Tan, **Raha Abdul Rahim**, Mohd Puad Abdullah ad Arbakariya B. Ariff. 2010. Optimization of an induction strategy for improving interferon alpha 2B production in the periplasm of *Escherichia coli* using response surface methodology. *Biotechnology and Applied Biochemistry* 58: 141-150.
80. Norfarina, M. N., Rosfarizan, M., Foo, H. L., and **Raha, A. R.** 2010. Improvement of folate biosynthesis by lactic acid bacteria using response surface methodology. *Journal of Food Technology and Biotechnology* 23:21-26.
81. Anuradha, K., Foo, H.L., Mariana, N.S., Loh, T.C., Yusoff, K., Hassan, M.D., Sassan, H. and **Raha A.R.** 2010. Live recombinant *Lactococcus lactis* vaccine expressing aerolysin genes D1 and D4 for protectin against *Aeromonas hydrophila* in tilapia (*Oreochromis niloticus*). *Journal of Applied Microbiology* 109(5): 1632-1642.
82. Low Kheng Oon, Nor Muhammad Mahadi, **Raha Abdul Rahim**, Amir Rabu, Farah Diba Abu Bakar, Abdul Munir Abdul Murad and Rosli Md Illias. 2010. Enhanced secretory production of hemolysin-mediated cyclodextrin glucanotransferase in *E. coli* by random mutagenesis of the ABC transporter system. *Journal of Biotechnology* 150(4): 453-459.
83. Moghadam, M.S., Foo H.L., Leow T.C., **Rahim, R.A.** and Loh, T.C. 2010. Novel bacteriocinogenic *Lactobacillus plantarum* strains and their differentiation by sequence analysis of 16S rDNA, 16S-23S and 23S-5S intergenic spacer regions and randomly amplified polymorphic DNA analysis *Food Technology and Biotechnology* 48(4): 476-483. ISSN 13309862
84. Moeini, H., **Raha A.R.** Omar, A.R., Shafee A. and K. Yusoff. 2011. *Lactobacillus acidophilus* as a live vehicle for oral immunization against chicken anemia virus. *Applied Microbiology and Biotechnology*. 90: 77-88.
85. Lim, S.H.E., Jahanshiri, F., **Abdul Rahim, R.**, Sekawi, Z., and Yusoff, K. 2010. Surface display of respiratory syncytial virus glycoproteins in *Lactococcus lactis* NZ9000. *Letters in Applied Microbiology* 51:658 – 664.

86. Baharum H, Morita H., Tomitsuka A., Lee F-C., Ng K-Y., **Raha A.R.**, Abe I and Ho C-L. 2011. Molecular cloning, modeling and site-directed mutagenesis of type III polyketide synthase from *Sargassum binderi* (Phaeophyta). *Marine Biotechnology* 13, 845– 856.
87. Ho W.Y., Yeap S.K., Ho C-L., **Raha A.R.**, Suraini A.A., and Alitheen N.B. 2011. Elephantopus scaber induces cytotoxicity in MCF-7 human breast cancer cells via p53-induced apoptosis. *J. Med. Plants Res.* 5, 5741-5749.
88. Moeini H., Omar, A.R., **Raha A.R.** and K. Yusoff. 2011. Improving the potency of DNA vaccine against chicken anemia virus (CAV) by fusing VP1 protein of CAV ro Marek's disease virus (MDV) type-1 VP22 protein. *Virology Journal* 8: 119- 206.
89. A. F. Soleimani, I. Zulkifli, A. R. Omar and **A. R. Raha**. 2011. Physiological responses of 3 chicken breeds to acute heat stress. *Poultry Science* 90:1435–1440.
90. Mojtaba Azma, Mohd Shamzi Mohamed, Rosfarizan Mohamad, **Raha Abdul Rahim**, Arbakariya B. Ariff. 2011. Improvement of medium composition for heterotrophic cultivation of greenmicroalgae, *Tetraselmis suecica*, using response surface methodology. *Biochemical Engineering Journal* 53 (2011) 187–195.
91. A. F. Soleimani, I. Zulkifli, A. R. Omar and **A. R. Raha**. 2011. Neonatal feed restriction modulates circulating levels of corticosterone and expression of glucocorticoid receptor and heat shock protein 70 in aged Japanese quail exposed to acute heat stress. *Poultry Science* 90:1427–1434.
92. Noreen Suliani Mat Nanyan, Hooi Wei Yeng , Ali Baradaran, Rosfarizan Mohamad, Sieo Chin Chin , Rosli Illias, Khatijah Yusoff and **Raha Abdul Rahim**. *Lactococcus lactis* M4, a potential host for the expression of heterologous proteins. 2011. *Microbial Cell Factory* 10:28-38.
93. Low Kheng Oon, Nor Muhammad Mahadi, **Raha Abdul Rahim**, Amir Rabu, Farah Diba Abu Bakar, Abdul Munir Abdul Murad and Rosli Md Illias. 2011. An effective extracellular protein secretion by an ABC transporter system in *Escherichia coli*: statistical modeling and optimization of cyclodextrin glucanotransferase secretory production. *Journal of Industrial Microbiology and Biotechnology*. 38: 1587-1597.
94. Mohd Hairul, A.R., Sade, A.B., Yiap, B.C. and **Raha A.R.** 2011. Genomic DNA Extraction from Medicinal Plants Available in Malaysia using a TriOMIC Improved Extraction Kit. *Genetics and Molecular Research* 10(4): 2757-2764.
95. Mincheol Kim, Dharmesh Singh, Ang Lai-Hoe, Rusea Go, **Raha Abdul Rahim**, Ainuddin A.N. Jongsik Chun and Jonathan M. Adams. 2012. Distinctive Phyllosphere Bacterial Communities in Tropical Trees. *Microbial Ecology*. 63: 674 – 681.
96. Binu M. Tripathi, Mincheol Kim, Dharmesh Singh, Larisa Lee-Cruz, Ang Lai-Hoe, Ainuddin A. N., Rusea Go, **Raha Abdul Rahim**, Husni M. H. A., Jongsik Chun and Jonathan M. Adams. 2012.

- Tropical soil bacterial communities in Malaysia: pH dominates in the equatorial tropics too. *Microbial Ecology* 64: 474-484.
97. Adelene Song Ai Lian, Janna O. Abdullah, Puad Abdullah, Norazizah Shafee and **Raha A. Rahim**. 2012. Functional Expression of an Orchid Fragrance Gene in *Lactococcus lactis*. *International Journal of Molecular Sciences*. 3(2): 1582-1597.
98. Hana Farizah Zamri, Mariana Nor Shamsudin, **Raha Abdul Rahim** and Vasanthakumari Neela. 2012. Oral Vaccination with *Lactococcus lactis* expressing the *Vibrio cholera* Wzm protein to Enhance Mucosal and Systemic Immunity. *Vaccine*. 30: 3231 – 3238 (ISSN: 0264-410X).
99. Yee, L.N., Chuah, J.A., Chong, M.L., Phang, L.Y., **Raha A.R.**, Sudesh, K. and Hassan M.A. 2012. Molecular characterization of *phaCAB* from *Comamonas* sp. EB172 for functional expression in *Escherichia coli*. *Microbiology Research* 2012: 550 – 557.
100. Mohd Anuar Jonet, Nor Muhammad Mahadi, Abdul Munir Abdul Murad, Amir Rabu, Farah Diba Abu Bakar, **Raha Abdul Rahim**, Kheng Oon Low and Rosli Md Illias. 2012. Optimization of a heterologous signal peptide by site-directed mutagenesis for improved secretion of recombinant proteins in *Escherichia coli*. *Journal of Molecular Microbiology and Biotechnology* 22:48-58.
101. Ho W.Y., Yeap S.K., Ho C-L., **Rahim R.A.**, and Alitheen N.B. 2012. Development of multicellular tumor spheroid (MCTS) culture from breast cancer cell and high throughput screening method using the MTT assay. *PLOS ONE* 7, e44640.
102. Ali Badaradan, Hooi Ling Foo, Sieo Chin Chin, and **Raha Abdul Rahim**. 2012. Isolation, identification and characterization of lactic acid bacteria from *Polygonum minus*. *Romanian Biotechnological Letters*. 17(2): 7245 – 7252.
103. Lai, Z.W., **Raha A.R.**, Ariff, A. and Mohamad, R. 2012. Biosynthesis of high molecular weight hyaluronic acid by *Streptococcus zooepidermicus* using oxygen vector and optimum impeller tip speed. *Journal of Bioscience and Bioengineering* 114 (3): 286 – 291.
104. Ho, W.Y., Yeap S.K., Ho, C.L., **Raha, A.R.** and Alitheen, N.B. 2012. Hepatoprotective activity of *Elephantopus scaber* on alcohol-induced liver damage in mice. *Evidence-based Complementary and Alternative Medicine*. 2012 Article ID 417953:8 pages.
105. Natarajan S.D., Nor'Aini, A.R., Mohamad, R. and **Raha A.R.** 2012. Potential of bioethanol production from *Nypa fruticans* sap by a newly isolated yeast *Lachancea fermentii*. *Journal of Renewable and Sustainable Energy* 4: 1-9.
106. Menaga Subramaniam, Rosfarizan Mohamad, Rosli Illias and **Raha Abdul Rahim**. 2012. The effect of signal peptides on the secretion of beta-cyclodextrin glucanotransferase in *Lactococcus lactis* NZ9000. *Journal of Molecular Microbiology and Biotechnology*. 22: 361-372. (ISSN 1464-1801)

107. Ho, W.Y., Yeap, S.K., Ho, C.L., **Raha A.R.** and Alitheen, N.B. 2012. Development of multicellular tumour spheroid (MCTS) culture from breast cancer cell and high throughput screening method using the MTT assay. *PLOS ONE*.7 (9) e44640 (JIF 4.09)
108. Adelene Ai-Lian Song, Janna Ong Abdullah, Mohd. Puad Abdullah, Norazidah Shafee, Roohaida Othman, Ee-Fun Tan, Normah Mohd. Noor, and **Abdul Rahim Raha**. 2012. Overexpressing 3-hydroxy-3-methylglutaryl coenzyme A reductase (HMGR) in the lactococcal mevalonate pathway for heterologous plant sesquiterpene production. *PLOS ONE* 7(12): e52444.
109. Badaradan Ali, Sieo Chin Chin, Hooi Ling Foo, Rosli Md Illias, Khatijah Yusoff and **Raha Abdul Rahim**. 2013. Cloning and In Silico Characterization of Two Signal Peptides from *Pediococcus pentosaceus* and their Function on Secretion of Heterologous Protein in *Lactococcus lactis*. *Biotechnology Letters*. 35 (2): 233 – 238.
110. Tripathi, B.M., Kim, M., Lai-Hoe, A. Shukor, N.A.A., **Rahim, R.A.**, Go, R., and Adams, J.M. 2013. pH dominates variation in tropical soil archaeal diversity and community structure. *FEMS Microbiology Ecology*. 86 (2): 303-311.
111. Ho, C.-L., Teo, S.-S. **Rahim, R.A.**, and Phang S.-M. 2013. Transcripts of *Gracilaria changii* that improve copper tolerance of *Escherichia coli*. *Asia Pacific Journal of Molecular Biology and Biotechnology*. 18 (3): 315-319.
112. Velaithan, V., Chin, S.C., Yusoff, K., Illias R.M. and **Rahim, R.A.** 2013. Novel synthetic signal peptides for the periplasmic secretion of green fluorescent protein in *Escherichia coli*. *Annals of Microbiology*. 64:542-550.
113. Baharum, H., Chu, W.-C., Teo, S.-S., Ng, K.-Y., **Rahim, R.A.** and Ho, C.-L. 2013. Molecular cloning, homology modeling and site-directed mutagenesis of vanadium-dependent bromoperoxidase from *Glacilaria changii* (Rhodophyta). *Phytochemistry* 92: 49-59.
114. Mousavi, S. S., Moeini, H., Mohamad, R., Dinarvand, M., Ariff, A., Ling, F. H., and **Raha, A. R.** 2013. Effects of medium and culture conditions on folate production by *Streptococcus thermophilus* BAA- 250. *Research in Biotechnology* 4 (6): 21 -29
115. Bayat, O., Baradaran, A., Ariff, A., Mohamad, R. and **Rahim, R.A.** 2013. Intracellular production of IFN-alpha 2B in *Lactococcus lactis*. *Biotechnology Letters*. DOI 10.1007/s10529-013-1390-4.
116. Hassan, M.A., Yee, L.-N., Yee, P.L., Ariffin H., **Raha A.R.**, Shirai, Y. and Sudesh, K. 2013. Unsustainable production of polyhydroxyalkanoates from renewable oil-palm biomass. *Biomass and Bioenergy*. 50: 1-9.

117. Song, A.A., Abdullah, J.O., Abdullah, M.P., Shafee, N., Othman, R., Noor, N.M. and **Rahim, A.R.** 2014. Engineering the lactococcal mevalonate pathway for increased sesquiterpene production. *FEMS Microb Lett.* 355: 177-184.
118. Maidin, S.T., Song, A.A., Sieo, C.C., Yusoff, K.M. and **Raha, A.R.** 2014. Construction of a novel inducible expression vector for *Lactococcus lactis* M4 and *Lactobacillus plantarum* Pa21. *Plasmid.* 74: 32-38.
119. Tan B.H., Chor Leow T., Foo H.L., **Abdul Rahim R.** 2014. Molecular characterization of a recombinant manganese superoxide dismutase from *Lactococcus lactis* M4. *BioMed Research International* 23146133, <http://dx.doi.org/10.1155/2014/469298>.
120. Mutalib, N.E.A., Isa, N.M., Alitheen, N.B., Song, A.A. and **Rahim, A.R.** 2014. IRES-Incorporated lactococcal bicistronic vector for target gene expression in a eukaryotic system. *Plasmid.* 73: 26-33.
121. Shazali N., Foo H.L., Loh T.C., Choe D.W., **Abdul Rahim R.** 2014. Prevalence of antibiotic resistance in lactic acid bacteria isolated from the faeces of broiler chicken in Malaysia *Gut Pathogens* 6 (1): 1 – 7.
122. Theresa Wan Chen Yap, Amir Rabu, Farah Diba Abu Bakar, **Raha Abdul Rahim**, Nor Muhammad Mahadi, Rosli Md Illias, Abdul Munir Abdul Murad (2014). Growth phase-dependent proteomes of the Malaysian isolated *Lactococcus lactis* dairy starin M4 using label-free qualitative shotgun proteomics analysis. *The Scientific World Journal.* 2014 : 1-14.
123. Jalilsood T, Baradaran A, Ling FH, Mustafa S, Yusof K, **Rahim R. A.** 2014. Characterization of pR18, a novel rolling-circle replication plasmid from *Lactobacillus plantarum*. *Plasmid.* 73:1-9.
124. Hui Fong Tai, Hooi Ling Foo, **Raha Abdul Rahim**, Teck Chew Loh, Mohd Puad Abdullah and Kimura Yoshinobu. 2015. Molecular characterization of new organization of plnEF and plw loci of bacteriocin genes harbour concomitantly in *Lactobacillus plantarum* I-UL4. *Microbial Cell Factories* 14 (89): 1-13 ISSN 1475-2859.
125. N.R. Abdullah, T.C. Loh, H. Akit, A.Q. Sazili, H.L .Foo, R. Mohamad, **R. Abdul Rahim**, M. Ebrahimi and A.B. Sabow. 2015. Fatty acid profile, cholesterol and oxidative status in broiler chicken breast muscle fed with different dietary oil sources and calcium levels. *South African Journal of Animal Science* 45(2): 153-163.
126. Tan, H.K., Foo, H.L., Loh, T.C., Mohamed Alitheen, N.B. and **Abdul Rahim, Raha.** 2015. Cytotoxic effect of proteinaceous postbiotic metabolites produced by *Lactobacillus plantarum* I-UL4 cultivated in different media composition on MCF-7 breast cancer cells. *Malaysian Journal of Microbiology* 11 (2): 207-214.



127. Tannaz Jalilsood, Ali Baradaran, Adelene Ai-Lian Song, Hooi Ling Foo, Shuhaimi Mustafa, Wan Zuhainis Saad, Khatijah Yusoff and **Raha Abdul Rahim**. 2015. Inhibition of pathogenic and spoilage bacteria by a novel biofilm-forming *Lactobacillus* isolate: a potential host for the expression of heterologous proteins. *Microbial Cell Factories* 14 (96): 1-14.
128. Lim, E.L., Siow, R.S., **Abdul Rahim, Raha** and Ho, C.L. 2015. Global transcriptome analysis of *Glacilaria changii* (Rhodophyta) in response to agarolytic enzyme and bacterium. *Marine Biotechnology*, DOI: 10.1007/s10126-015-9680-6.
129. Jevanathan Kalyanasundram, Suet Lin Chia, Adelene Ai-Lian Song, **Abdul Rahim Raha**, Howard A.Young and Khatijah Yusoff. 2015. Surface display of glycosylated Tyrosine related protein-2 (TRP-2) tumour antigen on *Lactococcus lactis*. *BMC Biotechnology* 15:113 DOI: 10.1186/s12896-015-0231-z
130. Stella Siaw Xiu Joan, Jee Pui-Fong, Adelene Ai-Lian Song, Li-Yen Chang, Khatijah Yusoff, Sazaly Abu Bakar and **Raha Abdul Rahim**. 2016. Oral vaccine of *Lactococcus lactis* harboring pandemic H1N1 2009 haemagglutinin1 and nisP anchor fusion protein elevates anti-HA1 sIgA levels in mice. *Biotechnology Letters*. DOI: 10.1007/s10529-016-2034-2
131. Susan Azizi, Rosfarizan Mohamad, **Raha Abdul Rahim**<sup>[1]</sup>, Amin Boroumand Moghaddam, Mona Moniri, Arbakariya Ariff, Wan Zuhainis Saad, Farideh Namvab. (2016). ZnO-Ag core shell nanocomposite formed by green method using essential oil of wild ginger and their bactericidal and cytotoxic effects. *Applied Surface Science* 384:517-524.
132. Farideh Namvar, Susan Azizi, Heshu Sulaiman Rahman, Rosfarizan Mohamad, Abdullah Rasedee, Mozghan Soltani and **Raha Abdul Rahim**. 2016. Green synthesis, characterization, and anticancer activity of hyaluronan/zinc oxide nanocomposites *OncoTargets and Therapy* (Accepted).
133. Jee, P.-F, Tiong, V., Shu, M-H., **Raha A.R.**, ... Abubakar, S and Chang, L.-Y. 2017. Oral immunization of a non-recombinant *Lactococcus lactis* surface displaying influenza hemagglutinin 1 (HA-1) induces mucosal immunity in mice. *PLoS ONE* 12(11). E0187718
134. Mogghadam, AB., Moniri, M.,...**Raha A.R.**, NAVaderi, M and Mohamad, R. 2017. Ecofriendly formulated zinc oxide nanoparticles: induction of cell cycle arrest and apoptosis in the MCF-7 cancer cell line. *Genes* 8(10): 281.
135. Jacob P.-J, Masarudin, M.J., Hussein, M.Z. and **Rahim R.A.** 2017. Facile aerobic construction of iron based ferromagnetic nanostructures by a novel microbial nanofactory isolated from tropical freshwater wetlands. *Microbial Cell Factories* 16(1): 175
136. Jee, P.-F, Tiong, V., Shu, M-H., **Raha A.R.**, ... Abubakar, S and Chang, L.-Y. 2017. Insertion of single-chain variable fragment (scFv) peptide linker improves surface display of influenza

- hemagglutinin (HA-1) on non-recombinant *Lactococcus lactis*. *Biotechnology Progress* 33(1): 154-162.
137. Nor, N.M., Mohammad, M.S., Loh, T.C., **Rahim, R.A.**, Tan J.S and Mohamad, R. 2017. Comparative analyses on medium optimization using one-factor-at-a-time, response surface methodology, and artificial neural network for lysine-methionine biosynthesis by *Pediococcus pentosus* RF-1. *Biotechnology and Biotechnological Equipment* 31(5): 935-947.
138. Song, A.A.-L., In, L.L.A., Lim, S.H.E and **Rahim, R.A.** 2017. A review on *Lactococcus lactis*: From food to factory. *Microbial Cell Factories* 16(1): 55
139. Ng, A.W.R., Tan, P.J., Hoo, W.P.Y.....**Rahim, A.R.**, Song, A.A.L. and In, L.L.A. 2018. In silico guided sequence modifications of K-ras epitopes improve immunological outcome against G12V and G13D KRAS antigens. *PeerJ* 2018(7) e5056
140. Anhar DAnial Mustafa, Jeevanathan Kalyanasundram, Sarah Sabidi, Adelene Ai-Lin Song, Maha Abdullah, **Raha Abdul Rahim** and Khatijah Yusoff. 2018. Proof of concept in utilizing in-trans surface display system of *Lactobacillus plantarum* as mucosal tuberculosis vaccine via oral administration in mice. *BMC Biotechnology* 18:63
141. Innanurdiani Koko, Adelene Ai-Lian Song, Mas Jaffri Masarudin and **Raha Abdul Rahim**. 2019. Engineering integrative vectors based on phage site-specific recombination mechanism for *Lactococcus lactis*. Koko et al. *BMC Biotechnology* (2019) 19:82
142. Mariam Dayana Mohd Taha, Mohammad Fahrulazri Mohd Jaini, Noor Baity Saidi, **Raha Abdul Rahim**, Umi Kalsom Md Shah, Amalia Mohd Hashim. 2019. Biological control of *Erwinia mallotivora*, the causal agent of papaya dieback disease by indigenous seed-borne endophytic lactic acid bacteria consortium. <https://doi.org/10.1371/journal.pone.0224431>

**Publications: b. More than 100 papers published in International and National Proceedings/Abstracts. Several are listed below....**

1. **Raha, A.R.**, K. Yusoff, A.B. Sipat, A.R. Omar, A. Lila. Cloning and Sequencing of Major VP genes of Chicken Anaemia Virus (1996). *Proceedings of the 9<sup>th</sup> National Biotechnology Seminar*. pp 33-35
2. **Raha, A.R.**, A.B. Sipat, Mohd Azmi, M.L., A.R. Omar, Ng, P.T., Filza, A., Chang, L.Y., Amos, T., Ernie Eileen, R.R., Ho, H.L., Kees Leenhouts (2000). Recombinant Gram Positive Bacteria for Vaccine Delivery- A Model System. *Proceedings of the 12<sup>th</sup> National Biotechnology Seminar*. pp 4-9
3. **Raha, A.R.**, K. Yusoff, A.B. Sipat, A. Lila, A. Ideris, A.R. Omar, P.T. Ng, Filza, A., Amos, T., Kees Leenhouts (2000). Recombinant Lactococcal System For Expression of Major VP genes of Chicken Anemia Virus. *Proceedings of the 2<sup>nd</sup> International Conference on Advance In Strategic Technologies*. pp 1409-1419
4. Latifah Saiful Yazan, Abdul Manaf Ali, **Raha Abdul Rahim**, Junainah Abdul Hamid, Nor Hadiani Ismail and Nordin Lajis (1996). Antimicrobial, antileukaemic and antiviral properties of Damnacanthol isolated from the root of *Morinda elliptica*. *Proceedings of the 8<sup>th</sup> National Biotechnology Seminar*. pp79-81
5. L.L. You, **Raha, A.R.**, A.B. Ariff, M.I.A. Karim, M.S. Saifulaman (1998). Growth Optimization of a Thermophilic Bacteria from a Petroleum Reservoir in Malaysia. *Proceedings of the 21<sup>st</sup> Symposium of the Malaysian Society for Microbiology*. pp 63-64
6. Ross, E.E. R., **Raha, A.R.**, K. Yusoff, M.Y. Manap., A. Ideris (2000). Construction of an *E.coli*-Lactococcus Shuttle Vector from Erythromycin Resistant Lactococcal Plasmid. *Proceedings of the 23<sup>rd</sup> Symposium of the Malaysian Society for Microbiology*. pp 63-64
7. Neela, V., Mariana Nor Shamsudin, Azlina, D., Rozita Rosli, **Raha Abdul Rahim** (2000). Immunological Characteristics of LPS from Pathogenic *Vibrio* Species. *Proceedings of the 23<sup>rd</sup> Symposium of the Malaysian Society for Microbiology*.
8. **Raha, A.R.**, Mohd Azmi, M.L., K.Y. Yusoff, Aini, I., Pong, L.S., Nadimpalli, V. And Ross, E. (2000). Recombinant Vaccine Delivery System. *Proceedings of the 3<sup>rd</sup> National Biotechnology Seminar*. pp 62-64

**Publications: b. More than 100 papers published in International and National Proceedings/Abstracts. Several are listed below....**

9. Tin Tin Myaing, **Raha, A.R.**, A.A. Saleha and Arifah, A.K. (2000). Antibiotic Resistance Pattern and Plasmid Profiles of *Escherichia coli* Isolated from Raw Chicken Meat in Selangor. *Proceedings of the 3<sup>rd</sup> National Biotechnology Seminar*. pp 530-534
10. Mohd Ismail Abdul Karim, Ng Perk Tsong, **Raha Abdul Rahim** and Arbakariya Ariff (1996). Biosorption of Cadmium by Bacterium UPM1. *Proceedings of the 9<sup>th</sup> National Biotechnology Seminar*. pp 303-309
11. **Raha AR**, Ernie RR, Roya A, Khatijah Y, Aini I (1996). Isolation and Plasmid Characterization of Lactococcus from Village Chicken. *Proceedings of the 9<sup>th</sup> National Biotechnology Seminar*. pp 350-351
12. **A.R. Raha**, K. Yusoff, P.T. Ng, Filza A. and A.B. Sipat (1998). Cloning of Chicken Anemia Virus DNA Fragments Coding for VP1 and VP2 into the Expression Vector pMG36e and Their Transformation into *Lactococcus lactis* MG1363. *Proceedings of the 10<sup>th</sup> National Biotechnology Seminar*. pp 286-288
13. K. Yusoff, **Raha, A.R.**, A.B. Sipat and Chang, L.Y. (1998). Cloning of the M gene of Newcastle Disease Virus into a Lactococcus Expression Vector. *Proceedings of the 10<sup>th</sup> National Biotechnology Seminar*. pp 289-290
14. **A.R. Raha**, K.Yusoff, M.Y. Manap, A. Ideris, E.E.R. Ross (1999). Molecular Characterization of *Lactococcus sp.* Isolated from Chicken Intestine. *Proceedings of the 12<sup>th</sup> National Biotechnology Seminar*. pp 90-92
15. Chang, L.Y., **Raha, A.R.**, A.B. Sipat and K. Yusoff (1999). Cloning of a Thermostable Xylanase Gene from *Bacillus Coagulans* ST-6 and an M gene from Newcastle Disease Virus into a Lactococcal Expression Vector, pMG36e. *Proceedings of the 12<sup>th</sup> National Biotechnology Seminar*. pp 289-290
16. A Mohd Nazri, S Abd Aziz, HM Yusof, A Ariff, **AR Raha**, K Uchiyama and S Shioya (1999). Bioconversion of Sago Starch to Fermentable Sugar Using Recombinant Yeast. *Proceedings of the 12<sup>th</sup> National Biotechnology Seminar*. pp 379-382
17. Loke CF, **Raha AR**, Omar AR and Yusoff K (2000). Cloning and Expression of the Fusion (F) and Haemagglutinin-neuraminidase (HN) genes from Newcastle Disease Virus (NDV) Strain AF2240 in a Mammalian Expression System. *Proceedings of the 10<sup>th</sup> Scientific Meeting of MSMBB* pp 43
18. Neela Raja, Mariana Nor Shamsudin, Wan Somarny, Rozita Rosli, **Raha Abdul Rahim** and Son Radu (2000). Application of Dot-Blot Assay and RAPD for the Identification and Differentiation

**Publications: b. More than 100 papers published in International and National Proceedings/Abstracts. Several are listed below....**

- of Species-Specific *Staphylococcus aureus*. *Proceedings of the 13<sup>th</sup> National Biotechnology Seminar* pp 543-549.
19. Neela Raja, Mariana Nor Shamsudin, Wan Somarny, Rozita Rosli, **Raha Abdul Rahim** and Son Radu (2001). Rapid and Ubiquitous Molecular Based Method for the Species-Specific Identification of Local Isolates of *Staphylococcus aureus*. *Proceedings of the 24<sup>th</sup> Symposium of the Malaysian Society for Microbiology* pp 52-55
  20. Mickey, V., Son, R., **Raha, A.R.**, Patrick, G. and Gulam R. (2000). *Vibrio cholerae* 01 in Miri Sarawak: Antibiotic Resistance and Their Genotype Characterization. *4<sup>th</sup> UNESCO National Workshop on Promotion of Microbiology in Malaysia*.
  21. Lajis, N.H., Ismail, N.H., Jasri, M., Yazan, L.S., Abdullah, M.A., Ali, A.M., **Raha, A.R.**, Ariff, A., Marziah, M., Aimi, N., Takayama, H. and Kitajima, M. (2000). The Chemistry and Biology Activity Studies of *M. elliptica*. *ACGC Chemical Research Communication*
  22. Neela, V., Wan, S., Mariana, N.S., Rozita, R. and **Raha A.R.** (2000). Detection of Zonula Occludens Toxin (*zot*) and Accessory Cholerae Enterotoxin (*ace*) Genes in *Vibrio cholerae* Isolates. *25<sup>th</sup> Annual Conference of the Malaysian Society for Biochemistry and Molecular Biology*.
  23. Samuel Lihan, Son Radu, Zaiton Hassan, **Raha Abdul Rahim** and Gulam Rusul (2001). Molecular Cloning and Nucleotide Sequencing: Preliminary Development of Specific Oligonucleotide Probes Based on Repetitive Element Marker for Detection of *Listeria monocytogenes*. *Proceedings of the 24<sup>th</sup> Symposium of the Malaysian Society for Microbiology*. pp 130-133
  24. Somarny, W.M.Z., Mariana, N.S., Neela, V., Rozita, R. and **Raha, A.R.** (2001) Optimization of Parameters for Accessory Cholera Enterotoxin (Ace) Protein Expression. *Proceedings of the 24<sup>th</sup> Symposium of the Malaysian Society for Microbiology* pp 205-207
  25. Zaiton Hassan, Endang Purwati, Son Radu, **Raha Abdul Rahim** and Gulam Rusul (2000). Incidence of *Listeria* Species from Food Sources in Malaysia. *Proceedings of the 23<sup>rd</sup> Symposium of the Malaysian Society for Microbiology* pp 33-36
  26. Zaiton Hassan, Endang Purwati, **Raha Abdul Rahim**, Gulam Rusul and Son Radu (2000). Presence of *Listeria* Species in Imported Frozen Beef Samples Obtained from Wet Market Using Different Enrichment Procedures. *Proceedings of the 23<sup>rd</sup> Symposium of the Malaysian Society for Microbiology* pp 109-112
  27. Ho, H.L., **Raha, A.R.**, Ariff, A.B. and Hirzun, M.Y. (2000). Growth Characteristic and Plasmid Stability of a Recombinant *Lactococcus lactis* in Different Carbon Sources. *Proceedings of the 23<sup>rd</sup> Symposium of the Malaysian Society for Microbiology* pp 128-129

**Publications: b. More than 100 papers published in International and National Proceedings/Abstracts. Several are listed below....**

28. Lim Leng Choo, Hasanah Mohd Ghazali, **Raha Abdul Rahim** and Takashi Takamura (2000). Screening and Isolation of L-Methionine  $\gamma$ -Lyase-Producing Microorganisms. *Proceedings of the 23<sup>rd</sup> Symposium of the Malaysian Society for Microbiology*. pp 169-170
29. Haryanti T., W.L. Ooi, Son R., Gulam R., Abdul Reezal A.L., YF Ngeow and **Raha A.R.** (2000) Study of *Enterococcus Spp.* (Poultry and Clinical Sources) by Genotyping Applications. *Proceedings of the 23<sup>rd</sup> Symposium of the Malaysian Society for Microbiology* pp 203-205
30. Sumaiyah A.R, Son R, **Raha A.R.**, Rozila A, Cheah Y.K, Noorzaleha A.S, Zaiton H. (2002). Antibiotic Resistance and Plasmid Profiling Among Enteropathogenic *E.coli* (EPEC) Clinical Isolates from Diarrhea Patients. *Proceedings of the 25<sup>th</sup> Symposium of the Malaysian Society for Microbiology* pp 39
31. Lee, S.F., You, L.L., Lai, O.M., **Abdul Rahim, R.** and Abdul Aziz, S. (2002) Partial Characterization of a Hyperthermophilic Bacterium Isolated from Sarawak Oil Well. *Proceedings of the 25<sup>th</sup> Symposium of the Malaysian Society for Microbiology*. pp 49
32. Yiap B.C, **Raha A.R.**, C.M.V.L. Wong, Hirzun M.Y. (2002). Study of a Putative Growth Related Gene YOR228c in Yeast. *Proceedings of the 25<sup>th</sup> Symposium of the Malaysian Society for Microbiology*. pp 73
33. Lesley Maurice Bilung, Son Radu, **Raha Abdul Rahim**, Kasing Apun and Cheah Yoke Kqueen (2002). Random Amplified Polymorphic DNA, Plasmid and Antibiotic Resistance Profile of *Listeria monocytogenes* and *Listeria innocua* Isolated from Local Poultry Meat. *Proceedings of the 25<sup>th</sup> Symposium of the Malaysian Society for Microbiology*. pp 80
34. Chui Fung Loke, **Raha Abdul Rahim**, Abdul Rahman Omar and Khatijah Yusoff (2003). DNA Vaccines against Newcastle Disease Virus. *Proceedings of the Fifth National Congress of Genetics*. pp 137
35. **Raha, A.R.**, Aini, I., Yusoff, K.M., Mariana, N.S., Hirzun, M.Y., Foo, H.L., Norjahan, B.M.A., Noor Aini, A.R., Adibah, Y., Rosli, M.I., Asmat, A., Abdul Munir, A.M., Varma, N.R.S., Haryanti, T., Hooi, W.Y. and Mastura, K. (2003). Development of Vaccine Delivery Platform Using *Lactococcus lactis*. *Proceedings of the 14<sup>th</sup> National Biotechnology Seminar*. pp 13-17
36. Hossein, A.S., H.L. Foo., H. Daud. And **Raha, A.R.** (2003). Isolation and Cloning of a Partial Serine Protease Gene from *Aeromonas sp.* *Proceedings of the Federation of Asia Pacific Microbiology Society Symposium*
37. Neela, V., Mariana N.S., Amghalia, A., Somarny, W.M.Z., Son, R., Rozita, R. And **Raha, A.R.** (2003). Development of a Multiplex PCR System For the Simultaneous Identification of *Staphylococcus*

**Publications: b. More than 100 papers published in International and National Proceedings/Abstracts. Several are listed below....**

- aureus* and the Detection of Clinically Relevant Antibiotic Resistance. *Proceedings of the 25<sup>th</sup> Symposium of the Malaysian Society for Microbiology* pp 31
38. Samuel, L., Son, R., Zaiton, H., Gulam Rusul, R.A., **Raha, A.R.**, Siti Zulaiha, H., Yours, E.H. and Cheah, Y.K. (2003). Comparisons of Repetitive Sequence (RS) -and Arbitrarily Primer (AP) -PCR for Discrimination of *Listeria monocytogenes* Strains. *Proceedings of the 25<sup>th</sup> Symposium of the Malaysian Society for Microbiology*. pp 49
39. Irene Lah, Cheah Yoke Kqueen, Son Radu and **Raha Abdul Rahim** (2003). Characterisation of Enteropathogenic *Escherichia coli* (EPEC) Clinical Isolates by Antibiotic Resistance Profile and Random Amplified Polymorphic DNA (RAPD) Fingerprinting. *Proceedings of the 25<sup>th</sup> Symposium of the Malaysian Society for Microbiology*. pp 68
40. Gwendelyne Tanil, Son Radu, **Raha, A.R.**, Suhaimi Napis, Jurin W. Gunsala M, M. Nishibuchi (2003). Antibiotic Resistance of *Vibrio parahaemolyticus* Isolated from Coastal Seawater in Peninsular Malaysia. *Proceedings of the 13<sup>th</sup> Scientific Meeting of MSMBB*. pp 40
41. Neela V, Mariana N.S, Amghalia M.S.e, Halimaton H, Rosli R, Son R. (2003) Cloning and Sequencing of REP Fragment in *Staphylococcus aureus*. *Proceedings of the 13<sup>th</sup> Scientific Meeting of MSMBB*. pp 48
42. Julia Ibrahim, Hirzun Mohd Yusof and **Raha Abdul Rahim** (2003). High Culture Density Cultivation of Recombinant *Escherichia coli* Using Fed-Batch Fermentation Technique. *Proceedings of the 13<sup>th</sup> Scientific Meeting of MSMBB*. pp 60
43. Aida Azrina Azmi, Yaakob Che Man, Clemente Michael Wong Vui Ling, **Raha Abdul Rahim** (2003). Sampling of Raw Meats and Fats of Pigs Using Polymerase Chain Reaction for Halal Authentication. *Proceedings of the 13<sup>th</sup> Scientific Meeting of MSMBB*. pp 43
44. Nguyen Phuoc Dang, Yeen Yee Wong, Jeniffer Ann Harikrishna, Michael C.V.L. Wong, **Raha Abdul Rahim** and Chai Ling Ho (2003). Isolation of Salinity Tolerance Genes from Mangrove Plants, *Acanthus Ebracteatus* and *Bruguiera Cylindrica*. *Proceedings of the 13<sup>th</sup> Scientific Meeting of MSMBB*. pp 78
45. Nor Azlina Ahmad, **Raha Abdul Rahim** and Khatijah Yusoff (2003). Cloning and Expression of a Lactococcal Cell Surface Anchorage Protein Gene, *nisP* in *E.coli* Expression System. *Proceedings of the 13<sup>th</sup> Scientific Meeting of MSMBB*. pp 86
46. Sabrina Kamin, **Raha Abdul Rahim**, Khatijah Yusoff and Foo Hooi Ling (2003). Cloning and Molecular Study of the GAD Promoter from *Lactococcus lactis*. *Proceedings of the 13<sup>th</sup> Scientific Meeting of MSMBB*. pp 91

**Publications: b. More than 100 papers published in International and National Proceedings/Abstracts. Several are listed below....**

47. Teo Swee Sen, Teoh Seddon, Ng Ying Pei, Ho Chai Ling, **Raha Abdul Rahim** and Phang Siew Moi (2003). Analysis of Expressed Sequence Tags (ESTs) from a Malaysian Red Seaweed, *Gracilaria Changii* (Gracilariales, Rhodophyta). *Proceedings of the 14<sup>th</sup> Scientific Meeting of MSMBB*. pp 101
48. Neela, V., Mariana, N.S., Halimaton, H., Rosli, R., **Raha, A.R.** and Radu, S. (2003). The Role of Typing in Diagnosis of *Staphylococcus aureus* Infection. *Third Federation of Asia Pacific Microbiology Societies Conference*. pp51
49. Yiap, B.C., **Raha, A.R.**, Wong, C.M.V.L. and Hirzun, M.Y. (2003). Gene Dosage-Dependant of Growth Physiology For Disruption and Complementation of YIR010W (DSN1) Gene in *S.cerevisiae*. *Third Federation of Asia Pacific Microbiology Societies Conference*. pp 71
50. Tan, L.L., **Raha, A.R.** Ariff, A.B. and Hirzun, M.Y. (2003). Isolation of Auxotrophic, Temperature and Osmotic Mutants of Locally Isolated *Pichia ohmeri* Strain Via Ultra Violet Mutagenesis. *Third Federation of Asia Pacific Microbiology Societies Conference*. pp 92
51. Lew Kok Cheong, Rosfarizan Mohamad, **Raha Abdul Rahim** and Arbakariya Ariff (2003). Development of Fed-Batch Fermentation Technique For High Density Cell Cultivation of *Bacillus subtilis*. *Third Federation of Asia Pacific Microbiology Societies Conference*. pp 105
52. You, L.L., **Raha, A.R.**, Ariff, A., Karim, M.I.A. and Chan, H.K. (2003). Microbial Enhance Oil Recovery (Meor) by Thermophilic Bacteria Using Its End Products. *Third Federation of Asia Pacific Microbiology Societies Conference*. pp120
53. Halimaton Hamad, Mariana Nor Shamsudin and **Raha Abdul Rahim** (2004). Prevalence of Enterotoxigenic Genes in Environment Isolates of *Staphylococcus aureus*. *Proceedings of the 26<sup>th</sup> Symposium of the Malaysian Society for Microbiology*. pp 60.
54. Yin Sze Lim, Hooi Ling, Foo, Teck Chewn, Loh, **Raha, Abdul Rahim** and Gulam Rusul, R.A. (2004). Inhibition Study of Bacteriocin Producing Lactic Acid Bacteria, *Lactobacillus plantarum*, I-UL4. *Proceedings of the 26<sup>th</sup> Symposium of the Malaysian Society for Microbiology*. pp76.
55. Rosfarizan Mohamad, Mohd Nasir Sulaiman, **Raha Abdul Rahim** and Arbakariya Ariff (2004). Effect of Different Types of Medium Formulation and pH on Phytase Production by *Aspergillus ficuum* DSM932. *Proceedings of the 26<sup>th</sup> Symposium of the Malaysian Society for Microbiology*. pp83.
56. Azlina Mansor, Arbakariya Ariff, **Raha Abdul Rahim** and Rosfarizan Mohamad (2004). Production and Characterization of a New Cyclodextrin Glucosyltransferase (CGTase) from an Alkalophilic



**Publications: b. More than 100 papers published in International and National Proceedings/Abstracts. Several are listed below....**

- Bacillus circulans* P28. *Proceedings of the 26<sup>th</sup> Symposium of the Malaysian Society for Microbiology*. pp89
57. Hana Farizah Zamri, Mariana Nor Shamsudin, **Raha Abdul Rahim**, Somarny Zain and Noor Asyikin Sahat (2004). Comparative Functional Characterization of O-Antigen Transport Genes in *Vibrio alginolyticus*. *Proceedings of the 26<sup>th</sup> Symposium of the Malaysian Society for Microbiology* pp 96.
58. Rosfarizan Mohamad, Azlina Mansor, Arbakariya bin Ariff, **Raha Abdul Rahim** and Suteaki Shioya (2004). Production of Cyclodextrin Glucosyltransferase (CGTase) from Alkalophilic *Bacillus circulans* P28. *JSPS-NRCT.DOST/LIPI/VCC Joint Seminar* 60-65
59. **Raha Abdul Rahim**, Rosfarizan Mohamad, Arbakariya Ariff, Khatijah Yusoff, Akihiko Kondo, Nadimpalli Ravi Sankara Varma, Nor Azlina Ahmad and Wan Siti Atikah Wan Omar (2004). Cloning and Expression of a Lactococcal Cell Surface Anchorage Gene (*nisP*). *JSPS-NRCT.DOST/LIPI/VCC Joint Seminar* 72-77
60. Mohd Shahrul Ezhar Abdul Rahman, **Raha Abdul Rahim**, Arbakariya Ariff and Khatijah Yusoff (2005). Cloning and Expression of Human Erythropoietin (hEPO) in Chinese Hamster Ovary Cells and Production in 2L Bioreactor. *Proceedings of the 15<sup>th</sup> Scientific Meeting of MSMBB*. 19-20
61. Low ETL, Chan PL, Boon SH, Wong YL, Rozana R, Ooi LC-L, Elyana MS, Halimah A, Amos TCY, Wizana ZA, **Raha AR**, Wan KL, Ho CL, Rajinder Singh and Cheah SC (2005). Generation of ESTs and Development of Oil Palm DNA Chip. *Proceedings of the 2005 Conference on Biotechnology of Plantation Commodities*. 86-94
62. Low ETL, Ooi Lc-L, Wong YL, Rajinder S. **Raha AR** and Cheah SC (2005). Identification of Oil Palm (*Elaeis guineensis* variant Jacq.) Flowering Associated Genes. *8<sup>th</sup> International Meeting of the Microarray Gene Expression Data Society (MGED8)*.
63. Foo, H.L., Lim, Y.S., Loh, T.C., Saleh, N.M., **Raha, A.R.** and Gulam, R. (2005). Characterization of Bacteriocin Produced by *Lactobacillus plantarum* I-UL4 Isolated from Malaysian Fermented Tapioca, Tapai Ubi. *Proceedings of the 4<sup>th</sup> NIZO Conference*.
64. Rosfarizan, M, **Raha, A.R.**, Ling, L.S. and Ariff, A.B. (2005). Improved Carbon Flux for Cell Built-Up During Cultivation of *Lactobacillus rhamnosus* using Exponential Fed-Batch Culture. *Proceedings of the 27<sup>th</sup> Symposium of the Malaysian Society for Microbiology*. pp157-160
65. Hana Farizah Zamri, Mariana Nor Shamsudin and **Raha Abdul Rahim**. (2005). Cloning Optimization in *E.coli* and *Lactococcus* Vectors of Potential Immunostimulants against *Vibrio alginolyticus*. *Proceedings of the 27<sup>th</sup> Symposium of the Malaysian Society for Microbiology*. pp192-195

**Publications: b. More than 100 papers published in International and National Proceedings/Abstracts. Several are listed below....**

66. Mariana Nor Shamsudin, Nagi Alhaj, **Raha Abdul Rahim** and Zamri Ishak (2005). Biolysate and Carbohydrate Assays for the Detection of *Escherichia coli*, *Salmonella spp* and *Vibrio cholerae* based on Cell Wall Polysaccharide. *Proceedings of the 27<sup>th</sup> Symposium of the Malaysian Society for Microbiology*. pp 202-206
67. Nurul Hidayah Idris, Mariana Nor Shamsudin and **Raha Abdul Rahim** (2005). Molecular Analysis of *Staphylococcus aureus* Genes Cultured in Local Honey. *Proceedings of the 27<sup>th</sup> Symposium of the Malaysian Society for Microbiology*. pp214-217
68. Hooi W.Y., **Raha A.R.**, Mariana, N.S. and N.R.S. Varma (2005). Molecular Identification and Characterization of Lactococcal Isolates from Cow's Milk. *Proceedings of the 27<sup>th</sup> Symposium of the Malaysian Society for Microbiology*. pp254-256
69. Nur Adeela Yasid, **Raha Abdul Rahim**, Khatijah Yusoff and Mohd Shahrul Ezhar (2005). Cloning of F and HN Genes of Newcastle Disease Virus into Plasmid pcDNA3.1-*acmA'* Towards the Construction of a Recombinant Vaccine. *Proceedings of the 27<sup>th</sup> Symposium of the Malaysian Society for Microbiology*. pp 288-290
70. Kok Yau, Ng., Hooi Ling, Foo., Rosfarizan Mohamad, Teck Chwen, Loh., **Raha Abdul Rahim**, Yin Sze, Lim., and Gulam Rusul, Rahmat Ali. Media Optimization of Bacteriocin Production by *Lactobacillus plantarum* I-UL4. (2005). *Proceedings of the 27<sup>th</sup> Symposium of the Malaysian Society for Microbiology*. pp354-356
71. Yin Sze, Lim., Hooi Ling, Foo., **Raha Abdul Rahim**, Teck Chewn Loh and Gulam Rusul, Rahmat Ali (2005). In Vitro Assessment of the Probiotic Characteristics of *Lactobacillus plantarum* I-UL4. *Proceedings of the 27<sup>th</sup> Symposium of the Malaysian Society for Microbiology*. pp 357-359.
72. Nguyen Phuoc Dang, Wong Yeen-Yee, Ho Chai-Ling, Jennifer Ann Harikrishna, Michael C.V. L. Wong, **Raha Abdul Rahim** (2005) The isolation of salinity tolerant genes from mangrove plants by using bacterial functional assay. The 15th Malaysian Society of Molecular Biology and Biotechnology, Kuala Lumpur, 4-5 April, 2005.
73. Chai-Ling Ho, Nguyen Phuoc Dang, Yeen-Yee Wong, Jennifer Ann Harikrishna, **Raha Abdul Rahim** and Michael C.V.L. Wong (2006) The isolation of salinity tolerant genes from mangrove plants, *Acanthus ebreteatus* Vahl and *Bruguiera cylindrica* (L.) Blume. The 8th International Congress of Plant Molecular Biology, Adelaide, Australia, 20 – 25 August 2006.
74. Yin Sze, Lim., Hooi Ling, Foo, **Raha Abdul Rahim**, Teck Chewn Loh, Mohd Hair Bejo and Gulam Rusul, Rahmat Ali (2006). The Probiotic Characteristics of *Lactobacillus plantarum* Strains

**Publications: b. More than 100 papers published in International and National Proceedings/Abstracts. Several are listed below....**

- Isolated from local Foods. *Proceedings of the 28<sup>th</sup> Symposium of the Malaysian Society for Microbiology*. pp .
75. Nur Adeela Yasid, **Raha Abdul Rahim**, Khatijah Yusoff and Mohd Shahrul Ezhar (2006). A novel Approach towards the construction of recombinant vaccine against NDV. *Proceedings of the 28<sup>th</sup> Symposium of the Malaysian Society for Microbiology*. pp .
76. Tan Boon Hooi, **Raha Abdul Rahim** and Foo Hooi Ling (2006). Construction of a recombinant superoxide dismutase exhibiting antioxidant activities. *Proceedings of the 28<sup>th</sup> Symposium of the Malaysian Society for Microbiology*. pp .
77. Sabrina KAmin, **Raha Abdul Rahim**, Khatijah Yusoff and Foo Hooi Ling (2006). Molecular cloning and expression of S.tag in Lactococcus lactis. *Proceedings of the 28<sup>th</sup> Symposium of the Malaysian Society for Microbiology*. pp .
78. Mohd Shahrul Ezhar, **Raha Abdul Rahim**, Khatijah Yusoff and Nur Adeela Yasid (2006). Cloning and expression of F gene in CHO cells. *Proceedings of the 28<sup>th</sup> Symposium of the Malaysian Society for Microbiology*. pp .
79. Hooi Wei Yeng, Foo Hooi Ling, and **Raha Abdul Rahim** (2006). Isolation and sequence analysis of a putative bacteriocin gene from milk strain Lactococcus lactis M12. *Proceedings of the 28<sup>th</sup> Symposium of the Malaysian Society for Microbiology*. pp .
80. Mariana Nor Shamsudin, NagiAlHaj, **Raha Abdul Rahim**, and Zamri Ishak (2006). Phenotypic and genotypic characterization of antimicrobial resistance in Escherichia coli isolates from different sources. *Proceedings of the 28<sup>th</sup> Symposium of the Malaysian Society for Microbiology*. pp .
81. Foo Hooi Ling, Tan Boon Chin, Thung Tze Young, Ng Kok Yau, Lim Yin Tze, **Raha Abdul Rahim**, and Hasanah Mohd. Ghazali (2006). Preliminary study of bacterial population if selected Malaysian fermented foods, budu and bambangan. *Proceedings of the 28<sup>th</sup> Symposium of the Malaysian Society for Microbiology*. pp .
82. Sabrina, K., Foo, H.L., Yusoff, K., and **Raha A.R.** 2007. Expression and purification of recombinant S-fusion protein as a functional tagged protein in Lactococcus lactis. *29<sup>th</sup> Symposium of the Malaysian Society for Microbiology* (proceeding).
83. Haryanti T., Mariana N.S., Latifah, S.Y., Yusoff, K., and **Raha A.R.** 2007. Membrane targeted expression of multiple epitopes in Lactococcus lactis. *29<sup>th</sup> Symposium of the Malaysian Society for Microbiology* (proceeding).

**Publications: b. More than 100 papers published in International and National Proceedings/Abstracts. Several are listed below....**

84. Hooi, W.Y., Mariana N.S., Son R., and **Raha A.R.** 2007. Construction of a constitutive expression vector for *Lactococcus lactis*. 29<sup>th</sup>*Symposium of the Malaysian Society for Microbiology* (proceeding).
85. Suria, M.S., Erna Mutiara, M., Adlin Azlina A.K., Zamri, A., Mohd Afendy, A.T., Han-Yih, Lau, Mariana N.S., and **Raha A.R.** 2007. Detection of foodborne pathogen *Escherichia coli* O157:H7 by multiplex PCR. 29<sup>th</sup>*Symposium of the Malaysian Society for Microbiology* (proceeding).
86. Yin Tze, Lim, Hooi Ling, Foo, Teck Chwen, Loh, **Raha Abdul Rahim**, Mohd. Hair Bejo and Gulam Rusul, Rahmat Ali. 2007. Intestinal microflora of rat fed with probiotic Lactic Acid Bacteria strains isolated from Malaysian foods. 29<sup>th</sup>*Symposium of the Malaysian Society for Microbiology* (proceeding).
87. Tan J.W., Cheah, W.L., Lai, Y.W., Chua, K.H, Thong, K.L., Nirmala, D.A., Annuar, M.S.M., Ibrahim. S., Raha A.R., and Vikineswary, S. 2007. Development of a PCR assay for detection of *nifH* and *nifD* genes in indigenous photosynthetic bacteria. 29<sup>th</sup>*Symposium of the Malaysian Society for Microbiology* (proceeding).
88. Ho, C.-L., Teo, S.-S., Teoh, S., Lee, W.-W., Raha, A.R. and Phang, S.-M. 2007. Transcriptomic analyses of *Gracilaria changii*. International Seaweed Symposium, Kobe, Japan, 25-31 March 2007. (Oral presentation).
89. Ho, C.L., Nguyen, P.D., Wong, Y.-Y., Teo, S.-S., Harikrishna, J.A., Raha, A.R. and Wong, M.C.V.L. 2007. Analyses of Expressed Sequence Tags (ESTs) from two Mangrove trees, *Acanthus ebracteatus Vahl* and *Bruguiera cylindrica (L.) Blume*. The Asia Pacific Conference on Plant Tissue Culture and Agribiotechnology, Kuala Lumpur, Malaysia, 16-19 June 2007. (Oral presentation).
90. Ho, C.-L., Wong, T. K.-M. Lee, W.-W., Raha, A.R. and Phang, S.-M. 2007. Generation and analyses of expressed sequence tags (ESTs) from *Sargassum binderi*. Malaysian Science and Technology Congress 2007, 4-6 September 2007. (oral presentation)
91. Norfarina Muhammad Nor, Seyed Sadegh Mousavi, Noreen Suliani Mat Nanyan, Rosfarizan Mohamad, Foo Hooi Ling and Raha Abdul Rahim. Screening of lactic acid bacteria for folic acid production from various sources. 30<sup>th</sup> Symposium of Malaysian Society for Microbiology, Microbes: Biotechnology Engine for Health and Wealth Creation, August 16 – 19, 2008, Kuantan, Pahang.
92. Raha, A.R., Anuradha, K., Foo, H.L., Mariana, N.S., Loh, T.C., Yusoff, K. and Sasan, H.H. Recombinant Lactococcal Vaccine Candidates for Protection against *Aeromonas hydrophila* in

**Publications: b. More than 100 papers published in International and National Proceedings/Abstracts. Several are listed below....**

- Tilapia (*Oreochromis niloticus*). BIT's 3<sup>rd</sup> Annual World Vaccine Congress: The Future of Global Vaccines. 23-25 March, 2011. Beijing, China. Pg.222. (Invited speaker)
93. Raha, A.R., Yusoff, K., Foo, H.L., Shuahimi, M., Sieo, C.C., Tannaz, J. and Mohd Shawal, T. Molecular Characterisation and Plasmid Analysis of Lactic Acid Bacteria Isolated from Malaysian Herbal Plants. 6<sup>th</sup> Asian Conference of Lactic Acid Bacteria. 8-10 September, 2011. Sapporo, Japan. Pg 32. (poster presentation)
94. Mohd Shawal Thakib Maidin, Sieo Chin Chin, Khatijah Yusoff and Raha Abdul Rahim. Molecular Characterisation of a Putative Plasmid Isolated from Plant Derived Enterococci. Proceedings: International Congress of Malaysian Society for Microbiology 2011. Penang, Malaysia. Vol1: 243-246. (poster)
95. Omid Bayat, Ali Bardaran, Arbakariya Ariff, Rosfarizan Mohamad and Raha Abdul Rahim. Intracellular Production of Alpha-Interferon in *Lactococcus lactis*. Proceedings: International Congress of Malaysian Society for Microbiology 2011. Penang, Malaysia. Vol1: 247-249. (poster)
96. Hafizah Mahmud, Rosli Md. Illias and Raha Abdul Rahim. Construction of Twin-Arginine Translocation (Tat) Pathway in *Lactococcus lactis* for Recombinant Protein Secretion. Proceedings: International Congress of Malaysian Society for Microbiology 2011. Penang, Malaysia. Vol1: 198-201. (poster).
97. Raha, A.R., Song, A.L.A., Abdullah, M.P., Shafee, N. and Abdullah, J.O. (2012). The production of a plant sesquiterpene synthase from *Polygonum minus*, a local Malaysian herbaceous plant in *Lactococcus lactis*. 7<sup>th</sup> International Symposium on Lactic Acid Bacteria, 29-31 May 2012. Wuxi, China.
98. Song, A.L.A., Abdullah, M.P., Shafee, N., Ong, J.A. and Raha, A.R. (2010). Cloning and expression of Vanda Hybrid sesquiterpene synthase in *Lactococcus lactis*. National Postgraduate Symposium, 30 December 2010. UKM, Selangor, Malaysia.
99. Song, A.L.A., Abdullah, M.P., Shafee, N. and Raha, A.R. (2010). Microarray profiling of *Lactococcus lactis* in various culture conditions. International Symposium of Lactic Acid Bacteria, 25-27 July 2010. UPM, Serdang, Malaysia

## PUBLICATIONS: BOOKS, RESEARCH NOTES, GENE BANK AND OTHERS

1. Bazli Syah Ahmad, Arbakariya Ariff, **Raha Abdul Rahim** and Abdul Rahman Omar (2003). Cultivation of Animal Cells Suspension in 2L Stirred Tank Bioreactor with Bubble-Free Aeration system. *The Bioscientist*. Vol 2, No 1
2. Julia Ibrahim, Ng Chyan Leong, Hirzun Mohd. Yusof, **Raha Abdul Rahim**, Rosfarizan Mohamad and Arbakariya Ariff (2004). High Culture Density Cultivation of Recombinant *Escherichia coli* Using Fed-Batch Fermentation Technique. *The Bioscientist*. 12(1): 2-7.
3. Haryanti T., Ross, E. Nadimpalli, R.S., Mariana S., and **Raha A.R.** (2004). Strain Development: Recombinant *Lactococcus lactis* harboring the Enterovirus71 and cholera toxin genes. *The Bioscientist*. 12(1): 16 – 19.
4. Arbakariya Ariff, Rosfarizan Mohammad, Suraini Abdul Aziz, and **Raha Abdul Rahim** (2005). Sago Starch as a Green Fermentation Feedstock for Solvent (Acetone-Butanol-Ethanol) Production. *BioTech Communications*. 1: 6 – 11.
5. Rosfarizan Mohammad, **Raha Abdul Rahim** and Arbakariya Ariff (2005). Fed-Batch Culture: An Approach for the Improvement of Fermentation Performance. *BioTech Communications 2*: 26 – 31. Monograph - Continuous Culture: Theory and Applications (2000) Eds: A.B Ariff, M.Y. Hirzun, M. Rosfarizan, M.N. Kamal, and **A.R. Raha**.
6. Monograph – Strain Improvement. (2004) eds: A. B. Ariff, **Raha A.R.**, Rosfarizan M.
7. Laboratory Manual for Cell and Molecular Biology (2003- 2006) eds. **Raha A.R.**, Norihan M.S. and Parameswari
8. Laboratory Manual for Genetic Engineering (2003-2006) eds. **Raha A.R.** and Parameswari
9. Laboratory Manual for Advanced Techniques in Molecular Biology (2004) eds. **Raha Abdul Rahim** and Ho Chai Ling
10. Laboratory Manual for Introduction to Microbial Biotechnology (2007) ed. **Raha Abdul Rahim**
11. Proceedings Malaysian Society for Microbiology (2008) ed. **Raha Abdul Rahim et al.**
12. Proceedings Malaysian Society for Microbiology (2011) Vol I and Vol II ed. **Raha Abdul Rahim et al.**
13. **Raha A.R.**, Yusoff K., Foo H.L., Mariana, N.S., Varma N.R.S. and Hooi, W.Y. (2006). *Lactococcus lactis*: A Model Lactic Acid Bacteria for Expression and Delivery of Useful Proteins. *BioTech Communications 3*: 22 – 26.
14. **Raha A.R.**, K. Yusoff, H.L. Foo, Rosfarizan M., A. Ariff, Mariana N.S., Varma N.R.S., NorAzlina A. and Wan Siti Atikah W.O. (2006). Display of an Anchor Protein (NisP) on the Surface of *Lactococcus lactis*. *Bioscientist* vol. 4(1): 12-14.

15. Kit TriOmic – `Ekstrak DNA, RNA dan Protein serentak'. 30 March 2006. Utusan Malaysia (Biotek).
16. Lee Y.K., Shio, W., Su, J., Yan, W, Ganguly, B., Rahayu, E. .... **Raha A.R.**, Foo, H.L., Tan, J., Chen, M-J and Nittisinprasert, S. 2011. Lactic Acid Bacteria: Microbiological and Functional Aspects, (4<sup>th</sup> Edition). Eds. Lahtinen, S. et al. pp 713 – 756. CRC Press, Taylor and Francis Group Ltd, Milton Park, Oxford, OX1 4RN, UK. ISBN 978-1-43-983677-4.
17. Adelene Song Ai Lian, Lionel In Lian Aun, Foo Hooi Ling and **Raha Abdul Rahim**. Anti-allergic Properties of Fermented Food. In Health Benefits of Fermented Foods and Beverages. 2015 (pp. 515-532). Florida: CRC Press, Taylor and Francis Group.
18. Song A.A., Musliyana M. and **Raha A.R.** Minute Biocreatures. In Nature's Yield and Wonders of Arts (NYAWA) 14': MICROBE. Eds. Faridah Q.Z., Nasir B., Shureen F.A.K., Song A.A. and Raha A.R. Universiti Putra Malaysia Press, Serdang, Selangor, 2014.
19. Higher Education Blue Print 2015-2025 PPPM (PT) 2015. Co-author for Shift 2 (Talent Excellence) and Shift 7 (Innovation Ecosystem)
20. Rosfarizan, M., Zee-Wei, L., Raha A.R. and Ariff, A.B. 2014. Biotechnological Approach of Natural Biopolymer Synthesis for Biomedical and Industrial Applications. INTROPica Issue 8: 17-19. ISSN 1895-4951.
21. The Malaysian Code of Responsible Conduct – 2017 (ISBN 978-967-15258-0-7)

#### Genbank deposits

1. Co-author of a published sequence of VP3 gene from a locally isolated chicken anemia virus, deposited into Gene Bank account # AF030518 (1997).
2. *L. lactis* pAJ01 – replication gene sequence – A (2003)
3. *L. lactis* plasmid pAR141 full sequence – DQ288662 (2005)
4. *L. lactis* plasmid pAR141 RepA gene sequence – ABB89944 (2005)
5. *L. lactis* plasmid pAR141 RepB gene sequence – ABB89945 (2005)
6. Sequence of a cell wall binding protein of *Pediococcus acidilactis* UB6 GenBank (National Center for Biotechnology) Accession number GQ351558 (2009).
7. Yee,L.-N., Hassan, M.A., **Abdul Rahim, R.**, Sudesh,K., Chong,M.-L. and Phang,L.Y.Molecular characterization of intracellular depolymerase, PhaZ gene of Comamonas sp. EB172 – HM853676 (2010)
8. Shojaei Moghadam, M., Foo, H.L., Thean Chor, L. and **Abdul Rahim R.** 2009. Thirty intergenic and spacer sequences of *Lactobacillus plantarum* strains (publication) deposited (examples):
  - ACCESSION: GU322933<sup>[1]</sup>Shojaei Moghadam, M., Foo, H.L., Thean Chor, L. and Abdul Rahim, R. (2009). *Lactobacillus plantarum* strain UL4 23S-5S ribosomal RNA intergenic spacer, partial sequence.

- ACCESSION: GU322934<sup>[SEP]</sup>Shojaei Moghadam, M., Foo, H.L., Thean Chor, L. and Abdul Rahim, R. (2009). *Lactobacillus plantarum* strain TL1 23S-5S ribosomal RNA intergenic spacer, partial sequence.

- ACCESSION: GU322935<sup>[SEP]</sup>Shojaei Moghadam, M., Foo, H.L., Thean Chor, L. and Abdul Rahim, R. (2009). *Lactobacillus plantarum* strain RG14 23S-5S ribosomal RNA intergenic spacer, partial sequence.

9. Hui Foong Tai, Hooi Ling Foo, **Raha Abdul Rahim**, Teck Chewn Loh and Mohd Puad Abdullah. 2012. DNA sequence for plw loci of *L. plantarum* I-UL4. GU322921.
10. Hui Foong Tai, Hooi Ling Foo, **Raha Abdul Rahim**, Teck Chewn Loh and Mohd Puad Abdullah. 2012. DNA sequence for plnEF loci of *L. plantarum* I-UL4. GU138149
11. Sequence of a *Lactobacillus plantarum* strain pA18 plasmid, complete cds GenBank (National Center for Biotechnology) Acession no. JN601038 (2012).
12. Sequence of *Lactobacillus plantarum* strain pA18 plasmid, pR18 replication protein (repA) gene, complete GenBank (NCB) Accession no. JN601039 (2013).
13. Sequence of *Lactobacillus plantarum* strain Taj-Apis362 glutamate decarboxylase (gadB) gene, complete cds. GenBank (NCB) Accession no. KF770955.1 (2014)

NO	AWARDS AND FELLOWSHIPS
1.	Advanced Cambridge Leadership Program - Cambridge Judge Business School, Cambridge, UK, 2019 (Fellowship JPA).
2.	Senior management development program - Havard Business School, Perth, Australia, 2018 (Fellowship AKEPT).
3.	Fellowship to participate and as international advisor to the International Union of Microbiological Societies' Congress, Saporro, Japan - 2011
4.	Anugerah Perkhidmatan Cemerlang (Kategori Ketua Jabatan) UPM - 2009
5.	Anugerah Penyelidik Cemerlang, Institut Biosains UPM - 2007
<b>6. Research and Innovation Exhibition (PRPI - UPM):</b>	
<b>Gold:</b>	
"Novel feed supplement for aquaculture animals derived from the metabolites of probiotic strains of <i>Lactobacillus plantarum</i> I-UL4 at the Invention, Research and Innovation exhibition organized by Universiti Putra Malaysia (2010).	
"Novel Neutraceutical Metabolites Produced by Probiotic Strains of <i>Lactobacillus plantarum</i> Exert Selective Cytotoxic and Antiproliferative Effects on Human Cancer Cells" at the Invention, Research and Innovation exhibition organized by Universiti Putra Malaysia (2011).	
S.O. Sarah, M. Zamri-Saad, Z. Zunita and <b>A.R. Raha</b> . 'Towards a New Vaccine – Live attenuated <i>Pasteurella multocida</i> B:2'	
Foo Hooi Ling, Lim Yin Tze, Raha Abdul Rahim, Loh Teck Chwen, Mohd Hair Bejo, Gulam Rusul Rahmat Ali. 'Novel Probiotic	
<i>Lactobacillus</i> sp Isolated from Malaysian Fermented Food and Feed Supplement in Animal Industry	



<b>Silver:</b>	
Raha Abdul Rahim, Nur Adeela Yasid, Khatijah Yusoff and Shahrul Ezhar. `A Novel Approach Towards the Construction of A Recombinant Vaccine Against NDV`.	
Raha Abdul Rahim, Tan Boon Hooi and Foo Hooi Ling. `Exploration of a Recombinant Superoxide Dismutase, a Vital Biological Antioxidant Enzyme`.	
Foo Hooi Ling, Thung Tze Young, Ng Kok Yau, Raha Abdul Rahim and Hasanah Mohd. Ghazali. `The Fermentation Mechanism of Malaysian Fish Sauce`.	
Premalatha, P., Zulkifli H.S., M. Mahmood, Raha A.R., and H.M. Saud	
"Transformation of Wild-type Plant Growth-Promoting Rhizobacteria (PGPR) <i>Bacillus sphaericus</i> UPMB 10 with Chimeric Plasmid Containing Green Fluorescence Protein".	
Mariana, N.S., Nagi, AlHaj, Raha A.R., and Zamri, I. "Rapid and Simple Test for <i>E. coli</i> , <i>Salmonella spp.</i> , and <i>V. cholerae</i> Based Carbohydrate of Lipopolysaccharide".	
Che Man Y., Aida, A.A., Raha A.R., and S. Radu. "Polymerase Chain Reaction: Analysis of Raw Pork and Lard for Halal Authentication".	
<b>Bronze:</b>	
Ho Chai Ling, Phang Siew Moi, Raha Abdul Rahim, Teo Swee Sen, Teoh Seddon and Lee Weng Wah. `Transcriptomic Analyses of and Agar Producing Seaweed, <i>Gracilaria changii</i> `.	
Nadimpali, V., Raha A.R., K. Yusoff, H.L. Foo, Mariana N.S., Haryanti T., and Azlina A. "A Revolutionized Approach for Surface Display in <i>Lactococcus</i> : From Protein Display to Drug Delivery".	
"The Novel Feed Additives Produced by Beneficial Lactic Acid Bacteria, <i>Lactobacillus plantarum</i> I-UL4, Isolated from Fermented Tapioca ( <i>Manihot esculanta</i> )"	
<b>BioTech ASIA (2005). Gold medal</b> for the Project Entitled "The Novel Feed Additives Produced by Beneficial Lactic Acid Bacteria, <i>Lactobacillus plantarum</i> I-UL4, Isolated from Fermented Tapioca ( <i>Manihot esculanta</i> )"	
7.	<b>Anugerah Perkhidmatan Cemerlang (Award for Excellent Performance)</b> , Universiti Putra Malaysia (2005).
8.	<b>Japanese Society for the Promotion of Science(JSPS)</b> , 2004 Biotechnology Conference, Bali, Indonesia
9.	<b>Japanese Society for the Promotion of Science (JSPS)Grant</b> (2weeks– 2004). "Surface Display of Proteins on Lactic Acid Bacteria" at University of Osaka
10.	<b>Malaysian Science, Technology and Innovation Expo (2004). Bronze Medal</b> Raha A.R., and Yiap, B.C., "TriOMIC – DNA, RNA, Protein Extraction".
11.	<b>Research and Innovation Exhibition(PRPI-UPM)</b> , 2004 – 1 bronze
12.	<b>Anugerah Perkhidmatan Cemerlang (Award for Excellent Performance)</b> , Universiti Putra Malaysia (2004).
13.	<b>International Technology Exhibition(ITEK – Malaysia)</b> , 2003. <b>Silver Medal</b> . Mariana N.S., Neela, V. Rosita, R., and <b>Raha A.R.</b> – "SASSAR Kit: Multiplex PCR for the Detection of MRSA" .
14.	<b>Anugerah Pengajar Terbaik (Award for Best Lecturer at the Faculty)</b> , Faculty of Food Science and Biotechnology (2003).
15.	<b>1st Prize Undergraduate Molecular Biology Project</b> from MSMBB (2003). "Cloning and Expression of SOD from <i>L. lactis</i> M14 in <i>E. coli</i> ", Tan Boon Hooi, Chong Pei Pei and <b>Raha Abdul Rahim</b> .
16.	<b>Anugerah Perkhidmatan Cemerlang (Award for Excellent Performance)</b> , Faculty of Food Science and Biotechnology (2002).
17.	<b>Research and Innovation Exhibition (PRPI - UPM)</b> , 2002 – 2 Silvers and 1 bronze.
<b>Silver</b>	
	Hirzun Mohd. Yusof, Ng Chyan Leong, Julia Ibrahim, <b>Raha Abdul Rahim</b> and Ho Chai Ling. "Production of Recombinant Human Protein in <i>E.coli</i> ".

	Foo Hooi Ling, Lee Yock Ann, Son Radu, <b>Raha Abdul Rahim</b> and Gulam Rusul Rahmat Ali. "The Study of a Novel Natural Biopreservative, Nisin, Produced by Lactic Acid Bacteria Isolated from Malaysian Ikan Rebus".
<b>Bronze</b>	
	Hirzun Mohd Yusof, Tan Li Lung, <b>Raha Abdul Rahim</b> and Arbakariya Ariff. "Characterization of Locally Isolated Yeast Strain Towards Industrial Application".
18.	<b>2<sup>nd</sup> Prize from Malaysian Society for Molecular Biology and Biotechnology (MSMBB) for a Paper Presentation</b> (2000). "Cloning and Expression of the Fusion (F) and Haemagglutinin-Neuraminidase (HN) Genes from Newcastle Disease virus (NDV) Strain AF2240 in a Mammalian Expression System", by Loke CF, <b>Raha A.R.</b> , Omar, AR. and Yusoff K.
19.	<b>1<sup>st</sup> Prize for Best Presentation at 4<sup>th</sup> UNESCO National Workshop on Promotion of Microbiology in Malaysia</b> (2000) by Micky Vincent, Son Radu, <b>Raha Abdul Rahim</b> , Patrick Guda, Gulam Rusul
20.	<b>Japan International Cooperation Agency (JICA) Grant</b> (2 months, 1999) – "Enzyme Assays for Methionine $\gamma$ -Lyase and Degenerated PCR Cloning", at Okayama University, Japan
21.	<b>1<sup>st</sup> Prize for Best Undergraduate Student Research Competition for Thesis</b> from the Faculty of Food Science and Biotechnology (1998). "Effects of NH <sub>3</sub> and NH <sub>4</sub> against HeLa and 3T3 Cells", by Chang Li Yen
22.	<b>Malaysian Science and Technology HRD Taveling Grant</b> (6 weeks, 1997) – "Utilization of <i>Lactococcal</i> Vectors for Cloning and Expression of Viral Genes", at Biologisch Centrum, University of Gronigen, Holland.
23.	<b>Malaysian Government Scholarship - JPA</b> (3 years, 1991-1995) "Characterization of Heat Shock Protein Genes in Cot Death Babies", at University of Strathclyde, Glasgow, Scotland
24.	<b>Golden Key (American Chapter)</b> – Undergraduate Program, USA
24.	<b>Young Lecturer's Scheme/Malaysian Government Scholarship</b> - BSc and MS Degree (Microbiology).

#### MEETINGS/SEMINARS/EXHIBITIONS/WORKSHOP - AS FACILITATOR

Year	Symposium/Seminar/Conference	Type of involvement	Place
1997	Master Class in New Technologies for the Measurement of Biodiversity	Organizing Committee	UPM
	The 3 <sup>rd</sup> Symposium on Trends in Biotechnology and the 7 <sup>th</sup> Meeting of MSMBB	Organizing Committee	UPM
	Seminar-Workshop on Molecular Tools for Biotechnology	Lecturer/Organizing Committee	UPM
1998	Seminar-Workshop on Molecular Tools for Biotechnology	Organizing Committee	UPM

Year	Symposium/Seminar/Conference	Type of involvement	Place
1999	Workshop Animal Biotechnology- DNA Markers	Committee Member	UPM
2000	Tools for Molecular Biology, "A Training Course in PCR"	Lecturer/Committee	UPM
	Workshop-Seminar on "The Application of DNA Technology on Crime Investigations"	Chairman-Lecturer	UPM
	Fermentation Technology Workshop-Seminar, "Continuous Culture, Theories and Application"	Lecturer/Organizing Committee	UPM
2001	24 <sup>th</sup> National Microbiology Symposium	Organizing Committee	Pahang
	Seminar and Workshop on GMO Detection	Organizing Committee	UPM
2003	26 <sup>th</sup> National Microbiology Symposium/ Asia Pacific Microbiology Conference	Organizing Committee	Kuala Lumpur
	Protein Purification Workshop	Chairman and Lecturer	FTU, IBS
2004	Protein purification Workshop	Organizing committee	FTU, IBS
	27 <sup>th</sup> National Microbiology Symposium	Organizing Committee	Langkawi
2005	28 <sup>th</sup> National Microbiology Symposium	Organizing Committee	Penang
	UPM related national and international exhibitions	Chairman	
2006	Malaysian Society for Microbiology Symposium	Chairman of the Organising committee	Malacca
2007	Malaysian Society for Microbiology Symposium	Advisor	Kuala Terengganu
2008	Malaysian Society for Microbiology Symposium	Chairman of the Scientific committee	Kuantan

Year	Symposium/Seminar/Conference	Type of involvement	Place
2009	International Cconference of the Malaysian Society for Microbiology	Scientific Committee	Penang
	The Fifth Asian Conference of Lactic Acid Bacteria: Microbes in Disease Prevention & Treatment	Advisory committee	Singapore
2010	International symposium for Lactic acid Malaysia	Chairman of the Organising committee	Putrajaya
2011	International Conference for Structural Biology and Functional Genomics	Chairman of the Organising committee	Putrajaya
	International Congress for Malaysian Society for Microbiology	Chairman of the Scientific Committee	Penang
	International Congress of the International Union for Microbiology Societies	International Advisory Board Member	Sapporo, Japan
2012	AFSLAB international symposium	International committee member	Wuxi, China
	MSM symposium	Scientific committee	Kota Kinabalu, Sabah
2013	AFSLAB international congress	International committee member	New Delhi, India
	ICMSM	Scientific committee	Langkawi
2014	AFSLAB international congress	International committee	Phillipines

**MEETINGS/SEMINARS/EXHIBITIONS/WORKSHOP - AS PRESENTER**

<b>Year</b>	<b>Symposium/Seminar/Conference</b>	<b>Type of involvement</b>	<b>Place</b>
1996	8 <sup>th</sup> National Biotechnology Seminar	Oral presenter	Johor Bahru
1997	9 <sup>th</sup> National Biotechnology Seminar	Oral presenter	Penang
1998	21 <sup>st</sup> National Microbiology Conference	Poster presenter	Selangor
	10 <sup>th</sup> National Biotechnology Seminar	Poster presenter	SIRIM
1999	22 <sup>nd</sup> National Microbiology Conference	Poster presenter	Penang
	11 <sup>th</sup> National Biotechnology Seminar	Poster presenter	Malacca
2000	The 10 <sup>th</sup> Scientific Meeting of MSMBB	Keynote Speaker	Selangor
	Proceedings of the 2 <sup>nd</sup> International Conference on Advances in Strategic Technologies,(ICAST)	Oral presenter	Putrajaya
	The 12 <sup>th</sup> National Biotechnology Seminar	Oral Presenter	Perak
	Conference for Lecturers of Health Inspectors, Kementerian Kesihatan Malaysia	Invited Speaker	Terengganu
	23 <sup>rd</sup> National Microbiology Conference	Poster presenter	Langkawi

Year	Symposium/Seminar/Conference	Type of involvement	Place
2002	The 12 <sup>th</sup> Scientific Meeting of MSMBB	Poster presenter	Selangor
	Media workshop: Dissecting the Myths on Frankenfoods	Invited Speaker	UPM
	CID seminar "Towards an Effective and Efficient Investigation"	Invited Speaker	Terengganu
	Muzakarah pakar GM Food – Satu perspektif dalam Islam	Invited speaker	IKIM
	Bengkel Pemantauan Projek Bioteknologi RM7 dan RM8	Paper presenter	Johor Bahru
	25 <sup>th</sup> National Microbiology Society Conference	Poster presenter	Kelantan
2003	The 13 <sup>th</sup> Scientific Meeting of MSMBB	Poster presenter	Selangor
	Thailand-Malaysia Biotechnology Working Group Meeting/BioThailand	Oral presenter	Thailand
	Bengkel Pemantauan Projek Bioteknologi RM8	Paper presenter	Sarawak
	3 <sup>rd</sup> Federation of Asia Pacific Microbiology Societies Symposium	Poster presenter	Kuala Lumpur
2004	The 14 <sup>th</sup> Scientific Meeting of MSMBB	Poster presenter	Melaka
	Malaysian Society for Microbiology Symposium	EXCO meeting, poster presenter	Langkawi
	Muzakarah Makanan Halal, JAKIM	Invited Speaker	Genting
2005	The 14 <sup>th</sup> Scientific Meeting of MSMBB	EXCO meeting, poster presenter	Kuala Lumpur Holland
	Proceeding of 4th NIZO Conference. Papendal, Netherland. 15-17 Jun.	Poster presenter	Kuala Lumpur
	International Scientific Congress	Oral presenter	Penang
	Malaysian Society for Microbiology Symposium	EXCO meeting, poster presenter	

Year	Symposium/Seminar/Conference	Type of involvement	Place
2006	R&D way forward - Department of Computer Science	Invited speaker	Port Dickson
2008	Malaysian Society for Molecular Biology and Biotechnology	Plenary speaker	Hyatt Saujana Subang
2009	Malaysian Genetics Congress	Invited speaker	Genting
	UK-Malaysia Symposium 'Current Strategies in Antimicrobial Therapies'	Invited speaker	UM
	Scientific writing skills – UTM	Invited speaker	Port Dickson
	PTK UPM – Research Philosophy and Ethics	Invited speaker	UPM
	International Symposium for Lactic Acid Bacteria	Exco meeting, workshop, poster	Singapore
2010	International Symposium for Lactic Acid Bacteria	EXCO meeting, Poster	Malaysia
2011	International Vaccine Congress	Oral presenter	Beijing, China.
	Structural Biology and Functional Genomics	Poster presenter	Putrajaya
	Seminar Kebangsaan Kesihatan dan Keselamatan	Invited speaker	UPM
	International Union for Microbiology Societies	Country rep. meeting, poster presentation	Sapporo, Japan
2012	Culture Isolation and Management	Keynote speaker	IBS, UPM
	International Symposium for Lactic Acid Bacteria	EXCO meeting, poster presentation	Wuxi, China
	19 <sup>th</sup> Scientific Meeting of the Malaysian Society for Molecular Biology and Biotechnology 31Oct – 1 <sup>st</sup> Nov 2012. University of Malaya, Kuala Lumpur –. Abstract : Lactic acid bacteria: Old microbes with new missions	Invited speaker	Kuala Lumpur

Year	Symposium/Seminar/Conference	Type of involvement	Place
2013	AKEPT workshop 'Demand driven proposal writing'	Chairman	Sepang
	Research Week UM conference	Invited speaker	Kuala Lumpur New Delhi
	International congress of AFSLAB	Invited speaker	UPM
	Culture Collection workshop and seminar	Invited speaker	
2014	Seminar Ilmu – JAKIM	Invited speaker	Putrajaya
	Women in Science – Gender equality in STEM research	Invited Speaker	Univ of Nottingham
	Taiwan-Malaysia Higher Education Forum	Invited Speaker	Taiwan
	Top Research Scientist ASM program	Speaker	Kuala Lumpur
2015	AFSLAB Congress	Invited speaker	Bangkok
	R&D month seminar UIAM	Invited speaker	Selangor
	EU-Member of Commerce and Industry Research and Innovation Seminar	Speaker	Kuala Lumpur
	9 <sup>th</sup> international postgrad forum on health system and policy	Invited speaker	Kuala Lumpur
	ICMSM	Chairman for Oral, poster	Penang
	R&D seminar UTM	Speaker	Johor
2016	R&D seminar – IOHUN	Invited Speaker	Putrajaya
	R&D seminar UUM	Invited Speaker	Kedah
	Academia-Industry Research Conference – Funding research on a changing landscape	Invited Speaker	Kuala Lumpur
	International AFSLAB conference	Invited speaker	Taiwan
2017	R&D seminar UIA Kuantan	Invited speaker	Kuantan
	R&D seminar UiTM	Invited speaker	Shah Alam
	Grant opportunities at KPT - MIDA	Invited speaker	KL



Year	Symposium/Seminar/Conference	Type of involvement	Place
2018	WiEF Social enterprise Forum, UIAM	Invited Speaker	ISTAC, KL
	1 <sup>st</sup> French-Malaysian Convention on Higher Education and Research	Invited Speaker	KL
	19 <sup>th</sup> International Conference for University Administrators, UiTM	Invited speaker	Shah Alam
	34 <sup>th</sup> Symposium of the Malaysian Society for Microbiology	Keynote Speaker	Penang
	Young Scientist Network – AKEPT International Research conference, Sepang	Invited speaker	Sepang
	USIM Research Forum, USIM	Invited speaker	Nilai
2019	Going Global 2019: The conference for leaders of International Education, 13-15 May, Berlin, Germany (fully sponsored by British Council)	Panel speaker	Berlin, Germany

**MEETINGS/SEMINARS/EXHIBITIONS/WORKSHOP - AS PARTICIPANT**

Year	Symposium/Seminar/Conference	Type of involvement	Place
1995	Workshop on Liposome –Mediated Gene Transfer	Participant	UM, Selangor
1999	Japanese National Molecular Biology and Chemistry Conference	Participant	Yokohama, Japan
2000	Asean Regional Workshop on Biosafety of Genetically Modified Organisms	Participant	KL
2002	Kuliah Aplikasi ON-Line	Participant	UPM, MTDC Kuala Lumpur
	Molecular Biology and Biochemistry Conference	Participant	PWTC
	BioMalaysia 2002	Participant	
2003	Science and Technology Conference	Participant	Selangor

Year	Symposium/Seminar/Conference	Type of involvement	Place
	BioThailand Biotechnology Conference	Participant	Thailand
	ISO 9000 Courses FSMB	Participant	FSMB, UPM
2004	Seminar on “Annealing Control Primer (ACP) Technology – New Era of PCR Technology”	Participant	MARDI
	Seminar on “Solving Problems in Recombinant Protein Expression”	Participant	Shah Alam
	Bengkel Polisi Teknologi Kebangsaan	Participant	Putrajaya
	Kursus ISO 9001:2000 Audit Dalaman	Participant	UPM
2005	BIO2005 Philadelphia	Participant	USA
	National Virology Colloquium	Participant	Putra Jaya
	Biotech Asia	Participant	Putra Jaya
	Seminar on Thinking	Participant	KL
	Leadership in Crisis Management	Participant	KL
			Bangi
2006	Learning Outcome 1	Participant	UPM
	Learning Outcome 2	Participant	UPM
	Internal Auditor	Participant	UPM
2008	Health care and Biotechnology Symposium	Participant	KL
	Animal Feedstuffs in Malaysia	Participant	Bangi
2009	Biosafety Workshop -	Participant	NRE
2010	Biosafety Workshop – Transgenic Microbe	Participant	KL
2011	Bengkel Percambahan Fikiran Penyediaan dan penetapan Biological Weapons Selected Agents List Rang Undang-Undang Konvensyen Senjata Biologi – Kementerian Pertahanan Malaysia	Participant	Putrajaya
2015	Global CEO conference	Participant	Kuching

Year	Symposium/Seminar/Conference	Type of involvement	Place
2016	Research Management Agency workshops – EPU (series 2-5)	Participant	Putrajaya
2018	9 <sup>th</sup> Asean Senior Management Development Program – Harvard Business School (KPM)	Participant	Bangi Selangor
	Research Integrity APEC – Australia (sponsored by APEC)	Participant	Tokyo
	Senior management Development Program – Harvard Business School (Sponsored by AKEPT)	Participant	Perth
2019	Advanced Cambridge Leadership Program (Sponsored by JPA)	Participant	United Kingdom

#### EXTRA CURRICULAR ACTIVITIES

- Advisor to Undergraduate Students' Society – Tennis (1996), Inter Department Table-tennis (1997), Longest Sandwich Project (1998).
- Advisor for setting up Teaching Laboratory for Molecular Biology and Biochemical Techniques Course in Universiti Islam Antarabangsa (2003).
- Advisor to the Debate Team of Tunku Kurshiah College (Finals 2004) on the Topic – Genetically Modified Food, Friend of Foe.
- Member of Parents-Teachers Association (Sekolah Kebangsaan Bandar Kinrara) – 2009-2013.
- Advisor to the Tunku Kurshiah College Science Project team (2010-2011) – won at National and International (USA) levels
- Member - National STEM movement
- KanWALK Selangor
- Member – War on Cancer Malaysia

#### CONSULTANCY

- Consultant Scientist to **Malaysian Health Department** for Identification of Food Pathogens (Molecular Biology/Microbiology) (2002-03).
- Panel member for evaluation of IGS Grant Applications under **Ministry of Science and Environment** (2001/02).
- Consultant for **JAKIM (Malaysian Religious Council)** i. Halal Food Processing using Microbes (2003), ii. Genetically modified microbes (2006)
- Consultant for **Polis DiRaja Malaysia (Malaysian Royal Police)** on “Aid of DNA in Police Investigation” (2001-2002).
- Consultant to **Vivantis Technologies Sdn. Bhd.** – Enzyme Discovery from Malaysian Bioresources (2002).
- Consultant to **Intermed** - Probiotic for Human (2004).

- Research consultant to **Sabah Fisheries Department** – Project State Government/MOSTI (2006 - 2007).
- Consultant to **AgriHiTech** – Culture Collection and Strain Improvement (2005 - 2006)
- Consultant to **EcocillusSdn Bhd** – Biomolecular Extraction Techniques and Services (2006-2007)
- Consultant to **VRI** – Isolation and detection of lactic acid bacteria (2010)
- Consultant to **KFI** – Enzymatic bioredding of kenaf (2010-2011).
- Board Member USIM (2015-2017)
- Board Member (exchange member) USM (2015-2016)
- Board member Crop of the Future Sdn Bhd (2016)
- Board member USM (2017 – current)

#### OTHER PROFESSIONAL ACTIVITIES

No	ACTIVITY	YEAR
1.	Reviewer for Articles in Journals <ul style="list-style-type: none"> <li>• Journal Bioscience (USM),</li> <li>• Journal Teknologi (UTM),</li> <li>• Asia-Pacific Journal of Molecular Biology and Biotechnology</li> <li>• MARDI Journal of Tropical Agriculture and Food Science</li> <li>• The Medical Science Monitor</li> <li>• Genetics Vaccines and Therapy</li> <li>• Molecular Biotechnology</li> <li>• Current Microbiology</li> <li>• Journal of Biotechnology</li> </ul>	
2.	Panel judge for Research Exhibitions/Poster/Oral at National Symposiums <ul style="list-style-type: none"> <li>• “Persidangan Biokimia dan Biologi Molekul Malaysia” Poster Competition</li> <li>• “Pameran Rekacipta dan Penyelidikan” in the Area of Biotechnology, UKM</li> <li>• Malaysian Society of Microbiology Symposium</li> </ul>	2003 2005 2003, 2004, 2009
3.	Panel of interviewer for “PASCA Siswazah Pegawai dalam Perkhidmatan” – MOSTE	2004
4.	Panel of interviewer for National Science Fellowship Scholarship (NSF) – MOSTE. MOSTI	2003, 2004, 2009, 2010, 2011, 2012, 2013
5.	Panel judge for “Pameran Rekacipta dan Penyelidikan” at Faculty and Institute Level, UPM.	Since 2004
6.	Life member – Malaysian Society for Microbiology	Since 2001

No	ACTIVITY	YEAR
7.	Life member – Malaysian Society for Molecular Biology and Biotechnology	Since 1996
8.	Interviewed by TV3, RTM, NTV7, Utusan on the areas of Molecular Biology, Genetically Modified Organisms and Biotechnology, Higher education Blue-print Chapters 2&7	
9.	External reviewer for IRPA research proposals – MARDI	2005, 2006
10.	External reviewer for e-science research proposals – UiTM, UKM	2006, 2007
11.	Academic Reviewer for Assoc. Professor Applications UKM, UMT, UPM, UTM, UNIMAS, UM	2006, 2009, 2010, 2011, 2012, 2013, 2015, 2016
12.	Academic Reviewer for Professorial Applications UKM, UTM, UMT, UPM	2006, 2009, 2011, 2012, 2013, 2015, 2016
13.	Reviewer for academic programs – IMU, UTM, UKM, UiTM	2010, 2011, 2012
14.	Panel for MQA – UTAR, IMU, UM programs (BS Biotechnology, MS, PhD)	2009-2011
15.	Evaluation committee for young scientist awards – Merck young scientists	2011-2013
16.	Evaluation committee for research awards – Mahathir Science Award	2012-2013
17.	Evaluation committee for young researcher awards – L'oreal Award	2012
18.	Co-author (Chapters 2 and 7)– Higher education Blue-print 2015-2025	2014-2015
19.	International organizing committee member to AFSLAB conference (China, India, Bangkok)	2011, 2013, 2015
20.	Technical committee – setting up of Research Management Agency	2016
21.	Malaysian Code of Responsible Conduct in Research (MCRCR) working group 2016	2016
22.	Science Outlook 2017, ASM - working group	2016-2017

**This lecturer's area of expertise is microbial genetics and her areas of research interest include plasmid biology, development of recombinant bacterial vaccine and cell factory using lactic acid bacteria, as well as molecular diagnostics for halal food research.**

**Since she became a Director at the Department of Higher Education, Ministry of Education, Malaysia in 2014, she has committed her time to administrative work especially to bid and manage the million dollars worth of grants received by MOE for research and development, along with the thousands of proposals sent by the IHL researchers applying for the grants. The tasks also allows her to share her experience and expertise with researchers and research administrators at the universities, as well as with national and international funding agencies. She finds the job challenging and stimulating.**