



# WAN IRYANI WAN ISMAIL

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## QUALIFICATIONS

- Doctor of Philosophy (Chemical Pathology – Cell Signaling & Pharmaceutical Biotechnology), University of Cape Town, South Africa
- Master of Science (Microbiology – Medical Microbiology & Phytochemistry), University Sains Malaysia (USM), Malaysia
- Bachelor of Science (Biology – Microbiology), University Sains Malaysia (USM), Malaysia

## FIELD OF RESEARCH

- Cell Signaling
- Pharmaceutical Biotechnology
- Nanobiotechnology
- Biochemistry
- Product Development
- Quality, Authenticity, Toxicity and Effectiveness of Products
- Traditional and Complementary Medicine
- Natural Products (Honey & other bee products, marine organisms, herbs)

## RESEARCH INTEREST

Wan Iryani Wan Ismail is a versatile, holistic, dynamic and passionate lecturer with a vision to help society through her research. Her expertise is in cell signaling and pharmaceutical biotechnology of several natural products such as bee products (honey, bee bread and propolis), marine organism and herbs. Among the prominent findings are methods in identifying the authenticity and quality status of honey samples, medicinal effects of natural honey, harmful effects of fake honey and medical applications of marine organisms. Using the cell signaling and pharmaceutical biotechnology approaches, she tries to understand several mechanisms of diseases and treatments such as obesity, diabetes, cancers, brain disorders, wound healing and microbial infections using *in-vitro*, *in-vivo* and *in-silico* models. Currently,

she integrates nanobiotechnology using green technology in her research in discovering the most effective treatments on the abovementioned diseases.

## EXPERT LINKAGES

- [https://www.researchgate.net/profile/Wan\\_Iryani\\_Wan\\_Ismail2](https://www.researchgate.net/profile/Wan_Iryani_Wan_Ismail2)
- <https://www.scopus.com/authid/detail.uri?authorid=36684084400>
- <https://app.webofknowledge.com/author/record/1071797>
- <https://scholar.google.com.my/citations?user=nvibxeyaaaaj&hl=en>

## PROFFESIONAL MEMBERSHIP

- Professional Biologist (Cell Signaling & Pharmaceutical Biotechnology), Royal Society of Biology, United Kingdom
- Malaysian Society of Biochemistry and Molecular Biology (MSBMB)

## GRANTS

Project : Energy Bar Stingless Bee Based Product (Bee Ready)  
Position : Project leader  
Grant : Commercialization Initiative Grant (CIF), UMT  
Name  
Status : Active (2021-2022)  
Amount : RM25,000

Project : Encapsulated Malaysian Honey using Alginate Pectin for Convenience Consumption  
Position : Project leader  
Grant : Prototype Research Grant Scheme (PRGS)  
Name  
Status : Active (2020-2022)  
Amount : RM161,000.00

Project : FREMEEBEE: French Malaysian Initiative for Intelligent Beehive Health Monitoring  
Position : Project leader  
Grant : Kementerian Pengajian Tinggi (KPT) dengan kerjasama Ministry of Europe and Foreign Affairs (MEAE) dan Ministry of National Education, Higher Education and Research (MESRI) Perancis: Hubert Curien Partnership – Hibiscus (PHC-Hibiscus) di bawah program Malaysia Partnership and Alliances in Research (MyPAIR)  
Name  
Status : Active (2020-2022)

Amount : RM66,000.00

Project : Fellowship for Women in Science (FWIS): L'Oréal-UNESCO: Can Honey Consumption Control Obesity? A New Notion in Understanding the Mechanism of Action

Position : Project leader

Grant Name : L'Oréal-UNESCO

Status : Active (2020-2021)

Amount : RM30,000.00

Project : Pelan Pembangunan Industri Kelulut Negara "*National Stingless Bee Industry Development Plan*"

Position : Project leader

Grant Name : Ministry of Agriculture and Agro-based Industry Malaysia

Status : Completed (2018-2019)

Amount : RM 86,500.00

Project : Branding of Kelulut Honey and Development of Healthy Food based on Honey and Bee Products (K-RF-175)

Position : Project leader

Grant Name : Malaysian Agricultural Research and Development Institute (MARDI)

Status : Completed (2018-2020)

Amount : RM80,000.00

Project : Elucidation of the Neuro-Regenerative Signaling Pathway in *Diopatra clapedii*

Position : Project leader

Grant Name : Fundamental Research Grant Scheme (FRGS)

Status : Completed (2016-2019)

Amount : RM 84,800.00

Project : Standard Development and Rebranding of Malaysia's Kelulut Honey (*Trigona*)

Position : Project leader

Grant Name : Malaysian Agricultural Research and Development Institute (MARDI)

Status : Completed (2016-2017)

Amount : RM 80,000.00

Project : Physiochemical and Toxicant Analyses of Several Types of Malaysian Honeys from Bees Species of *Apis* and *Trigona*

Position : Project leader

Grant Name : Research Acculturation Collaborative Effort (RACE)

Status : Completed (2015-2017)

Amount : RM 25,000.00

Project : Health and Safety: Nutraceutical Survival Kit for Flood Management

Position : Project leader

Grant Name : Prototype Research Grant Scheme (PRGS), Flood Disaster Management (KPM)

Status : Completed (2015)

Amount : RM 120,000.00

Project : Managing Metabolic Disorder with Emphasis on Obesity and Its Associated Diseases Using Several Insulin Sensitivity Enhancers

Position : Project leader

Grant Name : Research Entity Initiative (REI): Clinical Biopharmaceutics Research Group

Status : Completed (2013-2015)

Amount : RM 100,000.00

Project : Apoptosis Pathway and Its Regulatory Proteins of Several Types of Honey on Human Breast Cancer (MCF-7)

Position : Project leader

Grant Name : Fundamental Research Grant Scheme (FRGS)

Status : Completed (2011-2013)

Amount : RM 187,000.00

Project : Activation of Insulin Signaling Pathway by Endophytic Pyrones

Position : Project leader

Grant Name : Exploratory Research Grant Scheme (ERGS)

Status : Completed (2011-2013)

Amount : RM 132,350.00

Project : Excellent fund: Apoptosis Pathway of Gelam Honey on Human Breast Cancer (MCF-7)  
Position : Project leader  
Grant Name : Research Management Institute, UiTM  
Status : Completed (2010-2011)  
Amount : RM 7,000.00

Project : Selective Effect of *Labisia pumila* Extract on Estrogen Target Tissues  
Position : Project leader  
Grant Name : Private Grant: Bioalpha SDN BHD  
Status : Completed (2013-2014)  
Amount : RM 25,000.00

Project : Computational Approach to Study Bioactive Compounds of Endophytic Pyrones as Potential Ligands for Caspase Enzymes  
Position : Project leader  
Grant Name : Cumulative Impact Factor Initiative (CIFI)  
Status : Completed (2013-2015)  
Amount : RM 60,000.00

Project : Metabolomic Analysis of Secreted Proteins from Cell Culture 3T3-L1 Murine Adipocyte Supernatants Treated with Antiretroviral Protease Inhibitors  
Position : Project leader  
Grant Name : National Health Laboratory Services (NHLS), South Africa  
Status : Completed (2009-2010)  
Amount : RM 30,000.00

Project : Mechanism of Lipodystrophy induced by antiretroviral drugs: investigation in cultured adipocytes  
Position : Project leader  
Grant Name : National Health Laboratory Services (NHLS), South Africa  
Status : Completed (2008-2009)  
Amount : RM 30,000.00

Project : Equilibrium Modelling on Hybrid Supervised Machine Learning – Multicriteria Decision Making for Sustainability Assessment of Palm Oil Mills  
Position : Co-researcher  
Grant Name : Fundamental Research Grant Scheme (FRGS)  
Status : Active (2021-2023)  
Amount : RM80,490.00

Project : Supply Base Risk Assessment  
Position : Co-researcher  
Grant Name : MIMOS  
Status : Active (2021-2022)  
Amount : RM70,000.00

Project : *In Vitro* Comparison of Propolis Cytotoxicity between Human Gingival Fibroblast and Oral Cancer Cell lines  
Position : Co-researcher  
Grant Name : UITM  
Status : Active (2021-2023)  
Amount : RM20,000.00

Project : Protective Effect of *Moringa concanensis* Nimmo. bark Extract and Its Constituents Against UV Induced Damage in Human Dermal Fibroblasts (HDF) Cells  
Position : Co-researcher  
Grant Name : Talent & Publication Enhancement Grant (TAPE), UMT  
Status : Active (2020-2022)  
Amount : RM20,000.00

Project : Rapid Method Development for the Quantification of Antioxidant Compounds in Honey Based on ATR-FTIR Chemometrics and <sup>1</sup>H NMR Spectroscopy  
Position : Co-researcher  
Grant Name : Talent & Publication Enhancement Grant (TAPE), UMT

Status	: Active (2020-2022)
Amount	: RM20,000.00
Project	: In Silico Analysis and Validation of Molecular Network Underlying Nervous System Regeneration in <i>Diopatra clapedii</i>
Position	: Co-researcher
Grant Name	: Talent & Publication Enhancement Grant (TAPE), UMT
Status	: Active (2020-2022)
Amount	: RM20,000.00
Project	: Deciphering the Chemical Constituents in Marine Polychaete and its potential as Anti-Inflammatory Agents
Position	: Co-researcher
Grant Name	: Talent & Publication Enhancement Grant (TAPE), UMT
Status	: Active (2020-2022)
Amount	: RM20,000.00
Project	: Optimization and Characterizations of Gold Nanoparticles Utilizing Marine Worm, <i>Marphysa moribidii</i> (Annelida: Polychaeta) Extract as Reducing Agent for Bioimaging Marker Application
Position	: Co-researcher
Grant Name	: Fundamental Research Grant Scheme (FRGS)
Status	: Active (2020-2023)
Amount	: RM105,00.00
Project	: Empowering Marginalized Communities' Socio-Economy Through Sustainable Cultivation of Melon Manis Terengganu
Position	: Co-researcher
Grant Name	: Unit Peneraju Agenda Bumiputera (Teraju)
Status	: Active (2020-2025)
Amount	: RM2,384,000.00
Project	: Preparation and Characterization of Gellan G/Collagen Hydrogel Films Containing Gatifloxacin as Dressing Materials
Position	: Co-researcher

Grant Name	: Fundamental Research Grant Scheme (FRGS)
Status	: Active (2018)
Amount	: RM78,200.00
Project	: Biosynthesis of Gold Nanoparticles (AuNPs) by <i>Marphys moribidii</i> (Polychaetes) and Its Characterizations
Position	: Co-researcher
Grant Name	: Talent & Publication Enhancement Grant (TAPE), UMT
Status	: Completed (2018)
Amount	: RM20,000.00
Project	: Penghasilan Madu Premium Berasaskan Inovasi Mustafa Hive & HILDA System " <i>Premium Honey Production Based on the Mustafa Hive &amp; HILDA System Innovation</i> "
Position	: Co-researcher
Grant Name	: Ministry of Higher Education
Status	: Completed (2018)
Amount	: RM585,500.00
Project	: Pemeraksanaan Industri Produk Hasil Kelulut " <i>The Empowerment of Industry Product of Kelulut Production</i> "
Position	: Co-researcher
Grant Name	: Fraunhoufer Grant, SIRIM
Status	: Completed (2017)
Amount	: RM2,000,000.00
Project	: Implementation of Quality Control in the Development of Bee Products in Humaira Honey SDN BHD
Position	: Co-researcher
Grant Name	: Knowledge Transfer Grant (KTP) Ministry of Higher Education
Status	: Completed (2015-2017)
Amount	: RM 165,000.00
Project	: Unraveling Insulin Receptor and Its Regulators in Activating the Insulin Signaling Pathway in Induced-Insulin Resistance Model Treated with Stevioside

Position	: Co-researcher
Grant Name	: Research Acculturation Grant Scheme (RAGS)
Status	: Completed (2014-2016)
Amount	: RM 80,000.00
Project	: Immunomodulatory Activity of <i>Gynura procumbens</i> on Neutrophil Immune Mechanisms
Position	: Co-researcher
Grant Name	: Research Acculturation Grant Scheme (RAGS)
Status	: Completed (2014-2016)
Amount	: RM 80,000.00
Project	: Unraveling the Protection Role of Nicotinamide Supplementation in Induced Gestational Diabetic Rats & the Subsequent Immune Modulation via Molecular Mechanisms
Position	: Co-researcher
Grant Name	: Fundamental Research Grant Scheme (FRGS)
Status	: Completed (2014-2016)
Amount	: RM 96,000.00
Project	: Potential Source of Chlorogenic Acid as Weight Loss Stimulant from Food Manufacturing Waste
Position	: Co-researcher
Grant Name	: Research Acculturation Grant Scheme (RAGS)
Status	: Completed (2014-2016)
Amount	: RM 80,000.00
Project	: Metabolome Response to Stevioside in the Insulin Resistance Cell Lines
Position	: Co-researcher
Grant Name	: Research Acculturation Grant Scheme (RAGS)
Status	: Completed (2014-2016)
Amount	: RM 80,000.00
Project	: Rapid Masspropagation of <i>Tinospora crispa</i> Using Plant Tissue Culture Technique for Brotocafe Manufacturing Sdn. Bhd.
Position	: Co-researcher

Grant Name : Ministry of Higher Education

Status : Completed (2014-2016)

Amount : RM 155,800.00

Project : Anti-Stress-Depression Behavioral of Acacia Honey from Metabolomic Perspective

Position : Co-researcher

Grant Name : Research Acculturation Grant Scheme (RAGS)

Status : Completed (2013-2015)

Amount : RM 80,000.00

Project : Toxicity of *Curcuma longa* L. Supercritical Fluid Oleoresin

Position : Co-researcher

Grant Name : Fundamental Research Grant Scheme (FRGS)

Status : Completed (2013-2015)

Amount : RM 84,000.00

Project : Banana Soft Pith (*Musa sp.*) Resensitization Effect Towards Insulin-Resistance In-vitro Model

Position : Co-researcher

Grant Name : Research Acculturation Grant Scheme (RAGS)

Status : Completed (2012-2014)

Amount : RM 65,000.00

Project : Empirical Evolution of Malay Cupping Therapy: Effects on Inflammatory Mediators and Modulators of Pain

Position : Co-researcher

Grant Name : Research Acculturation Grant Scheme (RAGS)

Status : Completed (2012-2014)

Amount : RM 57,000.00

Project : Membrane Protein Folding: Folding of Envelope Glycoproteins from Flaviviridae Viruses

Position : Co-researcher

Grant Name : Excellence Fund, UiTM

Status : Completed (2012-2014)  
Amount : RM 60,000.00

Project : Banana Soft Pith Insulin Sensitivity Enhancement Theory  
Position : Co-researcher  
Grant Name : Research Incentive Fund (RIF), UiTM  
Status : Completed (2012-2014)  
Amount : RM 32,000.00

Project : Effect of Several Honey on Adipogenesis and Lipid Metabolism of 3T3-L1 Murine Adipocytes  
Position : Co-researcher  
Grant Name : Research Incentive Fund (RIF), UiTM  
Status : Completed (2012-2014)  
Amount : RM 32,000.00

Project : Identification of Compounds with Anti-proliferative Activity Against Cancer of Cervix from *Clinacanthus Nutans* and its Mechanism of Action  
Position : Co-researcher  
Grant Name : Research Acculturation Grant Scheme (RAGS)  
Status : Completed (2012-2014)  
Amount : RM 64,000.00

Project : Regulation of Adipogenesis and Lipid Metabolism of 3T3-L1 Murine Adipocytes by Polyphenolic Compounds of Gelam (*Melaleuca sp.*) Honey  
Position : Co-researcher  
Grant Name : Research Incentive Fund (RIF)  
Status : Completed (2012-2014)  
Amount : RM32,000.00

Project : Molecular Modeling and Docking Studies of P-Glycoprotein (ABCB1/MDR1)  
Position : Co-researcher  
Grant Name : Exploratory Research Grant Scheme (ERGS)  
Status : Completed (2012-2015)

Amount : RM 114,000.00

Project : Computational Approach to Study Bioactive Compounds of Endophytic Pyrones as Potential Ligands for Caspase Enzymes

Position : Co-researcher

Grant : Fundamental Research Grant Scheme (FRGS)  
Name

Status : Completed (2012-2015)

Amount : RM 80,350.00

Project : Molecular Basis of Stevioside Enhances Insulin Sensitivity in Insulin Resistance Cell Culture Model

Position : Co-researcher

Grant : Fundamental Research Grant Scheme (FRGS)  
Name

Status : Completed (2011-2013)

Amount : RM 180,000.00

Project : Molecular Mechanism of Insulin Signaling Pathway Activity of *Tinospora crispa* in Selected Cancer Cell Lines

Position : Co-researcher

Grant : Excellent Fund, UiTM  
Name

Status : Completed (2011-2013)

Amount : RM 8,000.00

## AWARDS

- Best Award Pecipta 2022  
Product's Name: Bee Ready: Nutritious Stingless Energy Bar
- Gold Medal. Pecipta 2022  
Product's Name: Bee Ready: Nutritious Stingless Energy Bar
- Asia's Raising Scientist 2022
- Tokoh Siti Hajar Al-Qibtiyah – Inovatif
- Anugerah Tokoh Wanita Kelantan Sempena Sambutan Hari Siti Khadijah 2021
- Silver Medal Award. Research and Innovation Week (MPI). 2021. Online.  
Product's Name: Bee Ready
- Bronze Medal Award. Research and Innovation Week (MPI). 2021. Online.  
Product's Name: Mykelulut: Rapid Method for the Authentication and Quality Assessment Of stingless bee honey
- Top 100 Asian Scientist 2020

- The Best Presenter at 13th Seminar on Science & Technology (S&T 2020): Virtual Conference. 6th – 7th October 2020. Universiti Malaysia Sabah, Malaysia
- Silver Medal, Research and Innovation Week (MPI) 2020, TATI, Terengganu – Product's Name: pH-Dependent MarAuNo
- Silver Medal, Research and Innovation Week (MPI) 2020, TATI, Terengganu – Product's Name: Mariposa Silver Nano: Potential Green Material for Food Packaging
- Bronze Medal, Research and Innovation Week (MPI) 2020, TATI, Terengganu – Rapid method for the authentication and quality assessment of honey using ATR-FTIR and 1H-NMR metabolomics
- Anugerah Inovasi Penyelidikan, Faculty of Science and Marine Environment, UMT, 2020
- ASEAN Science Leadership Fellowship Programme 2019
- Fellowship for Women in Science (FWIS): L'Oréal-UNESCO 2019
- Special Award, Seoul International Innovation Fair (SIFF) 2019 – Product's Name: MAurNO: From Worm to New Functional Nanogold
- Gold Medal, Seoul International Innovation Fair (SIFF) 2019 – Product's Name: MAurNO: From Worm to New Functional Nanogold
- Silver Medal PECIPTA 2019 – Product's Name: Dio-Ointment - The Miracle of Malaysian Fish Bait, *Diopatra clapedii* on Wound Healing
- Silver Medal PECIPTA 2019 – Product's Name: MAurNO: From Worm to New Functional Nanogold
- Silver Medal Hari Inovasi MARDI 2019 – Product's Name: World's First Stingless Bee Honey Specification – Malaysian Standard MS2683
- Gold Medal International Festival of Innovation on Green Technology 2019 (IFINOG) & IDEAS – Product's Name: Marine Nanoparticle Reducing Agent from Malaysian Shore (MARNO): AgNPs Synthesized from Local Polychaete
- Gold Medal International Festival of Innovation on Green Technology 2019 (IFINOG) & IDEAS – Product's Name: MardiiO: Bio-Ointment from Marine Polychaete, *Marphysa moribidii* for Wound Healing
- Gold Medal International Festival of Innovation on Green Technology 2019 (IFINOG) & IDEAS – Product's Name: Dio-Ointment: The Miracle of Malaysian Fish Bait, *Diopatra clapedii* Extract on Wound Healing
- Best Poster Presentation, Seminar BIOSSES 2019
- Silver Medal, ITEX2019 – Product's Name: Dio-Ointment: The Miracle of Malaysian Fish Bait as Aesthetic Skin Solutions
- Silver Medal, ITEX2019 – Product's Name: MAurNo: From Worm to New Functional Nanogold
- Gold Medal Research and Innovation Week (MPI) 2019, PSKT, Terengganu – Product's Name: Dio-Nanogold: From Worm to New Functional Nanogold
- Silver Medal Research and Innovation Week (MPI) 2019, PSKT, Terengganu – Product's Name: Dio-Ointment: The Miracle of Malaysian Fish Bait, *Diopatra clapedii* Extract on Wound Healing

- Silver Medal Research and Innovation Week (MPI) 2019, PSKT, Terengganu – Product's Name: MAurNO: Your New Eco-Friendly Paint Colorant
- Silver Medal Research and Innovation Week (MPI) 2018, PSKT, Terengganu – Product's Name: Fast-MARNO
- Bronze Medal Research and Innovation Week (MPI) 2018, PSKT, Terengganu – Product's Name: MyWonderCream
- Bronze Medal Research and Innovation Week (MPI) 2018, PSKT, Terengganu – Product's Name: New Brain Model
- Best Poster in 29th Intervarsity Biochemistry Seminar 2018
- Bronze Medal Seoul International Innovation Fair (SIFF) 2017 – Product's Name: MARNO
- Gold Medal PECIPTA 2017 – Product's Name: MARNO
- Bioeconomy Innovation of the Year 2017, BioMalaysia – Product's Name: MARNO
- Gold Medal Most Innovative Product, BioMalaysia – Product's Name: MARNO
- Silver Medal Most Commercial Ready Product, BioMalaysia – Product's Name: MARNO
- Gold Medal Research and Innovation Week (MPI) 2017, PSKT, Terengganu – Product's Name: MARNO
- Travel Grant from 4th Seoul International Congress on Endocrinology and Metabolism (SICEM) 2016. (RM3557.60)
- Anugerah Ahli Akademik Harapan Universiti Teknologi MARA 2014
- Anugerah Perkhidmatan Cemerlang Fakulti Farmasi 2013, Kampus Puncak Alam, UiTM
- Special Grant Award 'Research Entity Initiative' (REI) 2014 (RM100,000.00)
- Bronze Award at Competition and Exhibition. Invention, Innovation and Design Exposition (IIDEX) 2014
- Travel Grant from 2014 Seoul International Congress of Endocrinology and Metabolism
- InCoB 2014 Travel Grant (USD200)
- Bronze Award at BioMalaysia & Bioeconomy Asia Pacific 2013 Conference & Exhibition, Persada Johor International Convention Centre – Product's Name: GaLlacthoLaxNDss – Novel osmotic laxative derived from Petai Belalang and 'Gelam' honey
- Best Poster Presentation at 38th Malaysian Society Biochemistry and Molecular Biology (MSBMB) annual conference 2013
- Gold Medal at 24th International Invention Innovation & Technology Exhibition (ITEX) 2013, Kuala Lumpur, Malaysia – Product's Name: Reb A Tea Tarik
- Gold Award and Diamond Award Invention, Innovation and Design Expo (IIDEX) 2013 – Product's Name: Gallactholaxndss – Novel osmotic laxative derived from 'Petai Belalang' and 'Gelam' honey
- Young Researcher in Conjunction with Nobelist Mindset with Nobel Laureate Winner 2013
- Silver medal Innovation, Invention and Design Competition 2011 D'puncak (IID 2011) – Product's Name: An Alternative Drink for Diabetic Patient with Nutritional Blended of *Tinospora crispa* and Gelam Honey)

- Best Poster Award in Chemical Pathology by Adcock Ingram in Pathvine Congress 2010, Cape Town, South Africa
- 2008 Whitehead Scientific Travel Award (among 8 postgraduate students across South Africa)
- University of Cape Town Travel Award 2008
- Young Lecturer Scheme (2006-2010), Universiti Teknologi MARA (UiTM)/Ministry of Higher Education Malaysia
- Gold Award for the Best Presenter in the 4th National Science Fellowship, NSF Annual Seminar 2004, Ministry of Science, Technology & Innovation, Malaysia
- National Science Fellowship (NSF) 2002, Ministry of Science and Technology (MOSTI), Malaysia

## PUBLICATIONS

### Journal Article

1. Muhammad Faiz Zulkifli, Mohd Naim Fadhli Mohd Radzi, Jonel P. Saludes, Doralyn S. Dalisay, **Wan Iryani Wan Ismail**. Potential of natural honey in obesity control and weight management. *Journal of Evidence-Based Integrative Medicine*. 27. 1-20.
2. Mohd Azam, N. S., Che Soh, N. A., Rapi, H. S., Ismail. N., Jusoh, A. Z., Haron, M. N., Ali, A. M., Maulidiani, **Wan Ismail W. I.** (2022). *In vivo* study of subacute oral toxicity of kelulut honey. *International Food Research Journal*. 29(5).
3. Mohammad Asyraf Adhwa Masimen, Noor Aniza Harun, M. Maulidiani and Wan Iryani Wan Ismail. Overcoming Methicillin-Resistance *Staphylococcus aureus* (MRSA) Using Antimicrobial Peptides-Silver Nanoparticles. *Antibiotics*. 11(951). 1-16.
4. Umi Sharifah Nadhirah Ibrahim, Mohammad Asyraf Adhwa Masimen, Noor Aniza Harun, Izwandy Idris, **Wan Iryani Wan Ismail**. (2022). Efficiency of Silver Nanoparticles (AgNPs) Synthesis Based on Sample Preparation of *Marphyssa Moribidii*. *Journal of Sustainability Science and Management*. 17(4). 84-98.
5. Rameshkumar Santhanam, Thiruvethan Karunakaran, Kandhasamy Sowndhararajan, Muhammad Faiz Zulkifli, Govindan Kothandaraman Mouriya, Aravindhan Veerasamy, and Wan Iryani Wan Ismail. (2022). Photoprotective potential, cytotoxicity and UPLC-QTOF/MS analysis on bioactive solvent fractions of *Moringa concanensis* Nimmo. *Evidence-Based Complementary and Alternative Medicine*. (2022), 3781189, 1-10.
6. Nur Faezah Ismail, Muhammad Faiz Zulkifli and **Wan Iryani Wan Ismail**. (2022). Therapeutic Potentials of Bee Products from Different Species of Bees for the Healthcare and Treatment of COVID-19. *IIUM Medical Journal Malaysia*. 21(1): 19-29.
7. Muhammad Zulhelmi Muktar, Muhammad Ameerul Amin Bakar, Khairul Anuar Mat Amin, Laili Che Rose, **Wan Iryani Wan Ismail**, Mohd Hasmizam Razali, Saiful Izwan Abd Razak and Marc in het Panhuis. (2021). Gellan Gum Hydrogels Filled Edible Oil Microemulsion for Biomedical Materials: Phase Diagram, Mechanical Behavior, and *In Vivo* Studies. *Polymers*. 13(3281): 1-19.
8. Nur Faezah Ismail, M. Maulidiani, Syafizal Omar, Muhammad Faiz Zulkifli, Mohd Naim Fadhli Mohd Radzi, Norra Ismail, Arif Zaidi Jusoh, Suri Roowi, Wooi Meng Yew, R. Rudiyanto, **Wan Iryani Wan Ismail**. Classification of stingless bee honey based on

- species, processing methods and geographical origins using physicochemical and ATR-FTIR chemometric approach. *Journal of Food Composition and Analysis*. 104(2021): 1-12.
9. Nur Syakirah Rabiha Rosman, Mohammad Asyraf Adhwa Masimen, Noor Aniza Harun, Izwandy Idris and **Wan Iryani Wan Ismail**. (2021). Biogenic Silver Nanoparticles (AgNPs) from *Marphysa moribidii* Extract: Optimization of Synthesis Parameters. *International Journal of Technology*. 12(3): 167-179.
  10. Piong Chong Huai, Angeline Ung Ee Pei, Mohammad Asyraf Adhwa Masimen, **Wan Iryani Wan Ismail**, Izwandy Idris, Noor Aniza Harun. (2021). Biosynthesis of Gold Nanoparticles (AuNPs) By *Diopatra clapedii* (Polychaete) and Its Antibacterial Activity. *Sains Malaysiana*.
  11. Nur Syakirah Rabiha Rosman, Mohammad Asyraf Adhwa Masimen, Noor Aniza Harun, Izwandy Idris and **Wan Iryani Wan Ismail**. (2021). Biogenic Silver Nanoparticles (AgNPs) from *Marphysa moribidii* Extract: Optimization of Synthesis Parameters. *International Journal of Technology*. <https://doi.org/10.1016/j.heliyon.2020.e05462>
  12. Nurul Shahirah Mohd Azam, Nor 'Awatif Che Soh, Hannah Syahirah Rapi, Norra Ismail, Arif Zaidi Jusoh, Mohd Nizam Haron, Abdul Manaf Ali, **Wan Iryani Wan Ismail**. (2021). Effects of high dose of kelulut honey for short-term oral consumption. *ASM Science Journal*.
  13. Mohd Ulul Ilmie Ahmad Nazri, Mohd Hafizi Mahmud, Basri Saidi, Mohd Noor Mat Isa, Zolkapli Ehsak, Othman Ross, Izwandy Idris, **Wan Iryani Wan Ismail**. (2021). Cellular and molecular profiles of anterior nervous system regeneration in *Diopatra clapedii* Grube, 1878 (Annelida, Polychaeta). *Heliyon*. 7(2021). 1-11.
  14. Nur Syakirah Rabiha Rosman, Noor Aniza Harun, Izwandy Idris and **Wan Iryani Wan Ismail**. (2021). Nanobiotechnology: Nature Inspired Silver Nanoparticles (AgNPs) Towards Green Synthesis. *Energy and Environment*. 0(0) 1-24. <https://doi.org/10.1177/0958305X21989883>
  15. **Wan Iryani Wan Ismail**, Muhammad Faiz Zulkifli, Nurul Shahirah Mohd Azam, Suhana Samat, Francis Kanyan Enchang, Abdullah Abd Razak, Fuzina Nor Hussein. (2020). Effects of Pure and Fake Honey on Health from an Obesity Perspective. *Malays. Appl. Biol.* (2020) 49(4): 1-5.
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## Proceeding Article

1. **Wan Iryani W. Ismail**, Teh Pei Chuan and Muhammad Faiz Zulkifli. Effects of Natural and Adulterated Honey on The Lipid Accumulation in Human Breast Adenocarcinoma (MCF-7) Cell Lines. 2020. Proceedings of the 13th Seminar on Science & Technology, 6 – 7 October 2020, Faculty of Science & Natural Resources, Universiti Malaysia Sabah. 29-32. e-ISSN 2735 – 2226. <https://doi.org/10.1016/j.fct.2010.12.010>
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### Conference Publication (Abstract)

1. **Wan Iryani Wan Ismail.** Honenomic Solution in Facing Epidemic and Economic Challenges. 3<sup>rd</sup> Seminar BIOSSES 2021. 25<sup>th</sup> – 26<sup>th</sup> January 2021. Online.
2. **Wan Iryani Wan Ismail,** Advanced Wound Care Management at Bio-Collagen Technologies Sdn. Bhd. Karnival Inovasi@UMT 2020. 29<sup>th</sup> November 2020. Universiti Malaysia Terengganu.
3. **W.I.W. Ismail,** D. Arumugam, M.U.I.A. Nazri and I. Idris. Nervous System Regeneration of *Diopatra clapedii* Grube, 1878. 2nd Tropical Ocean and Marine Sciences International Symposium. 23<sup>rd</sup> – 24<sup>th</sup> November 2020. Universiti Malaysia Terengganu.
4. **Ismail, W. I. W.,** Muhammad Ashraf Mohd Salleh and Zolkapli Eshak. Potential of Honey in Combating COVID-19 Infection. 19<sup>th</sup> November 2020. Viral Infections MSBMB-Taylor's Virtual Focused Meeting 2020.
5. **Wan Iryani W. Ismail,** Pei C. Teh and Muhammad F. Zulkifli. Effects of Natural and Adulterated Honey on the Lipid Accumulation in Human Breast Adenocarcinoma (MCF-7) Cell Lines. 13<sup>th</sup> Seminar on Science & Technology (S&T 2020): Virtual Conference. 6<sup>th</sup> – 7<sup>th</sup> October 2020. Universiti Malaysia Sabah, Malaysia.
6. **Ismail WIW,** Samat S, Hussien FN. Sweet Food for Sweet Life. ASEAN Emerging Researchers Conference 2019. 9<sup>th</sup>-10<sup>th</sup> December 2019. Sunway University, Selangor.
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18. **Wan Iryani Wan Ismail**, Nabilatul Hani Mohd Radzman, Mohd Nazri Abu, Muhammad Ashraf Mohd Salleh and Suhana Samat. Improve Cell Sensitivity Towards Insulin with Food: A Strategy in Metabolic Disorder Management. International Cell Signalling Conference (ICSC) 2017. 25<sup>th</sup>26<sup>th</sup> July 2017. Primula Beach Hotel, Terengganu.
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## Other Outputs

### Book

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#### Chapter in Book

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#### Article in Magazine

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6. **Wan Iryani Wan Ismail**. (2016). *Fakta Sebenar Vaksin?* *Dewan Kosmik*. October 2016.
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## Policy/Technical Paper

1. Pelan Pembangunan Industri Kelulut Negara 2020-2030
2. Pelan Pembangunan Industri Kelulut Negara 2020-2030 (Infografik)
3. Pembangunan Blueprint Industri Kelulut Negara
4. MS2683:2017 Malaysia Standard: Kelulut (Stingless bee) Honey – Specification
5. Uterotrophic Assay and Blood Analysis in Ovariectomized Rats Fed with The End product of *Labisia pumila*
6. Efficacy and Selectivity of *Labisia pumila* (Crude Extract, End-Product and Fractions) Using *In-Vitro* Models

## Research Manual

1. Manual of Evaluation of *Marphysa moribidii* Extracts on Wound Healing: *In vivo* and histological Approach
2. Manual of Characterisation and Regeneration of *Diopatra claparedii* Nervous System Research Project
3. Manual of Survival and Regenerative Experiment of Polychaete *Diopatra claparedii* at Different Salinity and Temperature
4. Manual of the Effects of *Diopatra claparedii* Grube, 1878 Extract on Chang Liver and Human Primary Glioblastoma (U-87) Cell Lines

## SUPERVISION

### Doctor of Philosophy Degree

Thesis Title : Mechanism of Lipid Metabolism Regulation in the Insulin Resistance-Induced 3T3-L1 Adipocytes (Fat Cells) Treated with Several Types of Honey in Malaysia

Student Name : Muhammad Faiz Zulkifli

Role : Main Supervisor

Status : Ongoing

Thesis Title : Investigation of the Effects of Raspberry Pi4 Microcomputer Application in the Bee Hive Health Monitoring and Honey Production

Student Name : Mohanasundarapandian Sivakumar

Role : Main Supervisor

Status : Ongoing

Thesis Title : Mechanism of Action by Silver Nanoparticles (AgNPs) Synthesised from *Marphysa moribidii* Aqueous Extract against Selected Bacteria and Its Cytotoxicity Assessments

Student Name : Muhammad Asyraf Adhwa Masimen

Role : Main Supervisor

Status : Ongoing

Thesis Title : Anterior Nervous System Characterisation of *Diopatra clapedii* with Cellular and Molecular Aspects of Its Early Nervous System Regeneration

Student Name : Mohd Ulul Ilmie Bin Ahmad Nazri

Role : Main Supervisor

Status : Completed (2020)

  

Thesis Title : The Enhancement of Insulin Sensitivity by Stevioside from *Stevia rebaudiana* Bertoni in *In-Vitro* and *In-Silico* Models

Student Name : Nabilatul Hani Mohd Radzman

Role : Main Supervisor

Status : Completed (2018)

  

Thesis Title : Nutrient Sensing of Stevioside in Insulin Resistance Cell Culture Model

Student Name : Norhisham Haron

Role : Co-Supervisor

Status : Ongoing

  

Thesis Title : Effects of Gelam Honey, Fluorouracil and Their Synergistic Activity on Human Adenocarcinoma Colorectal Cancer HT-29 cells

Student Name : Syed Ahmad Tajudin Tuan Johari

Role : Co-Supervisor

Status : Completed (2020)

  

Thesis Title : Evaluation Effect of Pineapple Honey in Reducing Excess Weight Gain and Controlling Obesity *In Vitro* And *In Vivo* Model

Student Name : Suhana Samat

Role : Co-Supervisor

Status : Completed (2020)

  

Thesis Title : Molecular Mechanism of Apoptotic Pathway Induced by Acacia Honey on Human Breast Adenocarcinoma Cell Lines (MCF-7)

Student Name : Muhammad Ashraf Mohd. Salleh

Role : Co-Supervisor

Status : Completed (2020)

  

Thesis Title : The Effect of *Tinospora crispa* Crude Methanolic Extract on Hepatoma G2 Cell Lines and Wistar Rats Insulin Resistance Model

Student Name : Mohd Nazri Abu

Role : Co-Supervisor  
Status : Completed (2019)

#### Master Degree

Thesis Title : Elucidation of Antibacterial Activity of *Teucrium polium* Powder against *Bacillus Subtilis* and *Escherichia Coli*  
Student Name : Omar Jamal Mohammad Alabdallah  
Role : Main Supervisor  
Status : Ongoing

Thesis Title : *In Vivo* Study of *Diopatra clapedii* Aqueous Extract on Wound Healing, Evaluation of Its Antibacterial Activity and Identification of Bioactive Compounds  
Student Name : Nor 'Awatif Che Soh  
Role : Main Supervisor  
Status : Completed (2020)

Thesis Title : Evaluation of Wound Healing Property and Antibacterial Activity of *Marphysa moribidii* Aqueous and Formulations  
Student Name : Hannah Syahirah Mat Rapi  
Role : Main Supervisor  
Status : Completed (2020)

Thesis Title : An Acute and Subacute Oral Toxicity Study of Kelulut (*Heterotrigona itama*) Honey on Sprague-Dawley Rats  
Student Name : Nurul Shahirah Mohd Azam  
Role : Main Supervisor  
Status : Completed (2020)

Thesis Title : The Optimisation and Characterisation of Silver Nanoparticle (AgNPs) Synthesis from Local Marine Polychaete (*Marphysa moribidii*), and Evaluation of Its Antimicrobial Properties  
Student Name : Nur Syakirah Rabiha Rosman  
Role : Main Supervisor  
Status : Completed (2020)

Thesis Title : Effect of *Labisia pumila* Aqueous Extract on The Estrogenic Activity and Metabolic Disease Markers in Bilateral Ovariectomized Rats  
Student Name : Siti Nuraida Kamaludin

Role : Co-Supervisor  
Status : Completed (2020)

Thesis Title : Elucidation of Apoptotic Pathway on Human Breast Adenocarcinoma Cell Lines Mediated by *Labisia pumila* var. *alata* extract

Student Name : Muhammad Faiz Zulkifli

Role : Co-Supervisor

Status : Completed (2020)

Thesis Title : Extraction and Acute Toxicity Evaluation of *Curcuma Longa* L. Extract Obtained using Supercritical Carbon Dioxide Method *Curcuma Longa* L. Extraction through Carbon Dioxide Method and Its Toxicity Evaluation

Student Name : Siti Hafsa Mohd Shah

Role : Co-Supervisor

Status : Completed (2019)

Thesis Title : Anti-Stress Depression Effects of Acacia Honey on Chronic Unpredictable Mild Stress Rats

Student Name : Qamarul Hafiz Zainol Abidin

Role : Co-Supervisor

Status : Completed (2018)

Thesis Title : Antiproliferative Effect of *Cassia Auriculata* (Caesalpiniaceae) Flowers

Student Name : Samara Yahya Kraidi

Role : Co-Supervisor

Status : Completed (2014)

## COURSE TAUGHT

- BIO4102/3 Cell Signaling Undergraduates
- BIO3100/3 Cell Biology and Molecular Undergraduate
- BIO3802/3 Scientific Writing in Biology Undergraduate
- BIO4102/3 Cell Signaling Undergraduate
- BIO3802/3 Scientific Writing in Biology Undergraduate
- BIO4102/3 Cell Signaling Undergraduate
- BIO3801/3 Research Methodology in Biology Undergraduate
- BIO3801/3 Research Methodology in Biology Undergraduate
- BIO3101/4 Biochemistry Undergraduate
- BIO3101/4 Biochemistry Undergraduate
- BIO3101/4 Biochemistry Undergraduate

- BIO3100/4 Molecular and Cell Biology Undergraduate
- PHC450/3 Pharmaceutical Immunology Undergraduate
- PHC454/4 Pharmaceutical Microbiology Undergraduate
- PHC652/2 Traditional & Complementary Medicine Undergraduate
- PHC450/3 Pharmaceutical Immunology Undergraduate
- PHC454/4 Pharmaceutical Microbiology Undergraduate
- PHC429/4 Pharmaceutical Biochemistry Undergraduate
- PHC450/3 Pharmaceutical Immunology Undergraduate
- PHC454/4 Pharmaceutical Microbiology Undergraduate
- PHC429/4 Pharmaceutical Biochemistry Undergraduate
- PHC652/2 Traditional & Complementary Medicine Undergraduate
- PHC429/4 Pharmaceutical Biochemistry Undergraduate
- PHR555/3 Research I Undergraduate
- PHR450/3 Pharmaceutical Immunology Undergraduate
- BIO3101 Biochemistry Undergraduate
- BIO3101 Biochemistry Undergraduate
- BIO3101 Biochemistry Undergraduate
- PHC450 Pharmaceutical Immunology Undergraduate
- PHC504 Pharmaceutical Biotechnology Undergraduate
- PHC454 Pharmaceutical Microbiology Undergraduate
- PHC429 Pharmaceutical Biochemistry Undergraduate
- PHC425 Biostatistics and Calculus Undergraduate
- PHC450 Pharmaceutical Immunology Undergraduate
- PHC504 Pharmaceutical Biotechnology Undergraduate
- PHC454 Pharmaceutical Microbiology Undergraduate
- PHC429 Pharmaceutical Biochemistry Undergraduate
- PHC425 Biostatistics and Calculus Undergraduate
- PHC450 Pharmaceutical Immunology Undergraduate
- PHC454 Pharmaceutical Microbiology Undergraduate
- PHC402 Human Anatomy & Physiology Undergraduate
- PHC429 Pharmaceutical Biochemistry Undergraduate
- PHC425 Biostatistics and Calculus Undergraduate
- PHC450 Pharmaceutical Immunology Undergraduate
- PHC454 Pharmaceutical Microbiology Undergraduate
- PHC402 Human Anatomy & Physiology Undergraduate
- PHC504 Pharmaceutical Biotechnology Undergraduate
- PHC429 Pharmaceutical Biochemistry Undergraduate
- PHC429 Pharmaceutical Biochemistry Undergraduate
- PHR527 Toxicology Undergraduate
- PHR473 Pathology Undergraduate
- PHR450 Pharmaceutical Immunology Undergraduate
- PHR455 Pharmaceutical Microbiology Undergraduate

[LINKS](#)

- SCOPUS (36684084400): <https://www.scopus.com/authid/detail.uri?authorid=36684084400>
- WoS (D-1197-2018): <https://app.webofknowledge.com/author/record/1071797>
- Researchgate: [https://www.researchgate.net/profile/Wan\\_Iryani\\_Wan\\_Ismail2](https://www.researchgate.net/profile/Wan_Iryani_Wan_Ismail2)
- Academia.edu: Wan Iryani Wan Ismail
- LinkedIn: Wan Iryani Wan Ismail
- ORCID: 0000-0001-8069-2278
- Google Scholar <https://scholar.google.com.my/citations?user=NVibXeYAAAAJ&hl=en>
- Facebook: Wan Iryani Wan Ismail
- Instragram: Wan Iryani Wan Ismail

## OTHERS

- Deputy Director, Postgraduate Management Centre, UMT, 2022 - current
- Chairman, Working Group Specification of Kelulut (Stingless Bee) Honey, Department of Standard, Malaysia 2021 – current
- Head of Research Domain, Universiti Malaysia Terengganu, 2020 – current
- Member of ISO Global, 2020 – current
- Committee, Working Group Specification of Honey Bee, Department of Standard, Malaysia, 2020 – current
- National Grant Panel 2019 – current, Ministry of Higher Education, Malaysia
- Member of ASEAN Science Leadership Fellowship Programme 2019
- Deputy Chairman, Working Group Specification of Kelulut (Stingless Bee) Honey, Department of Standard, Malaysia 2016 – 2020
- 5 patents, 10 copyrights, 1 trademark and 1 commercialized research-product