

CURRICULUM VITAE



A. BUTIR-BUTIR PERIBADI *(Personal Details)*

Nama Penuh <i>(Full Name)</i>	Mohammad Noor Amal Azmai	Gelaran <i>(Title)</i> : Assoc. Prof. Dr.
No. MyKad / No. Pasport <i>(Mykad No. / Passport No.)</i> 850212095031	Warganegara <i>(Citizenship)</i> Malaysian	Bangsa <i>(Race)</i> Malay
Jawatan <i>(Designation)</i> Lecturer		Tarikh Lahir <i>(Date of Birth)</i> 12 February 1985

Alamat Semasa <i>(Current Address)</i>	Jabatan/Fakulti <i>(Department/Faculty)</i>	E-mel <i>(E-mail Address)</i>
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B. KELAYAKAN AKADEMIK *(Academic Qualification)*

Nama Sijil / Kelayakan <i>(Certificate / Qualification obtained)</i>	Nama Sekolah Institusi <i>(Name of School / Institution)</i>	Tahun <i>(Year obtained)</i>	Bidang pengkhusususan <i>(Area of Specialization)</i>
PhD	Universiti Putra Malaysia	2012	Epidemiology
BSc	Universiti Malaysia Terengganu	2007	Agrotechnology (Aquaculture)
Pre University	Perlis Matriculation College	2004	Life Science
SPM	Malay College Kuala Kangsar	2002	Science

C. KEMAHIRAN BAHASA *(Language Proficiency)*

Bahasa / Language	Lemah <i>Poor (1)</i>	Sederhana <i>Moderate (2)</i>	Baik <i>Good (3)</i>	Amat Baik <i>Very good (4)</i>	Cemerlang <i>Excellent (5)</i>
English			/		
Bahasa Melayu				/	

D. PENGALAMAN SAINTIFIK DAN PENGKHUSUSAN*(Scientific experience and Specialisation)*

<i>Organization</i>	<i>Position</i>	<i>Start Date</i>	<i>End Date</i>	<i>Expertise</i>
Associate for Academy of Sciences Malaysia (ASM), Malaysia	Associate	2021	2023	Fish disease, ecology and conservation
Young Scientists Network – Academy of Sciences Malaysia (YSN – ASM), Malaysia	Member	2021	-	Fish disease, ecology and conservation
Institute of Bioscience, Universiti Putra Malaysia	Associate Researcher	2015	-	Fish health, Aquaculture, Epidemiology
Malaysian Fisheries Society	Vice President	2021	-	Academician
Malaysian Fisheries Society	Council Member	2016	2020	Academician
Fellow of Malaysian Association of Veterinary Pathology	Young Expert Reference	2019	-	Fish health, Aquaculture
Department of Veterinary Microbiology and Pathology, Faculty of Veterinary Medicine, UPM	Post-Doctoral	2011	2012	Fish health, Aquaculture

E. PEKERJAAN (Employment)

<i>Majikan / Employer</i>	<i>Jawatan / Designation</i>	<i>Jabatan / Department</i>	<i>Tarikh lantikan / Start Date</i>	<i>Tarikh tamat / Date Ended</i>
Universiti Putra Malaysia	Assoc. Prof. Dr.	Biology	Nov 2018	-
Universiti Putra Malaysia	Senior Lecturer	Biology	June 2012	Oct 2018
Universiti Putra Malaysia	Post Doctoral Researcher	Vet. Pathology and Microbiology	Dec 2011	June 2012
Universiti Putra Malaysia	Research Assistant	Vet. Pathology and Microbiology	Jan 2008	Jun 2008

F. ANUGERAH DAN HADIAH (Honours and Awards)

<i>Name of awards</i>	<i>Title</i>	<i>Award Authority</i>	<i>Award Type</i>	<i>Year</i>
<i>Scientific Award</i>	Best Invention Award - ViVac UPM: Oral fish vaccine against vibriosis	International Research Invention, Innovation and Exhibition (I-RIE 2021)	Best Invention Award	2021
	Gold Award - ViVac UPM: Oral fish vaccine against vibriosis	International Research Invention, Innovation and Exhibition (I-RIE 2021)	Gold Award	2021
	Winner - Young Researcher Award (Science and Technology Category) for 2019	Universiti Putra Malaysia	Universiti Putra Malaysia	2020
	FAO expert group to conduct the risk assessment of the Group B Streptococcus (GBS) / Streptococcus agalactiae clonal complex (CC) 283	The Food and Agriculture Organization of the United Nations (FAO) Regional Office for Asia and the Pacific (RAP)	Expert reference	2020
	Next Generation Sequencing Workshop at WorldFish, Penang	WorldFish, GeneSEQ Sdn Bhd, The University of Queensland and Wilder Lab	Sponsored by WorldFish	2020

	Represent Malaysian Researcher for “Southeast Asian Group B <i>Streptococcus</i> – Creating a network to address the regional threat to public health and aquaculture (SEA-BeaSt)” – Bangkok	Scottish Funding Council - Global Challenges Research Fund	International Travel Grant	2019
	Winner - Recipient of Outstanding Young ASEAN-FEN Scientists Award 2018	ASEAN – Fisheries Education Network (FEN)	ASEAN-FEN Young Scientist Award	2018
	Represent Malaysian Researcher for “Southeast Asian Group B <i>Streptococcus</i> – Creating a network to address the regional threat to public health and aquaculture (SEA-BeaSt)” – Singapore Genome Institute, Singapore	Scottish Funding Council - Global Challenges Research Fund	International Travel Grant	2018
	Shaqinah N.N., Amal M.N.A., Jumria S., Syuhada R., Ismail A. and Zamri-Saad M. Pathological comparison between <i>Vibrio harveyi</i> and <i>V. alginolyticus</i> infections in Javanese medaka (<i>Oryzias javanicus</i>) model.	Malaysian Association of Veterinary Pathology	Best poster award and certificate	2017
	Aisyhah, M.A.S., Amal, M.N.A., Zamri-Saad, M., Siti-Zahrah, A. and Shaqinah, N.N. <i>Streptococcus agalactiae</i> isolates from cultured fishes in Malaysia manifesting low resistance pattern towards selected antibiotics	Wiley Online Library	Selected for Virtual Issue on Streptococcosis for Journal of Fish Diseases	2015
	Directory of Malaysian Fish Diseases Specialist Group 2014	Department of Fisheries Malaysia	Expert reference	2014
<i>Innovation Awards</i>	This invention relates to the field of fish vaccination with emphasis on all marine fishes that are or may be susceptible to vibriosis, and more specifically to vaccinate such fishes with a newly developed feed-based killed vaccine. Certificate of Filing; Application no: PI2021000105	Intellectual Property Corporation of Malaysia	Certificate of Patent Filing	2021
	Development of an effective herbal <i>Terminalia catappa</i> Linn. leaves towards <i>Trichodina</i> infestations on cyprinids of koi (<i>Cyprinus</i> sp.), barb (<i>Puntigrus</i> sp.) and goldfish (<i>Carassius</i> sp.). Application No: LY2020000410	Intellectual Property Corporation of Malaysia	Copyright	2020
	Silver Award - Intellectual Research & Innovation Showcase (iRiS2019), Universiti Selangor: - Ez catappa: Freshwater Fish Parasite Solution	Universiti Selangor, Selangor	Silver Award	2019
<i>Academic Awards</i>	Finalist – AKRI2019 – Blended Learning Experience	Ministry of Education	Certificate (Group)	2019
	Gold, K-NOVASI in Teaching and Learning 2018	Universiti Kebangsaan Malaysia	Gold medal and certificate (Group)	2018
	First Place, Competition on the Best Faculty/Centre in Practicing Innovation in Teaching and Learning 2017	Universiti Putra Malaysia	Certificate and RM5000 (Group)	2017

Non-Academic Awards	Certificate of Excellent Service	Universiti Putra Malaysia	Certificate	2019
	Fellow of Malaysian Association of Veterinary Pathology	Malaysian Association of Veterinary Pathology	Expert reference	2019
	Young Expert Reference	Malaysian Association of Veterinary Pathology	Expert Reference	2018
	Certificate of Excellent Service	Universiti Putra Malaysia	Certificate	2018
	Excellent Service Awards	Universiti Putra Malaysia	Certificate	2017
	Certificate of Excellent Service	Universiti Putra Malaysia	Certificate	2014
	Certificate of Excellent Service	Universiti Putra Malaysia	Certificate	2013
	Adi Young Lecturer Award (Department of Biology, Faculty of Science, UPM)	Universiti Putra Malaysia	Certificate	2012
Awards of Merit	Graduate Research Fellowship (GRF) – PhD	Ministry of Higher Education, Malaysia	Scholarship	2009-2011
	Department of Civil Service (JPA) - BSc	Malaysian Government	Scholarship	2004-2007

G. SENARAI PENERBITAN (Sila masukan nama pengarang, tajuk, nama jurnal, jilid, muka surat dan tahun diterbitkan) (List of publications – author (s), title, journal, volume, page and year published)432)

Journal	
	<ol style="list-style-type: none"> Naweedullah A, Syaizwan ZZ, Amal MNA, Ismail A. (2021). Toxicity of zinc oxide nanoparticles on the embryo of Javanese medaka (<i>Oryzias javanicus</i> Bleeker, 1854): A comparative study. <i>Animals</i> (In press). Hamidu S, Jumria S, Amalia MH, Ismail A, Syaizwan ZZ, Amal MNA. (2021). Diversity, composition, taxa biomarkers and functional genes of fish gut microbes that inhabits peat swamp forest and its converted areas in north Selangor, Malaysia. <i>Pertanika J. Trop. Agric. Sc.</i> (In press). Ching JJ, Adawiyah SS, Noorlidah A, Nazia AM, Norhidayah MT, Jumria S, Amal MNA. 2021. Hot water extract of <i>Pleurotus pulmonarius</i> stalk waste enhances innate immune response and immune-related gene expression in red hybrid tilapia <i>Oreochromis</i> sp. following challenge with pathogen-associated molecular patterns. <i>Fish & Shellfish Immunology</i> 116: 61-73 Jumria S, Hamidu S, Amalia MH, Zamri-Saad M, Ina-Salwany MY, Amal MNA. (2021). Diversity, relative abundance, and functional genes of intestinal microbiota of tiger grouper (<i>Epinephelus fuscoguttatus</i>) and Asian seabass (<i>Lates calcarifer</i>) reared in a semi-closed hatchery in dry and wet seasons. <i>Pertanika J. Trop. Agric. Sc.</i> 44(2): 337-367. Vilizzi L, Copp GH, Hill JE, Adamovich B, Aislabie L, Akin D, Al-Faisal AJ, Almeida D, Amal MNA, ... (2021). A global-scale screening of non-native aquatic organisms to identify potentially invasive species under current and future climate conditions. <i>Science of the Total Environment</i> 788: 147868. Saba AO, Ismail A, Zulkifli SZ, Shohaimi S, Amal MNA. (2021). Public knowledge and perceptions of the impacts and importance of alien fish species in Malaysia: implications for freshwater biodiversity and conservation. <i>Management of Biological Invasions</i> 12 (2), 441-456 Monir MS, Md Sabri MY, Zarirah MZ, Hasliza AH, Zamri-Saad M, Amal MNA, Annas S, Aslah M, Lee JY, Ina-Salwany MY. (2021). Immuno-protective efficiency of feed-based whole-cell inactivated bivalent vaccine against <i>Streptococcus</i> and <i>Aeromonas</i> infections in red hybrid tilapia (<i>Oreochromis niloticus</i> × <i>Oreochromis mossambicus</i>). <i>Fish and Shellfish Immunology</i> 113, 162-175. Azzam-Sayuti M, Ina-Salwany MY, Zamri-Saad M, Yusof MT, Annas S, Najihah MY, Liles MR, Monir MS, Zaidi Z, Amal MNA. (2021). The prevalence, putative virulence genes and antibiotic resistance profiles of <i>Aeromonas</i> spp. isolated from cultured freshwater fishes in peninsular Malaysia. <i>Aquaculture</i> 540, 736719. Aslah M., Zamri-Saad M, Amal MNA, Nurhidayu A, Monir MS, Chin YK, Ina-Salwany MY. (2021). Vaccine efficacy of a newly developed feed-based whole-cell polyvalent vaccine against vibriosis, streptococcosis and motile aeromonad septicemia in Asian seabass, <i>Lates calcarifer</i>. <i>Vaccines</i>. 9, 368. Saadu H, Ismail A, Syaizwan ZZ, Amalia MH, Amal MNA. (2021) Associations between anthropogenic activities, forest characteristics and water qualities in the North Selangor Peat Swamp Forest, Selangor, Malaysia. <i>Ecology, Environment and Conservation</i> 27(1): 1-17. Musa AI, Syaizwan ZZ, Amal MNA, Ferdaus MY, Ismail A. (2021). Reproductive toxicity of 3,4-dichloroaniline (3,4-DCA) on Javanese medaka (<i>Oryzias javanicus</i>, Bleeker 1854). <i>Animals</i> 11(3): 798. Hairan MH, Jamil NR, Looi LJ, Amal MNA. (2021) The assessment of environmental flow status in Southeast Asian rivers: a review. <i>Journal of Cleaner Production</i> 295: 126411 Saba AO, Ismail A, Syaizwan ZZ, Shamarina S, Amal MNA. (2021) Economic contribution and attitude towards alien freshwater ornamental fishes of pet store owners in Klang Valley, Malaysia. <i>PeerJ</i> 9: e10643. Usman S, Ahmad-Faizal AR, Khozirah S, Amal MNA, Zamri-Saad M, Nurulfiza MI, Farhan MN, Syaizwan ZZ, Jumria S, Musa AI. (2020) Microplastics pollution as an invisible potential threat to food safety and security, policy challenges and the way forward. <i>International Journal of</i>

Environmental Research and Public Health 17(24): 9591.

15. Nadirah AN, Zamri-Saad M, Ina-Salwany MY, Annas S, Farina MK, Fuad MM, **Amal MNA** (2020). Efficacy of whole cell inactivated *Vibrio harveyi* vaccine against vibriosis in a marine red hybrid tilapia (*Oreochromis niloticus* × *O. mossambicus*) model. *Vaccines* 8(4): 734.
16. Saba AO, Rasli NF, Ismail A, Syaizwan ZZ, Intan-Faraha AG, Muhammad-Rasul AH, **Amal MNA** (2020) A report on introduced amazon sailfin catfish, *Pterygoplichthys pardalis* in Gombak Basin, Selangor, with notes on two body patterns of the species. *Pertanika J. Trop. Agric. Sc.* 43(4): 693-703.
17. Emi FH, Irenc J, Intan-Faraha AG, **Amal MNA** (2020) Evaluation on toxicity level of *Terminalia catappa* leaves extract on selected cyprinid under different bath concentration. *Pertanika J. Trop. Agric. Sc.* 43(4): 445-456.
18. Basri L, Nor RM, Annas S, Ina-Salwany MY, Zamri-Saad M, Nor-Yasmin AR, Barkham T, **Amal MNA**. 2020. Co-infections of Tilapia Lake Virus, *Aeromonas hydrophila* and *Streptococcus agalactiae* in farmed red hybrid tilapia. *Animals* 10(11): 2141.
19. Saba AO, Ismail A, Syaizwan ZZ, Shamarina S, Nor-Rohaizah J, Nolila MN, Intan-Faraha AG, Muhammad-Rasul AH, **Amal MNA** (2020) Checklists, production trends, and potential ecological and socioeconomic impacts of non-native freshwater fishes in Malaysia: a review. *Aquatic Invasions* 15(4):646-670
20. Nurfarahin AP, Nurliyana M, Azzam-Sayuti M, Ina-Salwany MY, Zamri-Saad, Shaqinah NN, **Amal MNA** (2020) Antibiotic susceptibility and pathogenicity of *Aeromonas hydrophila* isolated from red hybrid tilapia *Oreochromis niloticus* × *O. mossambicus* in Malaysia. *Veterinary World* 13(10):2166-2171.
21. Saba AO, Ismail A, Zulkifli SZ, Halim MRA, Wahid NAA and **Amal MNA**. (2020) Species composition and invasion risks of alien ornamental freshwater fishes from pet stores in Klang Valley, Malaysia. *Scientific Reports* 10:17205.
22. Munay AA, **Amal MNA**, Omar H, Ismail A (2020) Mesocosm study of microalgae in different weather conditions. *Sustainability, Agri, Food and Environmental Research* 8 (3): 1-21.
23. Amatul-Samahah MA, Wan-Omar WHH, Natrah NFM, **Amal MNA**, Zamri-Saad M, Ina-Salwany MY (2020). Vaccination trials against vibriosis in shrimp: A review. *Aquaculture Reports* 18: 100471.
24. MA Ibrahim, SZ Zulkifli, **MNA Amal**, F Mohamat-Yusuff, A Ismail (2020) Embryonic toxicity of 3, 4-dichloroaniline (3, 4-DCA) on Javanese medaka (*Oryzias javanicus* Bleeker, 1854). *Toxicology Reports* 7: 1039-1045
25. Nurliyana M, Lukman B, Ina-Salwany MY, Zamri-Saad M, Annas S, Dong HT, Rodkhum C and **Amal MNA** (2020) First evidence of scale drop disease virus in farmed Asian seabass (*Lates calcarifer*) in Malaysia. *Aquaculture* 528: 735600.
26. Mukhtar A, Zulkifli SZ, Mohamat-Yusuff F, Harino H, **Amal MNA** and Ismail A (2020). Booster biocides levels in the major blood cockle (*Tegillarca granosa* L., 1758) cultivation areas along the coastal area of Peninsular Malaysia. *Water* 12(6): 1616.
27. Ali SHM, Ridzuan MSM, Siti-Zahrah A, Nur-Nazifah M, Firdaus-Nawi, Zamri-Saad M and **Amal MNA**. (2020). Retrospective identification of bacterial depository revealed that *Streptococcus iniae* was responsible for some of the streptococcosis cases in cultured red tilapia in Malaysia since 2006. *Pertanika J. Trop. Agric. Sc* 43(2): 231-238.
28. Sukeri NFM, Zulkafli AR, Saba AO, Halim ARA and **Amal MNA**. (2020). The influences of water quality on fish occurrences in Kuala Mai, Pahang River and Ulu Tembeling, Tembeling River, Pahang, Malaysia. *Pertanika J. Trop. Agric. Sc* 43(2): 163-182.
29. Radhi AM, Rohasliney H, **Amal MNA** and Zarul HH. (2020). The migratory pattern and condition of tiny scale barb, *Thynnichthys thynnoides* (Bleeker, 1852) at Rui River, Perak, Malaysia. *Thai Journal of Agricultural Science* 53(1): 19-31.
30. Ramlan NF, Bakar NA, Albert EL, Zulkifli SS, Ahmad S, **Amal MNA**, Che-Abdullah CA and Wan-Ibrahim WN. 2020. Comparison of neurotoxic effects of ethanol and endosulfan on biochemical changes of brain tissues in Javanese medaka (*Oryzias javanicus*) and zebrafish (*Danio rerio*). *Pertanika J. Sci. & Technol.* 28 (2): (2020)
31. Kamarudin NA, Syaizwan ZZ, **Amal MNA** Aziz FZA, Ismail A. 2020. Herbicide diuron as endocrine disrupting chemicals (EDCs) through histopathological analysis in gonads of Javanese medaka (*Oryzias javanicus*, Bleeker 1854). *Animals* 10(3):525.
32. Sow AY, Ismail A, Syaizwan ZZ, **Amal MNA**, Kamarul H. 2020. Assessment on reproductive biology of Asian swamp eel, *Monopterus albus* (Zuiew, 1793) in relation to the impacts of paddy practice management in Kelantan, Malaysia. *Pertanika J. Trop. Agric. Sc.* 43(1): 65-79.
33. Ezhumalai M, Muthanna AR, Suhaili Z, Dzaraly ND, Amin-Nordin S, **Amal MNA**, Mohd-Desa MN. 2020. Multilocus sequence typing analysis of invasive and non-invasive group B *Streptococcus* of hospital origin in Malaysia. *Malaysian Journal of Medical Sciences* 27(1): 135-139.
34. Chin YK, Ina-Salwany MY, Zamri-Saad M, **Amal MNA**, Aslah M, Lee JY, Annas S, Nurhidayu A. 2020. Effects of skin abrasion in immersion challenge with *Vibrio harveyi* in Asian seabass *Lates calcarifer* (Bloch, 1790) fingerling. *Diseases of Aquatic Organisms* 137:167-173
35. Syuhada R, Zamri-Saad M, Ina-Salwany MY, Mustafa M, Shaqinah NN, Desa M.N.M., Nordin SA, Barkham T, **Amal MNA**. 2020. Molecular characterization and pathogenicity of *Streptococcus agalactiae* serotypes Ia ST7 and III ST283 isolated from cultured red hybrid tilapia in Malaysia. *Aquaculture* 515: 734543.
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Assessment of bacteria and water quality parameters in cage cultured *Pangasius hypophthalmus* in Temerloh, Pahang River, Malaysia. *Nature Environment and Pollution Technology* 18(5): 1479-1486

37. Amalina NZ, Santha S, Zulperi D, **Amal MNA**, Yusof MT, Zamri-Saad M, Ina-Salwany MY. 2019. Prevalence, antimicrobial susceptibility and plasmid profiling of *Vibrio* spp. isolated from cultured groupers in Peninsular Malaysia. *BMC Microbiology* (2019) 19:251.
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39. **Amal MNA**, Fauzul-Aidil MRM, Jumria S, Syuhada R, Khamisah SNM, Lukman B, Lee JY, Nurliyana M, Ismail A, Zamri-Saad, Ina-Salwany MY, Shaqinah NN. 2019. Javanese medaka (*Oryzias javanicus* Bleeker, 1854) as potential model organism for aeromoniasis and vibriosis study in fish. *Pertanika J. Trop. Agric. Sc.* 42 (3): 1049 – 1065.
40. Nurshuhada A, Azila A, **Amal MNA**, Najiah M, Sandra CZ. 2019. Risk factors associated with viral nervous necrosis in hybrid groupers in Malaysia and the high similarity of its causative agent nervous necrosis virus to reassortant red-spotted grouper nervous necrosis virus/striped jack nervous necrosis virus strains. *Veterinary World* 12(8): 1273-1284.
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42. Nurliyana M, **Amal MNA**, Ina-Salwany MY, Zamri-Saad M, Shaqinah NN, Nurhidayu A, Mino S, Tomoo S. 2019. Vibriosis in cultured marine fishes: a review. *Aquaculture* 512 (2019): 734289.
43. Barkham T., Zadoks R.N., **Amal M.N.A.**, Baker, S., Bich V.T.N. et al., 2019. One hypervirulent clone, sequence type 283, accounts for a large proportion of invasive *Streptococcus agalactiae* isolated from humans and diseased tilapia in Southeast Asia. *PLOS Neglected Tropical Diseases* 13(6): e0007421.
44. Nurliyana M., **Amal M.N.A.**, Zamri-Saad, M., Ina-Salwany, M., Amalina, N.Z., Muskhazli, M., Shaqinah N.N. 2019. Virulence-associated genes and antibiotic resistance patterns of *Vibrio* spp. isolated from cultured marine fishes in Malaysia. *BMC Veterinary Research* 15:176.
45. Sow A.Y., Ismail A., Syaizwan Z.Z., **Amal M.N.A.**, Hambali K.A. 2019. Survey on heavy metals contamination and health risk assessment in commercially valuable Asian swamp eel, **Monopterus albus** from Kelantan, Malaysia. *Scientific Report* 9: 6391.
46. Norhariani M.N., Siti-Hajar M.Y., Hassan M.D., **Amal M.N.A.**, Nurliyana M. 2019. Costs of management practices of Asian seabass cage culture in Malaysia using stochastic model that include uncertainty in mortality. *Aquaculture* 510: 347-352.
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48. Nurliyana M., Muskhazli M., **Amal M.N.A.**, Zamri-Saad M., Ina-Salwany M.Y., Nurhidayu A. 2019. Environmental factors associated with the presence of Vibrionaceae in tropical cage-cultured marine fishes. *Journal of Aquatic Animal Health* 31:154-167.
49. Amonodin M.R., Rohasliney H., **Amal M.N.A.**, Zarul H.H. 2019. Evaluating the surrounding physical habitat for *Thynnichthys thynnoides*'s spawning areas using a visual-based habitat assessment at Rui River, Perak. *PERTANIKA Journal of Science & Technology* 27 (2): 689 – 700.
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53. Sule H.A., Ismail A., **Amal M.N.A.**, Zulkifli S.Z., Mohd-Fauzul A.M.R. 2019. Associations between the presence of bacteria and the physico-chemical parameters of water in peat swamp forest, paddy field and oil palm plantation in north Selangor, Malaysia. *PERTANIKA Journal of Tropical Agricultural Science* 42 (1): 185 – 207.
54. Atirah K.A., **Amal M.N.A.**, Zamri-Saad S., Munira M., Azila A., Sufian M., Nik-Haiha N.Y. 2019. Prevalence, risk factors and transmission of Nervous Necrosis Virus in a hatchery producing hybrid grouper (*Epinephelus lanceolatus* × *E. fuscoguttatus*) fry. *PERTANIKA Journal of Tropical Agricultural Science* 42 (1): 125 – 138.
55. Nabeel A.A., Ferdaus M.Y., Rohasliney H., Zufarzaana Z., Aziz A., **Amal M.N.A.** 2019. Heavy metals concentrations in stormwater and tilapia fish (*Oreochromis niloticus*) in Kuala Lumpur Holding and Storage SMART ponds. *PERTANIKA Journal of Tropical Agricultural Science* 42 (1): 225 – 236.
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H. PROJEK PENYELIDIKAN TERDAHULU (Past Research Project)

No.	Project No.	Project Title	Role	Year	Source of fund	Amount of fund (RM)	Status
1	TRGS/1/2019/UPM/02/5	The impacts of vaccination in marine fish culture industry	Program Leader	Dec 2019 – Nov 2022	TRGS, MOE	912,000	Ongoing
2	TRGS/1/2019/UPM/02/5	Determining the metagenomics of bacterial communities in cultured groupers following vaccination against vibriosis	Project Leader	Dec 19 – Nov 22	TRGS	272,000	Ongoing
3	KATS600-1/3/1 Jld. 4(19)	Freshwater Fishes of Malaysia	Project Leader/ Resource Person	Jun 2019 – Dec 2019	Ministry of Water, Land and Natural Resources, Malaysia	30,000	Completed
4	UPM/800-3/3/1/GPB/2018/9668600	Experimental co-infection of Tilapia Lake Virus and selected pathogenic bacteria in red hybrid tilapia (<i>Oreochromis niloticus</i> x <i>O. mossambicus</i>) model.	Project Leader	Dec 2018 – Nov 2020	PUTRA IPBerimpak UPM	150,000	Ongoing
5	FRGS/1/2018/STG03/UPM/02/11	The impacts of alien fishes on freshwater biodiversity, environment and socio-economy in Klang Valley, Malaysia	Project Leader	Jan 2019 – Dec 2020	FRGS, MOE	107,200	Ongoing
6	6300822 (Akaun Amanah)	Screening and detection of Tilapia Lake Virus from freshwater fishes in Malaysia	Project Leader	Dec 2018 – Nov 2019	MSD Animal Health, Singapore	21,140	Completed
7	GP-IPS/2018/9619200	Molecular identification, antibiotic susceptibility patterns and virulence genes characterization on <i>Vibrio</i> spp. isolated from cage-cultured marine fishes and its culturing environments	Project Leader	Feb 2018 – Jan 2020	IPS, UPM	25,000	Completed
8	GP-IPS/2018/9619100	Molecular serotyping, virulence gene profiling and pathogenicity of <i>Streptococcus agalactiae</i> isolated from cultured red hybrid tilapia in Malaysia	Project Leader	Feb 2018 – Jan 2020	IPS, UPM	25,000	Completed
9	GP-IPS/2017/9558800	Epidemiology of viral nervous necrosis in a hatchery producing hybrid grouper (σ giant grouper <i>Epinephelus lanceolatus</i> x ρ tiger grouper <i>E. fuscoguttatus</i>) fry	Project Leader	Nov 2017 – Oct 2019	IPS, UPM	20,000	Completed
10	6300822 (Akaun Amanah)	Metagenomics analysis of bacteria and virus communities from hatchery producing hybrid grouper fry: a deeper epidemiological investigation for control and prevention of vibriosis and VNN (Phase 1)	Project Leader	Feb 2017 – Feb 2018	DEPARTMENT OF FISHERIES, MALAYSIA	100,000	Completed
11	6300822 (Akaun Amanah)	Metagenomics analysis of bacteria and virus communities from hatchery producing hybrid grouper fry: a deeper epidemiological investigation for control and prevention of vibriosis and VNN (Phase 2)	Project Leader	Mac 2018 – Feb 2019	DEPARTMENT OF FISHERIES, MALAYSIA	30,000	Completed
12	GP-IPB/2016/9484101	Prevalence, risk factors, transmission and molecular characterization of <i>Vibrio</i> spp. from cage cultured seabass (<i>Lates calcarifer</i> Bloch, 1790)	Project Leader	Apr 2016 – Mar 2018	PUTRA IPBerimpak, UPM	136,000	Completed
13	01-02-12-2171RU	Identification, distribution, and migration pattern of anguillid eels in the northern part of Peninsular Malaysia.	Project Leader	Nov 2012 – Dec 2014	RUGS, UPM	30,000	Completed
14	GP-IPS/2014/9438722	Mating behavior and stages of normal development of Javanese medaka (<i>Oryzias javanicus</i> , Bleeker 1854) in captivity: a potential local test organism	Project leader	Nov 2014 – Oct 2016	PUTRA IPS, UPM	15,000	Completed
15	FRGS/2/2014/STWN03/UPM/02/1	Javanese medaka (<i>Oryzias javanicus</i> , Bleeker 1854) as a model organism for bacterial diseases study in fish	Project Leader	Dec 2014 – May 2017	FRGS, MOE	119,200	Completed
16	GP-IPS/2016/9476100	Growth performance and disease resistance of <i>Clarias gariepinus</i> (Burchell, 1822) fed with different ration of spirulina (<i>Arthrospira platensis</i>)	Project Leader	Mar 2016 – Mar 2018	PUTRA IPS, UPM	20,000	Completed
17	6300822 (Akaun Amanah)	Prevalance and risk factors of Viral Nervous Necrosis (VNN) in cultured groupers	Project Leader	Mar 2016 – Feb 2017	DEPARTMENT OF FISHERIES, MALAYSIA	30,000	Completed
18	National Science and Technology Development Agency, Thailand	Clinical metagenomics next-generation sequencing for discovery of pathogen profiles and their genomes from scale drop diseased Asian sea bass in Southeast Asia	Co researcher	Jan 2021 – Dec 2023	National Science and Technology Development Agency, Thailand	USD 9000	Ongoing
19	UPM.RMC.800-3/3/1/GPB/2020/9694800	Evaluating a newly developed feed-based bivalent vaccine against streptococcosis and motile aeromonas septicemia in red tilapia (<i>Oreochromis</i> sp.)	Co researcher	22 Dis 2020 – 21 Jun 2023	Putra Berimpak, UPM	100,000	Ongoing
20	FRGS/1/2020/SKKo/UKM/02/10	Elucidating the repercussion of <i>Porphyromonas gingivalis</i> gingipain in inducing neuronal degeneration using Javanese medaka (<i>Oryzias javanicus</i>) model	Co researcher	Sept 2020 – Aug 2023	FRGS, MOE	190,200	Ongoing
21	FRGS/1/2020/WAB11/UNIS EL/03/1	Biomonitoring of <i>Pterygoplichthys pardalis</i> (Sailfin catfish) in Langat River ecosystem through environmental DNA (eDNA)	Co researcher	Nov 2020 – Oct 2023	FRGS, MOE	106,200	Ongoing
22	FRGS/1/2020/STG03/UPM/02/12	Elucidation of molecular mechanisms underlying disease resistance against tilapia lake virus (TILV) using integrated transcriptomic and proteomic studies	Co researcher	Nov 2020 – Oct 2022	FRGS, MOE	143,955	Ongoing

23	UPM/GPB (Geran Putra Berimpak)	Phenotyping and the genotyping characterization of invasive GBS isolated from human and fish in Malaysia	Co researcher	Mar 2020 – Jan 2022	PUTRA IPBerimpak UPM	96,000	Ongoing
24	FRGS/1/2018/WAB01/UPM/02/12	Pathogenesis of Acute Hepatopancreatic Necrosis Disease (AHPND) In Shrimp Culture in Malaysia and Inactivated Vibrio Vaccine Efficacy Against The Disease	Co researcher	Jan 2019 – Dec 2021	FRGS, MOE	100,000	Ongoing
25	FRGS/1/2018/STGo3/UPM/01/1	Assessment of IBA's (Important Bird and Biodiversity Area) habitat quality, North-central Selangor coast	Co researcher	Jan 2019 – Dec 2020	FRGS, MOE	119,000	Ongoing
26	FRGS/1/2019/SKK06/UPM/02/21	Deciphering exposure effect of polystyrene microplastics (PS-MPs) towards Javanese medaka fish (<i>Oryzias javanicus</i>) using combinations of metabolomic and metagenomic approaches	Co researcher	Sept 2019 – Feb 2022	FRGS, MOE	159,000	Ongoing
27	FRGS/1/2019/WAB01/UIAM/02/1	Establishing zebrafish nutritional requirements in protein-to-carbohydrate ratio, as an animal model for farm fish nutrition and growth studies: Effects on fish growth, health and gut microbiota.	Co researcher	Sept 2019 – Aug 2022	FRGS, MOE	155,400	Ongoing
28	HICOE, IBS, UPM	Animal Vaccine and Therapeutics	Co researcher	Jan 2016 – Dec 2018	HICOE, MOHE	3,000,000	Ongoing
29	Geran Putra Inisiatif Siswazah, UPM	Phylogenetic and metagenomics analysis of <i>Vibrio</i> species isolated from cultured groupers, <i>Epinephelus species</i>	Co researcher	Jun 2017 – Jun 2019	PUTRA IPS, UPM	20,000	Completed
30	FRGS/1/2015/WAB01/UMT/03/3	Epidemiology study of Viral Nervous Necrosis (VNN) in Malaysian groupers: Sequence analysis strategies and quasispecies determinant's	Co researcher	Nov 2015 – Oct 2017	FRGS, MOE	71,700	Completed
31	04-01-04-SF1784	Decision support system for environmental flow assessment of altered river: a case study of Sg Pelus, Perak	Co researcher	Jan 2014 – June 2016	ESCIENCE FUND, MOSTI	281,400	Completed
32	TD-FRGS/2/2013/UPM/02/1/1	Optimizing mass culture system and ecotoxicological studies of Javanese medaka (<i>Oryzias javanicus</i>) as a model organism	Co researcher	Dec 2013 – Nov 2016	TRGS, MOE	79,000	Completed
33	FRGS/2/2014/STWN03/UPM/02/7	Determining the antigenic cross-reaction among outer membrane proteins (OMPs) of <i>Vibrio</i> species isolated from Tiger Grouper (<i>Epinephelus fuscoguttatus</i>)	Co researcher	Dec 2014 – Nov 2017	FRGS, MOE	106,200	Completed
34	FRGS/2/2014/STWN03/UNISEL/03/1	Leaves extract of <i>Terminalia catappa</i> Linn. as alternative source of therapeutics against parasite infections in Cyprinidae family	Co researcher	Nov 2014 – Oct 2016	FRGS, MOE	96,000	Completed
35	GP-IPM/2014/9445400	Phenotypic and life history diversities of local model organism: Java medaka (<i>Oryzias javanicus</i>) population across the Straits of Malacca	Co researcher	Mar 2015 – Mar 2017	PUTRA IPM, UPM	46,000	Completed
36	6374900 (Akaun Amanah)	Determination of optimal dosage of complete Freund's Adjuvant (CFA) in fish vaccine – Year 1	Co researcher	Feb 2014 – Jan 2015	DEPARTMENT OF FISHERIES, MALAYSIA	50,000	Completed
37	6374900 (Akaun Amanah)	Determination of optimal dosage of Freund's adjuvant in feed-based streptococcal vaccine - Year 2	Co researcher	Apr 2015 – Mac 2016	DEPARTMENT OF FISHERIES, MALAYSIA	30,000	Completed
38	6300103 (Akaun Amanah)	Immune development and protective efficacy following vaccination of tiger grouper (<i>Epinephelus fuscoguttatus</i>) and seabass (<i>Lates calcarifer</i>) with oral live feed streptococcus and vibriosis vaccines	Co researcher	Sep 2013 – Aug 2015	AGRO BIOTECHNOLOGY INSTITUTE (ABI), MOSTI	186,000	Completed