



Nitsara Karoonuthaisiri, Ph.D.

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Prof. Nitsara Karoonuthaisiri's expertise is in diagnostic development for food security purposes. She employed omics technology to investigate many organisms important for agriculture and food industry. She has published over 80 peer-reviewed scientific papers with an author h-index of 27, filed over 30 patents and developed more than 10 prototypes during her research career at National Center for Genetic Engineering and Biotechnology. She is appointed as Honorary Professor at Queen's University Belfast, UK and a founding co-Director of International Joint Research Center on Food Security. She served as a founding co-Chair for Global Young Academy.

EDUCATION

Harvard University, John F. Kennedy School of Government, Executive Education.

Global Leadership and Public Policy for the 21st Century: Received November 2015

Stanford University, Chemical Engineering, Stanford, CA

Ph.D. in Chemical Engineering: Received August 2004

M.S. in Chemical Engineering: Received June 2001

Columbia University, School of Engineering and Applied Science, New York, NY

B.S. in Chemical Engineering: Received May 1999

Honors with Distinction, Departmental Valedictorian

PROFESSIONAL EXPERIENCE

Oct 2021- **Queen's University Belfast, United Kingdom**

Present *Honorary Professor*

July 2022- **International Joint Research Center on Food Security (IJC-FOODSEC)**

Present *co-Director*

August 2004 - **National Center for Genetic Engineering and Biotechnology (BIOTEC),**

Present **National Science and Technology Development Agency, Thailand**

Jan 2019-Present: Principal Research Fellow (highest research position)

Jan 2014- Jan 2019: Director, Biosensing Technology Research Unit

Oct 2007- Jan 2014: Head of Microarray Laboratory

August 2011 - **Institute for Global Food Security**

August 2013 **Queen's University Belfast, United Kingdom**

Marie Skłodowska Curie Fellow

HONORS AND AWARDS

- Featured in "Women Gallery" by WIPO
- The 2022 Research Award, National Research Council of Thailand
- The 2021 Taguchi Prize for Outstanding Researcher from the Thai Society for Biotechnology
- 2021 'Rising Star Award of the Government Scholarship Students' from the Association of the Thai Government Scholarship Students.
- 2021 'Outstanding ONE HEALTH Researcher in Aquaculture Award' from American National Shellfisheries Association

- 2018 Selected as to be profiled among the top “women scientists in Asia” by the Association of Academies and Societies of Sciences in Asia (AASSA) and InterAcademy Partnership (IAP)
- The 2014 Research Award, National Research Council of Thailand
- Young Global Leader of 2013 by “World Economic Forum”
- “Women who make a difference” Award 2012 by “Thailand Tattler”
- Young Technologist of the Year (2011) from the Foundation for the Promotion of Science and Technology under the Patronage of His Majesty the King
- Marie Curie International Incoming Fellowship from European Union FP7 (2011-2013)
- Featured in Nature News in an article “Homecoming Queen”
- Selected as a member of Thai Academy of Science and Technology (2016)
- Elected as the founding co-Chair of the Global Young Academy (2010)
- Founding member of the Thai Young Scientists Academy (2010)
- Invention Award, National Research Council of Thailand (2010)
- Selected as 1 of 50 “Women will change” by “A Day” Magazine (2010)
- Awarded a UNESCO-L’Oreal Thailand 2009 fellowship “For Women in Science” (2009)
- Selected as 1 of 9 “Working Woman of the Year” by “Phuying Magazine” (2009)
- Selected as 1 of 7 “Young Mentors” for the InterAcademy Panel (2009)
- Among 43 of selected “outstanding young scientists” for the InterAcademy Panel (2008)
- Excellent Thesis Award, National Research Council of Thailand (2006)
- Outstanding Teaching Award, Stanford University (2002-2003)
- Tau Beta Pi National Engineering Honor Society
- Bonilla Medal (Columbia University Chemical Engineering Department Valedictorian) (1999)
- National Royal Thai Government Scholar (1994-2004)

PUBLICATIONS (The most recent publications)

1. Owolabi, I.O., Karoonuthaisiri, N., Elliott, C.T., Petchkongkaew, A. (2024) A 10-year analysis of RASFF notifications for mycotoxins in nuts. Trend in key mycotoxins and impacted countries. *Food Research International*. 172, 112915
2. Traynor, A., Thorburn Burns, D., Wu, D., Karoonuthaisiri, N., Petchkongkaew, A., Elliott, C.T. 2024. An Analysis of Emerging Food Safety and Fraud Risks of Novel Insect Proteins within Complex Supply Chains. *NPJ Science of Food*. 8, (7)
3. Pichayawaytin, G., Somboonkaew, A., Jintamethasawat, R., **Karoonuthaisiri, N.**, Sooksimuang, T., & Doljirapisit, N. A Method and Optical References for Compensating Signal Drift in a Fluorescent Microarray Reader. *Journal of the International Measurement Confederation*. (2023) (Revising)
4. Kolawole, O., Thammakhet-Buranachai, C., Petchkongkaew, A., Sooksimuang, T., Elliott, C.T., **Karoonuthaisiri, N.** 2023. Evaluating the Green Credentials and Performance of Deep Eutectic Solvents in the Extraction of Antibiotics and Mycotoxins in Foods" submitted to *Environmental Chemistry Letters*. (submitted)
5. Owolabi, I.O., Siwarak, K., Greer, B., Rajkovic, A, Dall’asta, C, **Karoonuthaisiri, N**, Uawisetwathana, U, Elliott, CT, Petchkongkaew, A. 2023. Applications of Mycotoxin Biomarkers in Human Biomonitoring for Exposome-Health Studies: Past, Present, and Future. *Expo Health*, <https://doi.org/10.1007/s12403-023-00595-4>
6. Owolabi, IO, **Karoonuthaisiri, N**, Elliott, CT, Petchkongkaew, A. 2023. A 10-year analysis of RASFF notifications for mycotoxins in nuts. Trend in key mycotoxins and impacted countries. *Food Research International*, 112915
7. Arayamethakorn, S, Uengwetwanit, T, **Karoonuthaisiri, N**, Methacanon, P, Rungrassamee, W. 2023. Comparative effects of different bacterial lipopolysaccharides on modulation of immune levels to improve survival of the black tiger shrimp. *Journal of Invertebrate Pathology*, 197, 107872.
8. Anghthong, P, Uengwetwanit, T, Uawisetwathana, U, Koehorst, JJ, Arayamethakorn, S, Schaap, PJ, Santos, VMD, Phromson, M, **Karoonuthaisiri, N**, Chaiyapechara, S, Rungrassamee, W 2023.

Investigating host-gut microbial relationship in *Penaeus monodon* upon exposure to *Vibrio harveyi*. *Aquaculture*, 739252

9. Noppakuadrattidej, P., Charlermroj, R., Makornwattana, M., Kaew-amdee, S., Waditee-Sirisattha, S., Vilaivan, T, Praneenararat, T*, **Karoonuthaisiri, N***.2023. Development of peptide nucleic acid-based bead array technology for *Bacillus cereus* detection. *Sci Rep* 13, 12482.
10. Sathitkowitchai W, Sathapondecha P, Angthong P, Srimarut Y, Malila Y, Nakkongkam W, Chaiyapechara S, Karoonuthaisiri N, Keawsompong S, Rungrassamee W. 2022. Isolation and Characterization of Mannanase-Producing Bacteria for Potential Synbiotic Application in Shrimp Farming. *Animals*.; 12(19):2583. <https://doi.org/10.3390/ani12192583>
11. Charlermroj, R, Makornwattana, M, Phuengwas, **Karoonuthaisiri, N**. 2022. A rapid colorimetric lateral flow test strip for detection of live *Salmonella* Enteritidis using whole phage as a specific binder. *Front. Microbiol.* 13:1008817.
12. Yotbuntueng,P, Jiemsup, S, Deenarn, P, Yongkiettrakul, S, Tobwor, P, Pruksatrakul, T, Sittikankaew, K, **Karoonuthaisiri, N**, Leelatanawit, R, Vichai, V, Wimuttisuk, W. 2022. Differential distribution of eicosanoids and polyunsaturated fatty acids in the *Penaeus monodon* male reproductive tract and their effects on total sperm counts. *PLoS ONE* 17(9):e0275134.
13. Taengchaiyaphum, S, Wongkhaluang, P, Sittikankeaw, K, **Karoonuthaisiri, N**, Flegel, TW, Sritunyalucksana, K. 2022. Shrimp genome sequence contains independent clusters of ancient and current endogenous viral elements (EVE) of the parvovirus IHNV. *BMC Genomics* 23(1):565
14. Situmorang, ML, Uawisetwathana, U, Arayamethakorn, S, **Karoonuthaisiri, N**, Rungrassamee, W, Haniswita, H, Bossier, P, Suantika, G. 2022. Supplementation of ex-situ produced bioflocs improves immune response against AHPND in Pacific whiteleg shrimp (*Litopenaeus vannamei*) postlarvae. *Applied Microbiology and Biotechnology*. 106:3751–3764
15. Adunphatcharaphon, S, Elliott, CT, Sooksimuang, T, Charlermroj, R, Petchkongkaewa, A, **Karoonuthaisiri, N**. (2022) The Evolution of Multiplex Detection of Mycotoxins Using Immunoassay Platform Technologies. *J Hazardous Materials*. 432:128706.
16. Uengwetwanit, T, Chutiwitoonchai, N, Wichapong, K., **Karoonuthaisiri, N**. 2022. Identification of novel SARS-CoV-2 RNA dependent RNA polymerase (RdRp) inhibitors: From in silico screening to experimentally validated inhibitory activity. *Computational and Structural Biotechnology Journal*. 20: 882-890.
17. Chaiyapechara, S, Uengwetwanit, T, Arayamethakorn, S, Bunphimpapha, P, Phromson, M, Jangsutthivorawat, W, Tala, S, **Karoonuthaisiri, N**, Rungrassamee, W. 2022. Understanding the host-microbe-environment interactions: Intestinal microbiota and transcriptomes of black tiger shrimp *Penaeus monodon* at different salinity levels. *Aquaculture*. 546: 737371.
18. Uawisetwathana, U, Jamboonsri, W, Bamrungthai, J, Jitthiang, P, Nookaew, I, **Karoonuthaisiri, N**. 2022. Metabolite profiles of brown planthopper-susceptible and resistant rice (*Oryza sativa*) varieties associated with infestation and mechanical stimuli. *Phytochemistry*. 194:113044.
19. Charlermroj, R, Phuengwas, S, Makornwattana, M, Sooksimuang, T, Sahasithiwat, S, Panchan, W, Sukbangnop, W, Elliott, CT, **Karoonuthaisiri, N***. 2021. Development of a microarray lateral flow strip test using a luminescent organic compound for multiplex detection of five mycotoxins. *Talanta*. 233. 122540
20. Udaondo, Z, Sittikankaew, K, Uengwetwanit, T, Wongsurawat, T, Sonthirod, C, Jenjaroenpun, P, Pootakham, W, Karoonuthaisiri, N, Nookaew, I. 2021. Comparative Analysis of PacBio and Oxford Nanopore Sequencing Technologies for Transcriptomic Landscape Identification of *Penaeus monodon*. *Life*. 11(8), 862
21. Tonsomboon, K, Noppakuadrattidej, P, Sutikulsombat, S, Petdum, A, Panchan, W, Wanichacheva, N, Sooksimuang, T, **Karoonuthaisiri, N**. 2021. Turn-On fluorescence resonance energy transfer (FRET)-

based electrospun fibrous membranes: rapid and ultrasensitive test strips for on-site detection of Mercury (II) ion. *Sensors and Actuators B: Chemical*, 130212

22. Uengwetwanit, T, Pootakham, W, Nookaew, I, Sonthirod, C, Anghong, P, Sittikankaew, K, Rungrassamee, W, Arayamethakorn, S, Wongsurawat, T, Jenjaroenpun, P, Sangsrakru, D, Leelatanawit, R, Khudet, J, Koehorst, JJ, Schaap, PJ, AP Martins dos Santos, V, Tangy, F, **Karoonuthaisiri, N***. 2021 A chromosome-level assembly of the black tiger shrimp (*Penaeus monodon*) genome facilitates the identification of growth-associated genes. *Molecular Ecology Resources*. 21(5):1620-1640.
23. Uawisetwathana, U, Situmorang, ML, Arayamethakorn, S, Suantika, G, Panya, A, **Karoonuthaisiri, N**, Rungrassamee, W. 2021. Supplementation of Ex-Situ Biofloc to Improve Growth Performance and Enhance Nutritional Values of the Pacific White Shrimp Rearing at Low Salinity Conditions. *Applied Sciences* 11 (10), 4598
24. Anghong, P, Uengwetwanit, T, Pootakham, W, Sittikankaew, K, Sonthirod, C, Sangsrakru, D, Yoocha, T, Nookaew, I, Wongsurawat, T, Jenjaroenpun, P, Rungrassamee, W, **Karoonuthaisiri, N**. 2020. Optimization of high molecular weight DNA extraction methods in shrimp for a long-read sequencing platform. *PeerJ* 8:e10340 <https://doi.org/10.7717/peerj.10340>
25. Himananto, O, Yoohat, K, Danwisetkanjana, K, Kumpoosiri, M, Rukpratanporn, S, Theppawong, Y, Phuengwas, S, Makornwattana, M, Charlermroj, R, **Karoonuthaisiri, N**, Thummabenjapone, P, Kositcharoenkul, N, Gajanandana, O. 2020. Double antibody pairs sandwich-ELISA (DAPS-ELISA) detects *Acidovorax citrulli* serotypes with broad coverage. *PLoS ONE* 15(8): e0237940.
26. Uengwetwanit, T, Uawisetwathana, U, Arayamethakorn, S, Khudet, J, Chaiyapechara, S, **Karoonuthaisiri, N**, Rungrassamee, W. 2020. Multi-omics analysis to examine microbiota, host gene expression and metabolites in the intestine of black tiger shrimp (*Penaeus monodon*) with different growth performance. *PeerJ* 8:e9646
27. Pootakham, W, Uengwetwanit, T, Sonthirod, C, Sittikankaew, K, **Karoonuthaisiri, N**. 2020. A Novel Full-Length Transcriptome Resource for Black Tiger Shrimp (*Penaeus monodon*) Developed Using Isoform Sequencing (Iso-Seq). *Front. Mar. Sci.* 7:172
28. Sittikankaew, K, Pootakham, W, Sonthirod, C, Sangsrakru, D, Yoocha, T, Khudet, J, Nookaew, I, Uawisetwathana, U, Rungrassamee, W, **Karoonuthaisiri, N**. 2020 Transcriptome analyses reveal the synergistic effects of feeding and eyestalk ablation on ovarian maturation in black tiger shrimp. *Scientific Reports* 10: 5481.
29. Anghong, P, Uengwetwanit, T, Arayamethakorn, S, Chaitongsakul, P, **Karoonuthaisiri, N**, Rungrassamee, W. 2020 Bacterial analysis in the early developmental stages of the black tiger shrimp (*Penaeus monodon*). *Scientific Reports* 10: 4896
30. Uawisetwathana, U, Chevallier, OP, Xu, Y, Kamolsukyeunyong, W, Nookaew, I, Somboon, T, Toojinda, T, Vanavichit, A, Goodacre, R, Elliott, CT, **Karoonuthaisiri, N**. 2019. Global metabolite profiles of rice brown planthopper-resistant traits reveal potential secondary metabolites for both constitutive and inducible defenses. *Metabolomics*. 15: 151.
31. Uawisetwathana, U, **Karoonuthaisiri, N**, 2019. Metabolomics for Rice Quality and Traceability: Feasibility and Future Aspects. *Current Opinions in Food Science*. 28:58–66
32. Sawettanai, N, Leelayuwapan, H, **Karoonuthaisiri, N**, Ruchirawat, S, Boonyarattanakalin, S. 2019. Synthetic Lipomannan Glycan Microarray Reveals the Importance of $\alpha(1,2)$ Mannose Branching in DC-SIGN Binding. *J Org Chem*. 84(12): 7606-7617
33. Charlermroj, R, Makornwattana, M, Phuengwas, S, Meerak, J, Pichpol, D, **Karoonuthaisiri, N**. 2019. DNA-based bead array technology for simultaneous identification of eleven foodborne pathogens in chicken meat. *Food Control*. 101:81-88

34. Deenarn, P, Tobwor, P, Leelatanawit, R, Wongtriphop, S, Khudet, J, **Karoonuthaisiri, N**, Vichai, V, Wimuttisuk1, W. 2018. Dynamics of fatty acid regulatory genes during ovarian development in *Penaeus monodon*. *Reproduction*. 156(6): 527–544.
35. Niyomdech, S, Limbut, W, Numnuam, A, Kanatharana, P, Charlermroj, R, **Karoonuthaisiri, N***, Thavarungkul, P*. 2018. Phage-based capacitive biosensor for *Salmonella* detection. *Talanta*. 188: 658–664
36. Boonruang, S, Srisuai, N, Charlermroj, R, Makornwattana, M, Somboonkaew, A, Horprathum, M, **Karoonuthaisiri, N**. 2018. Excitation of multi-order guided mode resonance for multiple color fluorescence enhancement. *Optics & Laser Technology*. 106: 410–416.
37. Uengwetwanit, T, Ponza, P, Sangsrakru, D, Wichadakul, D, Ingsriswang, S, Leelatanawit, S, Klinbunga, S, Tangphatsornruang, S*, **Karoonuthaisiri, N***. 2018. Transcriptome-based discovery of pathways and genes related to reproduction of the black tiger shrimp (*Penaeus monodon*). *Marine Genomics* 37: 69-73.
38. Kao, CM, **Karoonuthaisiri, N**, Weaver, D, Vroom, JA, Gai, SA, Ho, M, Patel, KG. 2018. A genomic island of *Streptomyces coelicolor* harbors the self-contained regulon of an ECF sigma factor. *bioRxiv*. 247056
39. Arayamethakorn, S, **Karoonuthaisiri, N**, Rungrassamee, W. 2017. A multiplex bead-based assay for immune gene expression analysis in shrimp. *Journal of Biotechnology* 260: 74-78.
40. Leelatanawit, R, Saetung, T, Phuengwas, S, **Karoonuthaisiri, N***, Devahastin, S. 2017. Selection of reference genes for quantitative real-time PCR in postharvest tomatoes (*Lycopersicon esculentum*) treated by continuous low-voltage direct current electricity to increase secondary metabolites. *International Journal of Food Science and Technology* 52(9):1942-1950.
41. Teerapornpantakit, J, Chanprapaph, P, **Karoonuthaisiri, N**, Charoenphandhu, N. 2017. Site-specific onset of low bone density and correlation of bone turnover markers in exclusive breastfeeding mothers. *Breastfeeding Medicine* 12(6):331-337.
42. Charlermroj, R, Makornwattana, M, Himananto, O, Seepiban, C, Phuengwas, S, Warin, N, Gajanandana, O, **Karoonuthaisiri, N**. 2017. An accurate, specific, sensitive, high-throughput method based on a microsphere immunoassay for multiplex detection of three viruses and bacterial fruit blotch bacterium in cucurbits. *Journal of Virological Methods* 247: 6-14.
43. Leelatanawit, R, Uawisetwathana, U, Klanchui, A, Khudet, J, Phomklad, S, Wongtriphop, S, Jiravanichpaisal, P, **Karoonuthaisiri, N**. 2017. Transcriptomic analysis of in male black tiger shrimp (*Penaeus monodon*) after polychaete feeding to enhance testicular maturation. *Mar Biotech* 19(2):125-135.
44. Charlermroj, R, Makornwattana, M, Grant, IR, Elliott, CT, **Karoonuthaisiri, N**. 2016. Validation of a high-throughput immunobead array technique for multiplex detection of three foodborne pathogens in chicken products. *Inter J Food Microb*. 224: 47–54.
45. Rungrassamee, W, Klanchui, A, Maibunkaew, S, **Karoonuthaisiri, N**. 2016. Bacterial dynamics in intestines of the black tiger shrimp and the Pacific white shrimp during *Vibrio harveyi* exposure. *J Invert Patho* 133, 12-19.
46. Uawisetwathana, U, Graham, SF, Kamolsukyonyong, W, Sukhaket, W, Klanchui, A, Toojinda, T, Vanavichit, A, **Karoonuthaisiri, N**, Elliott, C.T. 2015. Quantitative ¹H NMR-based metabolomic profiling of Thai Jasmine rice (*Oryza sativa*) responses to brown planthopper (BPH) infestation. *Metabolomics* 11(6), 1640-1655.
47. Gadaj, A, Cooper, KM, **Karoonuthaisiri, N**, Furey, A, Danaher, M. 2015. Determination of persistence of dimetridazole, metronidazole and ronidazole residues in black tiger shrimp (*Penaeus monodon*) tissue and stability during cooking. *Food Additives and Contaminants: Part A*. 32(2):180-93.
48. **Karoonuthaisiri, N***, Charlermroj, R, Teerapornpantakit, J, Kumposiri, M, Himananto, O, Grant, IR, Gajanandana, O, Elliott, CT. 2015 Bead array for *Listeria monocytogenes* detection using specific monoclonal antibodies. *Food Control* 47, 462-471

49. Rungrassamee, W, Kingcha, Y, Srimarut, Y, Maibunkaew, S, **Karoonuthaisiri, N**, Visessanguan, W. 2014. Mannooligosaccharides from copra meal improves survival of the Pacific white shrimp (*Litopenaeus vannamei*) after exposure to *Vibrio harveyi*. *Aquaculture* 434:403-410.
50. Chirakul, S, Bartpho, T, Wongsurawat, T, Taweechaisupapong, S, **Karoonuthaisiri, N**, Talaat, A.M, Wongratanacheewin, S, Ernst, RK, Sermswan, RW. Characterization of BPSS1521 gene (bprD), a regulator of *Burkholderia pseudomallei* virulence gene in mouse model. *PLoS ONE* 9(8): e104313. doi:10.1371/journal.pone.0104313
51. Leelatanawit, R, Uawisetwathana, U, Kudej, J, Klanchui, A, Phomklad, S, Wongtripop, S, Angthoung, P, Jiravanichpaisal, P, **Karoonuthaisiri, N**.* 2014 Effects of polychaetes (*Perinereis nuntia*) on sperm performance of the domesticated black tiger shrimp (*Penaeus monodon*). *Aquaculture* 433, 266–275
52. Charlermroj, R, Himananto, O, Seepiban, C, Kumpoosiri, M, Warin, N, Gajanandana, O, Elliott, CT, **Karoonuthaisiri, N**. 2014. An Antibody Array in a Multiwell Plate Format for the Sensitive and Multiplexed Detection of Important Plant Pathogens. *Analytical Chemistry* 86(14):7049-56
53. Rungrassamee, W, Klanchui, A, Maibunkaew, S, Chaiyapechara, S, Jiravanichpaisal, P, **Karoonuthaisiri, N**.* 2014. Characterization of intestinal bacteria in wild and domesticated adult black tiger shrimp (*Penaeus monodon*). *PLoS ONE* 9(3): e91853. doi:10.1371/journal.pone.0091853
54. Teerapornpantakit, J, Klanchui, A, **Karoonuthaisiri, N**, Wongdee, K, Charoenphandhu, N. 2014. Expression of transcripts related to intestinal ion and nutrient absorption in pregnant and lactating rats as determined by custom-designed cDNA microarray. *Mol Cell Biochem.* 391:103–116 doi:10.1007/s11010-014-1992-8
55. Wang, J, Morton, M, Elliott, CT, **Karoonuthaisiri, N**, Segatori, L, Biswal, SL. 2014. Rapid detection of pathogenic bacteria and screening of phage-derived peptides using microcantilevers. *Anal Chem.* 86 (3): 1671–1678
56. **Karoonuthaisiri, N**.* Charlermroj, R, Morton, MJ, Oplatowska, M, Grant, IR, Elliott, CT. 2014. Development of a M13 Bacteriophage-based SPR detection assay using *Salmonella* detection as a case study. *Sens. Actuators B: Chem* 190: 214– 220
57. Thaitrong, N, Charlermroj, R, Himananto, O, Seepiban, C, **Karoonuthaisiri, N**. 2013. Implementation of Microfluidic Sandwich ELISA for Superior Detection of Plant Pathogens. *Plos ONE* 8(12): e83231.
58. Morton, M.J, **Karoonuthaisiri, N**, Charlermroj, R, Stewart, L.D, Elliott, C.T, Grant, I.R. 2013. Phage display-derived binders able to distinguish *Listeria monocytogenes* from other *Listeria* species. *Plos One* 8(9): e74312. doi:10.1371/journal.pone.0074312
59. Rungrassamee, W, Maibunkaew, S, **Karoonuthaisiri, N**, Jiravanichpaisal, P. 2013. Application of bacterial lipopolysaccharide to improve survival of the black tiger shrimp after *Vibrio harveyi* exposure. *Developmental and Comparative Immunology* 41(2): 257 - 262
60. Morton, M.J, **Karoonuthaisiri, N**, Stewart, L.D, Oplatowska, M, Elliott, C.T, Grant, I.R. 2013. Production and evaluation of the utility of novel phage display-derived peptide ligands to *Salmonella* spp. for magnetic separation. *J Appl Microbiol* 115: 271--281
61. Charlermroj, R, Oplatowska, M, Gajanandana, O, Himananto, O, Grant, I.R, **Karoonuthaisiri, N**, Elliott, C.T. 2013. Strategies to Improve the Surface Plasmon Resonance-Based Immunodetection of Bacterial Cells. *Microchimica Acta* 180(7): 643-650
62. Charlermroj, R, Himananto, O, Seepiban, C, Kumpoosiri, M, Warin, N, Oplatowska, M, Gajanandana, O, Grant, I.R, **Karoonuthaisiri, N**, Elliott, CT. 2013. Multiplex Detection of Plant Pathogens Using a Microsphere Immunoassay Technology. *PLoS ONE* 8(4):e62344.
63. Rungrassamee, W, Klanchui, A, Chaiyapechara, S, Maibunkaew, S, Tangphatsornruang, S, Jiravanichpaisal, P, **Karoonuthaisiri, N**.* 2013. Bacterial population in intestines of the black tiger shrimp (*Penaeus monodon*) under different growth stages. *PLoS ONE* 8(4):e60802.
64. Leelatanawit, R, Klanchui, A, Uawisetwathana, U, **Karoonuthaisiri, N***. 2012. Validation of reference genes for real-time PCR of reproductive system in the black tiger shrimp. *PLoS ONE* 7(12): e52677.
65. Rungrassamee, W, Tosukhowong, A, Klanchui, A, Maibunkaew, S, Plengvidhya, V, **Karoonuthaisiri, N**. 2012. Development of bacteria identification array to detect the lactic acid bacteria in Thai fermented sausage. *J. Micro Methods* 91:341–353.

66. Ruktanonchai, U, Nuchuchua, O, Charlermroj, R, Pattarakankul, T, **Karoonuthaisiri, N.*** 2012. Signal Amplification of Microarray-based Immunoassay by Optimization of Nanoliposome Formulations. *Analytical Biochemistry* 429(2):142-7.
67. Bartpho, T, Wongsurawat, T, Wongratanacheewin, S, Talaat, AM, **Karoonuthaisiri, N**, Sermswan, RW. 2012. Genomic islands as a marker to differentiate between clinical and environmental *Burkholderia pseudomallei*. *PLoS ONE* 7(6): e37762.
68. Oaew, S, Charlermroj, R, Pattarakankul, T, **Karoonuthaisiri, N.** 2012. Gold nanoparticles/horseradish peroxidase encapsulated polyelectrolyte nanocapsule for signal amplification in *Listeria monocytogenes* detection. *Biosens Bioelectron.* 15;34(1):238-43.
69. Charlermroj, R, Oplatowska, M, Kumposiri, M, Himananto, O, Gajanandana, O, Elliott, C, **Karoonuthaisiri, N.*** 2012. Comparison of techniques to screen and characterize bacteria-specific hybridomas for high quality monoclonal antibodies selection. *Analytical Biochemistry* 421(1):26-36.
70. Chaiyapechara, S, Rungrassamee, W, Suriyachay, I, Kuncharin, Y, Klanchui, A, **Karoonuthaisiri, N**, Jiravanichpaisal, P. 2012. Bacterial community associated with the intestinal tract of *P. monodon* in commercial farms. *Microbial. Ecology.* 63(4):938-53
71. Uawisetwathana, U, Leelatanawit, R, Klanchui, A, Prommoon, J, Klinbunga, S, **Karoonuthaisiri, N.*** 2011 Insights into Eyestalk Ablation Mechanism to Induce Ovarian Maturation in the Black Tiger Shrimp. *PLoS ONE* 6(9): e24427
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Book chapter

Klingbunga, S, Khamnamtong, B, Preechaphol, R, Leelatanawit, R, Talakhun,W, **Karoonuthaisiri, N**, Roytrakul, S, Penman, DJ, McAndrew, BJ, Menasveta, P. 2010.

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INTELLECTUAL PROPERTIES

International Patents

Patents

1. Himamanto, O, Gajanandana, O, Karoonuthaisiri, N, Charlermroj, R, Rukpratanporn, S, Kumposiri, M, Yoohat, K, Phuengwas, S, Makornwattana, M. Bead array method for screening of hybridoma cell using protein membrane of bacterial cells. Application No. 2001004440 (filed in Thailand on August 7, 2020)
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23. G. Pichayawaytin et al., Light readout system for microarray spots, Thailand Patent Application No. 2301006142, Sep 2023.
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Petite patents

1. Development of DNA primers and probe for sex prediction in black tiger shrimp
2. Extraction method for microbial co-cultivation samples to obtain high metabolite coverage
3. Designing of specific epitopes for immune stimulation or allergy diagnosis
4. **Karoonuthaisiri, N**, Charlermroj, R, Makornwattana, M, Phuengwas, S, Praneenarat, T, Noppakuadrattidej, P, Vilaivan, T, Sirisattha, R. Primers specific to foodborne pathogens and method of primers reaction test therefore. Application No. 2003002324 (filed in Thailand on September 18, 2020)
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9. Charlermroj, R, **Karoonuthaisiri, N**, Makornwattana, M, Phuengwas, S, Meerak, J, Pichpol, D. A method to identify and discriminate species of multiple foodborne pathogens by bead array technique. Application No.1703002573 (filed on December 26, 2017)
10. Boonruang, S, Somboonkaew, A, **Karoonuthaisiri, N**, Charlermroj, R, Sooksimuang, T, Sahasithiwat, S, Porntheeraphat, S, Makornwattana, M, Kangkaw, L, Panchan, W, Aungskunsiri, K, Pongsoon, P, Amarit, R, Chanhorm, S, Pichayawaytin, G. Real-time reading system for multi-fluorescent color. Application No. 1703000334 (filed in Thailand on February 28, 2017)
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Trade secret

Karoonuthaisiri, N, Chatchawankanphanich, O, Charlermroj, R, Warin, N, Makornwattana, M, Phuengwas, S. Sample preparation for multiplex detection of four viroids in plant.

Commercial Prototypes

1. **Karoonuthaisiri, N**, Charlermroj, R, Makornwattana, M, Phuengwas, S, Himamanto, O, Warin, N, Seepiban, C, Gajanandana, O. Bead array method to simultaneously detect bacteria and viruses in curcubit.
2. **Karoonuthaisiri, N**, Charlermroj, R, Makornwattana, M, Himamanto, O, Warin, N, Seepiban, C, Gajanandana, O. Antibody array method to simultaneously detect bacteria and viruses in curcubit in a 96-well plate format.

GRANTS FROM INTERNATIONAL AND NATIONAL AGENCIES

- European Commission FP6
- European Commission Horizon2020
- National Science and Technology Development Agency
- National Center for Genetic Engineering and Biotechnology
- National Research Council of Thailand
- Thailand Research Fund
- Agricultural Research Development Agency
- Various private companies around the world

REFFEE FOR PEER-REVIEWED JOURNALS

1. Biosensors Bioelectronics
2. BMC Genomics
3. Developmental & Comparative Immunology
4. PlosOne
5. BMC Molecular Biology
6. Food Research International
7. Journal of Immunological Methods
8. Mol Cell Endocrinology
9. Anaerobe
10. Analytical Letters
11. Aquaculture
12. Analytical Methods
13. Analytical Chemistry