



Australian Centre for Disease Preparedness
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Curriculum Vitae

Name: Dr Agus Sunarto

Academic Qualifications

<i>Qualification</i>	<i>Date</i>	<i>Conferring Institution, Country & Thesis</i>
PhD	2011	University of Queensland, Australia (Understanding latency of koi herpesvirus in carp, <i>Cyprinus carpio</i>)
MVSc	2002	University Putra Malaysia, Malaysia (Characterization of white spot syndrome virus in tiger prawn, <i>Penaeus monodon</i>)
DVM	1994	Bogor Agricultural University, Indonesia (Vibrio luminescent in tiger prawn)
BVSc	1992	Bogor Agricultural University, Indonesia

Employment History

<i>Dates of Appointment</i>	<i>Level and Title of Appointment</i>	<i>Department/School, Institution, and Country</i>	<i>Details</i>
2019-present	Senior Research Scientist	CSIRO Health & Biosecurity, Australia	Senior Research Scientist in Managing Invasive Species and Diseases (MISD) Programme
2015-2019	Research Scientist	CSIRO Health & Biosecurity, Australia	Research Scientist in MISD Programme
2013-2015	Postdoctoral Fellow	CSIRO Australian Animal Health Laboratory, Australia	Postdoctoral Fellow in Carp Biocontrol Project
2005-2013	Head	Ministry of Marine Affairs and Fisheries (MMAF, Indonesia)	Head of MMAF's Fish Health Research Laboratory (FHRL)
2004-2005	Co-ordinator	MMAF, Indonesia	Co-ordinator of Virology Unit, FHRL
2002-2004	Research Scientist	MMAF, Indonesia	Research Scientist at FHRL
1994-2001	Junior Research Scientist	MMAF, Indonesia	Junior Research Scientist at FHRL

Honours and Awards

<i>Dates</i>	<i>Award</i>	<i>Conferring Organisation</i>	<i>Details</i>
2015	Kavli Fellow	Australian Academy of Science	One of 10 Australian EMCRs to attend the 5 th Kavli Frontiers of Science Symposium
2006	John Allright Fellowship	Australian Centre for International Agricultural Research (ACIAR)	PhD scholarship at the University of Queensland
2002	The Best Thesis Award	University Putra Malaysia	The best master's thesis of the Faculty of Veterinary Medicine
1996	AARD Award	Indonesian Agency for Agricultural Research and Development (AARD)	Outstanding research on immuno-stimulant in fish

Current Roles:

- Project Leader - Carp biocontrol: transmission dynamics of koi herpesvirus (KHV)
- Project Leader - Tilapia biocontrol: evaluation and bioprospecting
- Project Leader - Aquatic chicken: all-male fast-growing tilapia.

Carrier Overview

Agus Sunarto is a virologist by training with PhD from the University of Queensland, Australia. His work on prawn viruses has resulted in a book chapter in *Aquaculture Virology* (Academic Press/Elsevier Inc.). Agus led the investigation of mass mortality of carp in Indonesia and confirmed the first outbreak of koi herpesvirus (KHV, also known as cyprinid herpesvirus 3, CyHV-3) in Asia. He also isolated the Indonesian KHV C07 isolate, a new genetic lineage of KHV. After moving to Australia, Agus demonstrated that the KHV C07 isolate is highly virulent in Australian carp, and this led to 12 years collaboration with Dr Ken McColl on KHV as a potential biological control agent for invasive carp in Australia, funded by Invasive Animals Cooperative Research Centre (IA-CRC 2007-17) and National Carp Control Program (NCCP 2018-21). Agus initiated and developed a concept on "Managing tilapia as the aquatic chicken and an invasive species" and a project leader for "Tilapia biocontrol: evaluation and bioprospecting" funded by Centre for Invasive Species Solutions (CISS 2019-21) <https://invasives.com.au/research/tilapia-biocontrol/>. Currently, Agus is a senior research scientist in the Genome Engineering Team, exploring the application of gene-editing technologies for improving aquaculture productivity and managing invasive fish. Agus is also an ON PRIME graduate with initiative of "Aquatic Chicken: all-male fast-growing tilapia".

Before joining Commonwealth Scientific and Industrial Research Organisation (CSIRO, Australia) in 2013, Agus was head of the Fish Health Research Laboratory (FHRL) within the Indonesian Ministry of Marine Affairs and Fisheries. One of the achievements includes planning and overseeing the development of the new FHRL campus, and relocation of the old lab to this new campus. Agus has developed a strong track record of working with regional and international organisations including ACIAR, SEAFDEC, NACA, FAO and WorldFish Centre. Agus is an FAO national consultant for Technical Cooperation Programme on Health Management in Freshwater Aquaculture (TCP/INS/2905A). He is also an international consultant for WorldFish Centre on a mission investigating mass mortalities in tilapia in Bangladesh, and actively involved in the Global Tilapia Health Consortium led by WorldFish Centre. As Vice-Chairperson of the Fish Health Section of the Asian Fisheries Society (FHS-AFS) <http://www.fhs-afs.net/>, Agus organised the 10th Symposium on Diseases in Asian Aquaculture (DAA10) in Bali in 2017, which was attended by 402 participants from 29 countries. Currently, Agus is Chairperson of the FHS-AFS (2017-present). He is also a guest lecturer at University Diponegoro (Indonesia), Deakin University and James Cook University, where he teaches aquaculture virology.

Other Service, Consultancy and Adviser:

2020	Guest lecturer on aquaculture virology at Diponegoro University (Indonesia) and James Cook University.
2016-ongoing	Guest lecturer for master's degree on aquaculture biotechnology at Deakin University.
2017	International consultant for WorldFish Centre on tilapia lake virus (TiLV) and tilapia health.
2017-20	Chairperson of the Fish Health Section - Asian Fisheries Society (FHS-AFS). www.fhs-afs.net
2014-17	Vice-Chairperson of the Fish Health Section - Asian Fisheries Society. Organized the 10 th Symposium on Diseases in Asian Aquaculture, August 2017, Bali, Indonesia.
2014	Indonesian delegate for the UK-SEA Workshop on Sustainable Aquaculture. Bangkok, Thailand.
2004-ongoing	Regional resource expert on KHV at NACA based in Bangkok, Thailand.
2011-13	Member of the scientific advisory board on Fish Quarantine for the Directorate General of Fish Quarantine, the Indonesian Ministry of Marine Affairs and Fisheries.
2011-13	Guest lecturer for postgraduate program at Bogor Agricultural University, Indonesia.
2005-13	Technical adviser for Indonesian Shrimp Clubs since it was established in 2005.
2003-04	Indonesian national consultant in Virology for FAO's Technical Cooperation Program on 'Health Management in Freshwater Aquaculture'.
2002-06	Board member of the Technical Expert on Fish Diseases for the Directorate of Fish Health and Environment, the Indonesian Ministry of Marine Affairs and Fisheries.

Editorial Board Member, Reviewer and Editor:

- Editorial board of Indonesian Aquaculture Journal and Journal of Aquatic Research and Marine Sciences (USA) <https://norcaloa.com/ARMS>.
- Referee papers for Veterinary Research, Veterinary Microbiology, Fish and Shellfish Immunology, Journal of Fish Diseases, Journal of Aquatic Animal Health, Diseases of Aquatic Organisms, Aquaculture, Frontiers in Microbiology and Journal of Applied Ecology.
- Co-founder and Editor-in-chief of the INFHEM Magazine, published by the Indonesian Network on Fish Health Management ISSN 2302-9641 (2012-13).

Major Projects:

- Tilapia biocontrol: Evaluation and bioprospecting. Funded by Centre for Invasive Species Solutions (CISS) 2019-21.
- KHV as a biological control agent for carp in Australia. Funded by IA-CRC 2007-2017 and NCCP 2018-21.
- FAO Technical Cooperation Programme: Health Management in Freshwater Aquaculture (TCP/INS/2905A). 2003-4.
- Japan-funded SEAFDEC: Development of formalin-based vaccine against KHV. 2004-06.
- Australian Centre for International Agricultural Research (ACIAR):
 - Application of PCR for improved shrimp health management in the Asian region (FIS/2002/075). 2005-08.
 - Health management in prawn hatcheries and grow-out ponds (PN9411). 1995-98.

Publications (52):

Summary and Metrics

Total Publications: 52	
International publications:	27
Book chapters	2
Journal articles	13
Conference papers	11
Other publications	1
Indonesian national publications	25

Publication Metrics		
Citation indices	ResearcherID H-3471-2013	Google Scholar
h-index	10	14
Citations	344	653
Average citations per article	21	n/a
Average citations per year	20	n/a
Publication listed	19	42

International publications (27)

Book chapters (2):

1. **Sunarto, A.** and S. Naim. **2016**. Totiviruses of Crustaceans. *In* F.S.B. Kibenge and M.G. Godoy (Eds). Aquaculture Virology. Academic Press/Elsevier Inc. p425-439. <http://dx.doi.org/10.1016/B978-0-12-801573-5.00030-9>
2. McColl, K.A, A. **Sunarto** and L. Li. **2016**. Cypriniviruses. *In* D. Liu (Ed.). Molecular detection of animal viral pathogens. CRC Press/Taylor & Francis. Florida. p789-795. <https://www.crcpress.com/Molecular-Detection-of-Animal-Viral-Pathogens/Liu/p/book/9781498700368>

Journal articles (13):

3. McColl, K.A. & **Sunarto, A.**, **2020**. Biocontrol of the Common Carp (*Cyprinus carpio*) in Australia: A Review and Future Directions. *Fishes* 5, 17. <https://doi.org/10.3390/fishes5020017>
4. Bondad-Reantaso, M. G., Mackinnon, B., Bin, H., Jie, H., Tang-Nelson, K., Surachetpong, W., Alday-Sanz, V., Salman, M., Brun, E., Karunasagar, I., Hanson, L., Sumption, K., Barange, M., Lovatelli, A., **Sunarto, A.**, Fejzic, N., Subasinghe, R., Mathiesen, A. M., & Shariff, M. **2020**. Viewpoint: SARS-CoV-2 (The Cause of COVID-19 in Humans) is Not Known to Infect Aquatic Food Animals nor Contaminate Their Products. *Asian Fisheries Science*, 33: 74–78. <https://doi.org/10.33997/j.afs.2020.33.1.009>
5. McColl, K. A., **Sunarto, A.**, & Neave, M. **2018**. Biocontrol of carp: More than just a herpesvirus. *Frontiers in Microbiology* 9: 2288. <https://doi.org/10.3389/fmicb.2018.02288>
6. Neave, M. J., **Sunarto, A.**, & McColl, K. A. **2017**. Transcriptomic analysis of common carp anterior kidney during Cyprinid herpesvirus 3 infection: Immunoglobulin repertoire and homologue functional divergence. *Scientific Reports*, 7, 41531. <http://www.nature.com/articles/srep41531>
7. McColl, K. A., **Sunarto, A.**, & Holmes, E. C. **2016**. Cyprinid herpesvirus 3 and its evolutionary future as a biological control agent for carp in Australia. *Virology Journal*, 13(1), 206. <https://link.springer.com/article/10.1186/s12985-016-0666-4>
8. McColl, K. A., **Sunarto, A.**, Slater, J., Bell, K., Asmus, M., Fulton, W., Hall, K., Brown, P., Gilligan, D., Hoad, J., Williams, L.M. & Crane, M.S. **2016**. Cyprinid herpesvirus 3 as a potential biological control agent for carp (*Cyprinus carpio*) in Australia: susceptibility of non-target species. *Journal of Fish Diseases* <http://onlinelibrary.wiley.com/doi/10.1111/jfd.12591/epdf>
9. **Sunarto, A.** and K.A McColl. **2015**. Expression of immune-related genes of common carp during cyprinid herpesvirus 3 infection. *Diseases of Aquatic Organisms*, 113: 127-135. <http://www.int-res.com/articles/dao2015/113/d113p127.pdf>
10. **Sunarto, A.** K.A McColl, M.St.J. Crane, K.A. Schat, B. Slobedman, A.C. Barnes and P.J. Walker. **2014**. Characteristics of cyprinid herpesvirus 3 in different phases of infection: Implications for disease transmission and control. *Virus Research*, 188: 45-53. <http://www.sciencedirect.com/science/article/pii/S0168170214001440>

11. McColl, K.A., B.D. Cooke and **A. Sunarto**. 2014. Viral biocontrol of invasive vertebrates: lessons from the past applied to cyprinid herpesvirus-3 and carp (*Cyprinus carpio*) control in Australia. *Biological Control*, 72: 109-117. <https://www.cabdirect.org/cabdirect/abstract/20143171434>
12. **Sunarto, A.**, C. Liongue, K.A. McColl, M.M. Adams, D. Bulach, M.St.J. Crane, K.A. Schat, B. Slobedman, A.C. Barnes, A.C. Ward and P.J. Walker. 2012. Koi herpesvirus encodes and expresses a functional interleukin-10. *Journal of Virology*, 86: 11512-11520. <http://jvi.asm.org/content/86/21/11512.full>
13. **Sunarto, A.**, K.A. McColl, M.St.J. Crane, T. Sumiati, A.D. Hyatt, A.C. Barnes and P.J. Walker, 2011. Isolation and characterization of koi herpesvirus (KHV) in Indonesia: identification of a new genetic lineage. *Journal of Fish Diseases*, 34: 87-101. <http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2761.2010.01216.x/full>
14. Corbeil, S., A. Colling, L.M. Williams, F.Y.K. Wong, K. Savin, S. Warner, B. Murdoch, C.O.I. Cogan, T.I. Sawbridge, M. Fegan, I. Mohammad, **A. Sunarto**, J. Handler, P. Pyecroft, M. Douglas, P.H. Chang and M.St.J. Crane. 2010. Development and validation of a TaqMan® PCR assay for the Australian abalone herpes-like virus. *Diseases of Aquatic Organisms*, 9: 1-10. http://www.int-res.com/articles/dao_oa/d092p001.pdf
15. Kurita, J., K. Yuasa, T. Ito, M. Sano, R.P. Hedrick, M.Y. Engelsma, O.L.M. Haenen, **A. Sunarto**, E.B. Kholidin, H.Y. Chou, M.C. Tung, L. de la Peña, G. Lio-Po, C. Tu, K. Way and T. Iida. 2009. Molecular epidemiology of koi herpesvirus (KHV). *Fish Pathology*, 44: 59-66. <https://doi.org/10.3147/jsfp.44.59>

Conference papers (11):

16. **Sunarto, A.** and K.A. McColl. 2016. Biological control of tilapia: a potential virus. *Proceedings of the 5th Queensland Pest Animal Symposium*. Pest Animal Branch of the Weed Society of Queensland. p32-35.
17. Bondad-Reantaso, M.G., **A. Sunarto** and R.P. Subasinghe. 2007. Managing koi herpesvirus disease outbreak in Indonesia and the lessons learned. *Developments in Biologicals*, 129: 21-28.
18. **Sunarto, A.** and A. Cameron. 2006. Epidemiology and control of koi herpesvirus in Indonesia. *Proceedings of the 11th International Society on Veterinary Epidemiology and Economics*, Cairns, Australia. 4p (also available at www.sciquest.org.nz)
19. **Sunarto, A.** and A. Cameron. 2005. Response to mass mortality of carp: an Indonesian experiences. In Subasinghe, R.P. and J.R. Arthur (Eds). *Regional Workshop on Preparedness and Response to Aquatic Animal Health Emergencies in Asia*. FAO Fisheries Proceedings. No. 4. Rome. P87-106.
20. **Sunarto, A.**, A. Rukyani and T. Itami. 2005. Indonesian experience on the outbreak of koi herpesvirus in koi and common carp (*Cyprinus carpio*). *Japan Bulletin of Fisheries Research Agency. Supplement 2*: 15-21.
21. Musa, N., L.K. Leong and **A. Sunarto**. 2005. Koi herpesvirus (KHV) – an emerging pathogen in koi. *Colloquium on Viruses of Veterinary and Public Health Importance*, Bangi, Malaysia, p146-147.
22. **Sunarto, A.**, Tauhid, A. Rukyani, I. Koesharyani, H. Supriyadi, H. Huminto, D.R. Agungpriyono, F.H. Pasaribu, Widodo, D. Herdikawan, D. Rukmono and S.B. Prayitno, 2005. Field investigations on a serious disease outbreak among koi and common carp (*Cyprinus carpio*) in Indonesia. In Walker, P.J., R.G. Lester and M.G. Bondad Reantaso (Eds). *Diseases in Asian Aquaculture V. Proceedings of the 5th Symposium on Diseases in Asian Aquaculture. Fish Health Section, Asian Fisheries Society*, Manila. P125-136.
23. **Sunarto, A.**, Widodo, Tauhid, I. Koesharyani, H. Supriyadi, L. Gardenia, B. Sugianti and D. Rukmono. 2004. Current Status of Transboundary Fish Diseases in Indonesia: Occurrence, Surveillance, Research and Training. In Lavilla-Pitogo, CR and Nagasawa, K (Eds). *Transboundary Fish Diseases in Southeast Asia: Occurrence, Surveillance, Research and Training*. SEAFDEC Aquaculture Department, Tigbauan, Iloilo, Philippines. P91-122.
24. Rukyani, A., Hardjono and **A. Sunarto**. 2003. Status of Quarantine Procedures for Live Fish in Indonesia. *Proceedings of Regional Seminar on the Harmonization of Quarantine Procedures for Live Fish in ASEAN Countries*.
25. Rukyani, A., Tauhid and **A. Sunarto**. 1999. The application of Vibrio bacterin and Lipopolysaccharide (LPS) to induce immune function of black tiger shrimp (*Penaeus monodon* Fabr.) in netcages. *Proceeding of Tropical Fisheries and Aquaculture Conference*, Malaysia.
26. Rukyani, A and **A. Sunarto**. 1998. Non-specific Pathogen Resistant (NsPR) *Penaeus monodon*: a Complementary of SPF Broodstock Development. *Proceedings of Workshop on the Development of Specific Pathogen Free of Penaeus monodon Broodstock in ASEAN Countries*.

Magazine (1):

27. McColl, K.A., **A. Sunarto**, L.M. William and M.St.J. Crane. 2007. The koi herpesvirus: dreaded pathogen or white knight? *Aquaculture Health International*, 9: 4-6.

Oral Presentations at International Conferences (24):

1. Managing koi herpesvirus (KHV) in koi and carp. Nusatic Ornamental Fish Trade and Show. Jakarta, **Indonesia, 2018.**
2. Next-gen tilapia biosecurity. Global Tilapia Health Workshop. WorldFish Centre, Penang, **Malaysia, 2017.**
3. Koi herpesvirus in carp: The tale of two countries. 10th Symposium on Diseases in Asian Aquaculture. Bali, **Indonesia, 2017.**
4. Current status of koi herpesvirus in the Asia-Pacific region. The OIE Twinning Program: Recent Status and Control of Koi Herpesvirus in South East Asia Countries. Bali, **Indonesia, 2017.**
5. Biological control of tilapia: a potential virus. 5th Queensland Pest Animal Symposium. Townsville, **Australia, 2016.**
6. Koi herpesvirus: dreaded pathogen or white knight? 5th Kavli Frontiers of Science Symposium. Makassar, **Indonesia, 2015.**
7. Whole-genome sequencing of koi herpesvirus: from *in silico* to field applications. 3rd Australasian Scientific Conference on Aquatic Animal Health. Cairns, **Australia, 2015.**
8. KHV: some practical considerations for the use of a herpesvirus as a biocontrol agent. Invasive Animals CRC Conference. Canberra, **Australia, 2015.**
9. Latency of koi herpesvirus in carp: Implications on diseases transmission and control. 9th Symposium on Diseases in Asian Aquaculture. Ho Chi Minh City, **Vietnam, 2014.**
10. Current status and research capability on fish and shellfish health in Indonesia. UK-SEA Workshop on Sustainable Aquaculture. Bangkok, **Thailand, 2014.**
11. KHV-encoded IL-10: what we know and don't? 2nd Australasian Scientific Conference on Aquatic Animal Health. Cairns, **Australia, 2013.**
12. Epidemiology and control of koi herpesvirus in Indonesia. 11th Symposium of International Society for Veterinary Epidemiology and Economics. Cairns, **Australia, 2006.**
13. Development of cell line from tail of koi (*Cyprinus carpio*) and isolation of koi herpesvirus from Indonesian aquaculture. 6th Diseases in Asian Aquaculture. Colombo, **Srilanka, 2005.**
14. Mucus as DNA source for non-lethal diagnosis of koi herpesvirus (KHV) in common carp (*Cyprinus carpio*). World Aquaculture Society Conference. Bali, **Indonesia, 2005.**
15. Lessons learnt from KHV outbreaks and need for practical approaches to emergency preparedness and response. Emergency Preparations and Response to Disease Outbreak, a Special Session organized by FAO/NACA at World Aquaculture Society Conference. Bali, **Indonesia, 2005.**
16. Role of non-governmental organisations (NGOs) in the development of fish health management in Indonesia. World Aquaculture Society Conference, Bali, **Indonesia 2005.**
17. Epidemiology, diagnostic and preventive practices for koi herpesvirus (KHV) in Indonesia. KHV Infection: Present Status and Future Prospects for Prevention. Tokyo, **Japan, 2004.**
18. Response to mass mortality of carp: an Indonesian experience. FAO Regional Workshop on Preparedness and Response to Aquatic Animal Health Emergencies. Jakarta, **Indonesia, 2004.**
19. Trans-boundary aquatic animal pathogens in Indonesia. Building Capacity to Combat Impacts of Aquatic Invasive Alien Species and Associated Trans-boundary Pathogens in ASEAN Countries. Organized by FAO. Penang, **Malaysia, 2004.**
20. Current status of trans-boundary fish diseases in Indonesia. Meeting on Trans-boundary Fish Diseases in Southeast Asia. Organized by South East Asian Fisheries Development Centre (SEAFDEC). Manila, **Philippines, 2004.**
21. Indonesian experience on the outbreak of koi herpesvirus in koi and common carp (*Cyprinus carpio*). International Symposium on Koi Herpesvirus Disease: Strategy for Koi Herpesvirus Disease Control, Yokohama, **Japan, 2004.**
22. Outbreak of disease causing mass mortality in koi and common carp (*Cyprinus carpio*) in Indonesia. International Workshop on Koi Herpesvirus. London, **England, 2004.**
23. Field investigations on a serious disease outbreak in koi and common carp (*Cyprinus carpio*) in Indonesia. 5th Diseases in Asian Aquaculture, Gold Coast, **Australia, 2002.**
24. **Current status of fish and shrimp disease problems in Indonesian aquaculture.** Petit Symposium on Aquaculture. National Fisheries University, Shimonoseki, **Japan, 2002.**

Indonesian national publications (25, not listed in this CV)

END