CURRICULUM VITAE

ANYA SALIH, PH.D.

Phone: (61) 468387110; Email: A.Salih@westernsydney.edu.au,

Australian Citizen

(i) Professional Preparation

- Ph.D. Marine Biology, University of Sydney, 2001
- M.Sc Marine Biology, University of Sydney 1998
- M.S. Marine Biology, University Khartoum, 1989
- B.Sc. Honors Zoology, University Khartoum, 1985

(ii) Appointments

2007-2021	Senior Research Fellow / Senior Lecturer (Level C) / Manager of Confocal Bio-Imaging Facility, Western Sydney University
2003-2007	Sesqui Senior Research Fellow, Australian Center Microscopy & Microanalysis, University of Sydney
2001-2003	Post doctoral research fellow, ACM&M, University of Sydney

(iii) Awards & Honors

2020 Emmy for Outstanding Approaches to New Documentary – Chief Scientist and 3D image specialist in the team – Awavena virtual and augmented reality documentary.

2014 Member of Photosynthesis team (headed by Oula Ganoun) nominated for the Deputy Vice-Chancellor Research Award in category of 'Excellence in Research Interdisciplinary Team Award'.

2006 Innovation Challenge Griffith Hack Award for best R&D project, University of Sydney

2003 Awarded University of Sydney's most prestigious fellowship – the Chancellor's Postdoctoral Research Fellowship Scheme, SESQUI Post-doctoral fellowship

Current research I have research projects in the following areas:

- **Novel biotechnological applications of fluorescent proteins (FPs) in biomedical, bioimaging and cell biological fields.** I am recognized as one of the world's leading experts in the biology and optics of GFP-type (green fluorescent protein) proteins from reef corals. In collaboration with a multidisciplinary team, we characterized and patented over 50 novel coral GFP-type proteins for cellular labelling, gene and protein tagging technologies in bacterial, mammalian and plant cells as transient expressions or in target protein fusions (8 journal publications; 6 international patents). One of the proteins I helped to develop, EosFP, has become widely used by researchers world-wide in plant and medical sciences (cited in over 600 publications).

- **Light optimization strategies of photosynthetic organisms & optical properties of plants, animals and human tissues.** *In situ* measurements of light quantity and quality, transmission and absorption using microsensor system to collect in situ spectrally resolved light fields with a micrometer spatial resolution in organisms, microalgae, plants, etc. Confocal imaging and micro-spectroscopy to characterize structural adaptations for light propagation and harvesting. Cellular and molecular mechanisms to reduce photostress. Micro-optical characterization of tissues in healthy and diseases organisms, including mammals and in cancer.

- **Biomimetic & biologically inspired optical designs for renewable energy - biofuels and solar energy generation.** Corals evolved to grow microalgae at high photosynthetic

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- **Biomimetic & biologically inspired optical designs for renewable energy - biofuels and solar energy generation.** Corals evolved to grow microalgae at high photosynthetic

efficiencies, solving the key challenge faced by commercial algal bioreactors due to self-shading of algae at high densities that limits the scaling-up of bioenergy generation. Corals also solved the problem of light harvesting by evolving efficient solar energy harvesting and channeling photonic systems. By learning from this nature, and by integrating concepts of optics and aquatic microbial ecology, in collaboration with a multidisciplinary team of photobiologists, engineers and chemists, I develop strategies to improve microalgal bioreactors and organic solar cell technologies.

- **Photosynthesis in the infrared spectrum by micro-organisms.** Photosystems I and II convert solar energy into the chemical energy that powers life using red light (680 to 700 nm). I research microorganisms that evolved to photosynthesise in the infra-red spectrum using chlorophyll D and F, breaking the barrier of energy "red limit" of oxygenic photosynthesis. In collaboration with researchers at University Sydney, UTS and UNSW, I have discovered new organisms with chl D and F in marine and terrestrial ecosystems.
- **Impacts of ocean warming on coral reefs and their capacity to survive climate change. I** have over 30 years of experience in research of coral-microalgal ecology, ecophysiology and cellular biology. My PhD research into the biological roles of FPs and cellular mechanisms of enhancing reef corals' resilience to climate change resulted in a landmark publication (Salih *et al.* Nature 2000) cited over 300 times. My current research focusses on Great Barrier Reef and Lord Howe Island reefs, with collaborations on other reefs worldwide.
- **Bioimaing techniques in life sciences.** I have wide-ranging skills in imaging and develop novel techniques for cell biology, bio-optics, medicine, agriculture, marine and terrestrial photophysiology, as well as material sciences, protein chemistry, molecular biology and environmental sciences. I organize national and international forums, symposia and workshops in basic and advanced fluorescence imaging: confocal techniques in 2D, 3D and 4D analyses, time-lapse imaging; confocal and multi-photon techniques, focusing on analyses of protein localization and movement.
- **Scientific data visualization, animation, virtual (VR) and augmented reality (AR),** with links to sciences and to arts and humanities. Many universities are rushing to design degrees to promote transdisciplinarity by combining Art-Science approaches and UWA's Symbiotica lab is an example of such collaboration. I have worked with some of the top VR and AR experts and my confocal images and film clips have been incorporated into internationally acclaimed multi-media and film productions by artists and film-makers. Examples include Coral Rekindling Venus, using imagery of my fluorescent corals, shown in 12 countries and over 50 museums (including Museum Western Australia), centers and festivals, as well as this year's VR/AR film Awavena http://www.awavenavr.com featuring some of my fluorescent and confocal imagery from samples from the Amazon, premiered at Sundance Film Festival and at the World Economic Forum (Davos, Switzerland).

Teaching

- I have taught in introductory cell biology, biophysics and biology courses at University of Sydney and WSU to undergraduate and Applied MSc students. I routinely teach students in live cell imaging, optics and various techniques relevant to confocal imaging as part of my position at WSU during the last 12 years. I develop programs, teach and provide hands-on training in bioimaging techniques via lab classes, workshops and to facility user groups. I have been involved in lecturing in WSU 'Adaptation to climate change' since 2016. I taught courses in Scientific Methodology, Scientific language at part of post-graduate MSc Coursework at University of Sydney.

Publications

Scholarly book chapters

1. **Salih A.** (2019) Fluorescent Proteins. In: Fundamentals of Fluorescence Imaging. 1st Edition, *Edited Guy Cox, Pan Stanford, New York.* ***SBN-10:*** *9814774855;* ***ISBN-13:*** *978-9814774857*
2. **Salih A.** (2012) Screening reef corals for novel GFP-type fluorescent proteins by confocal imaging - *In vivo* cellular imaging using fluorescent proteins. Methods Molecular Biology, 872: 217-233.
3. **Salih A.** (2012) Fluorescence control in natural green fluorescent protein (GFP)-based photonic structures of reef corals. Optical Biomimetics: Materials and Applications, ed. M. Large, Woodhead Publ. UK. p. 199-228.
4. **Salih A.** (2011) Laser scanning confocal imaging of forensic samples and their 3D visualization in digital forensics for the health sciences: Applications in Practice and Research, A Daskalaki, Max Planck Institute, Germany, pp 13-28.
5. **Salih A.**, Wormell P., Garbutcheon-Singh K., Harper B., Myers S., Geny D., Hammang C., Aldrich-Wright J. (2011) Applications of fluorescence spectroscopy and confocal microscopy. In: Metallointercalators Synthesis and Techniques to Probe Their Interactions with Biomolecules, Ed. J R Aldrich-Wright, New York, pp 235-272.
6. Prescott M., **Salih A.** (2009) Genetically encoded fluorescent probes and their applications in the life sciences. In: Fluorescence applications in biotechnology and life sciences., Ed. E. Goldys, New Jersey. USA & Canada, pp 55-77.
7. Cox G., **Salih A.** (2006) Fluorescent characteristics of fluorochromatophores in corals. In: Focus on Multidimensional Microscopy. Ed. Cheng, P.C, Hwang, P.P., Wu, J.L., Wang, G. & H. Kim. World Scientific Publishing Co. Vol. 3. pp. 145-151.
8. **Salih A.** (2003) An Exploration of light regulating pigments of reef corals from macro- to micro- & nano-scales. In: From Zero to Infinity. 32nd Harry Messel International Science Foundation for Physics, University Sydney. Ed. J. Nicholls & B. Pailthorpe. pp. 49-70.

Refereed journal article

9. Mojzes P, Gao L, Nedbal L, Ismagulova T, Solovchenko A, Moudrikova S, Pilátová J, Gorelova O, Solovchenko A. **Salih A (2021)** Guanine is a high-capacity, rapid-turnover nitrogen depot of microalgal cells. PNAS Accepted
10. Trinh QT, Krishna CB, **Salih A**, et al. (2020) Biofilm growth on PVC and HDPE pipes impacts chlorine stability in the recycled water. Journal of Environmental Chemical Engineering. 8, 6 : 104476 https://www.sciencedirect.com/science/article/abs/pii/S2213343720308253?via%3Dihub
11. Lambert GG, Depernet H, Gotthard G, Navizet I, Lambert T, Bindels DS, Levesque V, Moffatt JN, Schultz DT, **Salih A**, Royant A, Shaner NC (2020) *Aequorea*'s secrets revealed: New fluorescent proteins with unique properties for bioimaging and biosensing PLOS Biology 18(11):e3000936. https://doi.org/10.1371/journal.pbio.3000936 https://journals.plos.org/plosbiology/article/citation?id=10.1371/journal.pbio.3000936
12. Dalton S, Carroll A, Sampayo E, Roff G, Harrison P, Entwistle K, Huang Z, **Salih A**, Diamond-Tissue S (2020) Successive marine heatwaves cause significant coral bleaching impacts during a fast phase transition from El Niño to La Niña. Science of The Total Environment 715:136951 DOI: 10.1016/j.scitotenv.2020.136951
13. Brodersen EK, **Salih A** (in prep) Parabolic light channelling by coral corallite architecture enhanced by fluorescent proteins. J Frontiers Marine Science.
14. Wanga F, Chen ZH, Liuc X, Shabalab L, Yue M, Zhoub M, **Salih A**, Shabalab S (2019) The loss of RBOHD function modulates root adaptive responses to combined hypoxia and salinity stress in *Arabidopsis*. Environmental and Experimental Botany 158, 125–135.
15. Garby T, Matys E, Ongley S, **Salih A**, Larkum A, Walter M, Summons R, Neilan B (2017) Lack of methylated hopanoids renders the cyanobacterium Nostoc punctiforme sensitive to osmotic and pH stress. Applied & Environmental Microbiology. 2017, doi: 10.1128/AEM.00777-17

16. Molina R, Tam T, Campbell R, Lambert G, **Salih A**, Shaner N, Hughes T, Drobizhev M (2017) Blue-Shifted Green Fluorescent Protein Homologs Are Brighter Than Enhanced Green Fluorescent Protein under Two-Photon Excitation. Journal of Physical Chemistry Letters. J Phys Chem Letters 2017 Jun 15; 8(12): 2548–2554.
17. Liu X, Cai S, Wang G, Wang F, Dong F, Mak M, Holford P, Ji J, **Salih A**, Zhou M, Shabala S, Chen Z (2017), 'Halophytic NHXs confer salt tolerance by altering cytosolic and vacuolar K+ and Na+ in Arabidopsis root cell', Plant Growth Regulation, vol 82, no 2, pp 333 - 351.
18. Wang, F., Chen, Z., Liu, X., Colmer, T., Shabala, L., **Salih, A.,** Zhou, M. and Shabala, S. (2017), 'Revealing the roles of GORK channels and NADPH oxidase in acclimation to hypoxia in Arabidopsis', Journal of Experimental Botany, vol 68, no 12, pp 3191 - 3204.
19. Fanna D. J., Zhang Y., **Salih A.,** Reynolds J. K., Feng L (2016) Dinuclear complexes of europium(III) and gadolinium(III) ions with a julolidine-quinoline based tridentate ligand Journal of Coordination Chemistry, 69(11), 1883-1892.
20. Chen Z., Liu X., Cai S, Wang G., Wang F., Dong F., Mak M., Holford P., Ji J, **Salih A.**, Zhou M., Shabala S. (In press) Halophytic NHXs confer salt tolerance by altering cytosolic and vacuolar K+ and Na+ in Arabidopsis root cell. Journal of Experimental Botany
21. Lapshin G., **Salih A.,** Kolosov P., Golovkina M., Zavorotnyi Yu S., IvashinaT, Vinokurov L., Bagratashvili V.N., Savitsky A.P. (2015) Fluorescence Color Diversity Of Great Barrier Reef Corals. Journal of Innovative Optical Health Sciences, 8 (4) 1550028: 1-11.
22. Pfautsch S., Renard J., Tjoelker M G., and **Salih, A.** (2015) Phloem as Capacitor: Radial Transfer of Water into Xylem of Tree Stems Occurs via Symplastic Transport in Ray Parenchyma. Plant Physiology, 167: 963–971.
23. Cutrale F., **Salih A.**, Gratton E (2013) Spectral phasor approach for fingerprinting of photo-activatable fluorescent proteins Dronpa, Kaede and KikGR. Method. Appl. Fluoresc. 1(3): 35001.
24. Smith, E.G., D'Angelo, C., **Salih, A**, Wiedenmann, J (2013) Screening by coral green fluorescent protein (GFP)-like chromoproteins supports a role in photoprotection of zooxanthellae. Coral Reefs, 32, (2), 463-474.
25. Larkum AWD, Chen M, Li Y, M Schliep, Trampe E, West J, **Salih A** and M Kuhl (2012) A novel epiphytic chlorophyll d-containing cyanobacterium isolated from a mangrove-associated red alga. J. Phycology 48 (6), pp. 1320-1327.
26. Xu C-Y., **Salih A.**, Ghannoum O., Tissue D.T. (2012) Leaf structural characteristics are less important than leaf chemical properties in determining the response of leaf mass per area and photosynthesis of *Eucalyptus saligna* to industrial-age changes in [CO2] and temperature. Journal of Experimental Botany, Vol. 63, No. 15, pp. 5829–5841.
27. Larkum A.W.D., **Salih A.**, Kuhl M. (2011) Growth and rapid greening of new vegetative segments of calcifying alga *Halimeda macroloba*, PLoS ONE, vol 6 (7), no. e20841, [ORS ID: 221503]
28. Liu A., Fong A., Becket E., Yuan J., Tamae C., Medrano L., Maiz M., Wahba C., Lee C., Lee K., Tran K., Yang H., Hoffman R., **Salih A.**, Miller J. (2011) Selective advantage of resistant strains at trace levels of antibiotics: a simple and ultrasensitive color test for the detection of antibiotics and genotoxic agents, Antimicrobial Agents and Chemotherapy, vol 55, no. 3, pp 1204-1210, [ORS ID: 219390]
29. Kenkel C, Traylor M, Wiedenmann J, **Salih A**, Matz M (2011) Fluorescence of coral larvae predicts their response to the settlement cue and reflects stress, Royal Society of London. Proceedings B. Biological Sciences, vol 278, no. 1718, pp 2691-2697, [ORS ID: 219389]
30. D'Angelo C, Denzel A, Vogt A, Matz M, Oswald F, **Salih A**, Nienhaus G, Wiedenmann J (2008) Blue light regulation of host pigment in reef-building corals, Marine Ecology Progress Series, vol 364, no. 0, pp 97-106, [Pre-UWS], [ORS ID: 214465]
31. Alieva N, Konzen K, Field S, Meleshkevitch E, Hunt M, Beltran-Ramirez V, **Salih A**, + 3 Externals, (2008) Diversity and evolution of coral fluorescent proteins, PLoS ONE 3 (7), e2680 [ORS ID: 209505]
32. Oswald F, Schmitt F, Leutenegger A, Ivanchenko S, D'Angelo C, **Salih A**, Maslakova S, Bulina M, Schirmbeck R, Nienhaus G, Matz M, Wiedenmann J (2007) Contributions of host

and symbiont pigments to the coloration of reef corals, FEBS Journal, vol 274, no. 4, pp 1102-1109, [ORS ID: 214474]
33. Cox G, Matz M, Salih A (2007) Fluorescence lifetime imaging of coral fluorescent proteins, Microscopy Research and Technique, vol 70, no. 3, pp 243-251, [ORS ID: 214473]
34. Leutenegger A, D'Angelo C, Matz M, Denzel A, Oswald F, Salih A, Nienhaus G, Wiedenmann J, (2007) It's cheap to be colorful: Anthozoans show a slow turnover of GFP-like proteins, FEBS Journal, vol 274, no. 10, pp 2496-2505, [ORS ID: 214472]
35. Leutenegger A, Kredel S, Gundel S, D'Angelo C, **Salih A**, Wiedenmann J (2007) Analysis of fluorescent and non-fluorescent sea anemones from the Mediterranean Sea during a bleaching event, Journal of Experimental Marine Biology and Ecology, vol 353, no. 2, pp 221-234, [ORS ID: 214471]
36. Baird A, **Salih A**, Trevor-Jones A (2006) Fluorescence census techniques for the early detection of coral recruits, Coral Reefs, pp 73-76, [Pre-UWS], [ORS ID: 215582]
37. Kahng S, **Salih A** (2005) Localization of fluorescent pigments in a nonbioluminescent, azooxanthellate octocoral suggests a photoprotective function, Coral Reefs, vol 24, no. 3, pp 435-0, [Pre-UWS], [ORS ID: 214490]
38. Wiedenmann J, Ivanchenko S, Oswald F, Schmitt F, **Salih A**, Spindler K.D, and G U Nienhaus (2004). EosFP, a fluorescent marker protein with UV-inducible green-to-red fluorescence conversion. Proceedings of National Academy of Sciences USA. 9 (101) 45, 15905–15910. (208 citations)
39. Gilmore AM, Larkum AWD, **Salih A**, Itoh S, Shibata Y, Bena C, Yamasaki H, Papina M & R Van Woesik (2003) Simultaneous time-resolution of the emission spectra of fluorescent proteins and zooxanthellae chlorophyll in reef-building corals. Photochemistry & Photobiology 77, 515-523. (25 citations)
40. Salih A, Larkum AWD, Cox G, Kühl M and O Hoegh-Guldberg (2000) Fluorescent pigments in corals are photoprotective. Nature 408, 850-853.
41. Cox GC, **Salih A**, James JM and WG Allaway (1995) Confocal microscopy of cyanobacteria in calcite speleothems. Zoological Studies 34, 1: 5-6.
42. **Salih A,** Cox GC and R Hinde (1995) Autofluorescence imaging of symbiotic algae in corals using confocal microscopy - a potential tool for environmental monitoring. Zoological Studies 34, 1: 53-55.

Refereed conference papers

43. **Salih A.** (2011) Photoactive GFP-type fluorescent proteins in reef corals: biological roles and bioimaging applications, 3rd International Symposium Topical Problems BioPhotonics. 3pp.
44. **Salih A.**, Wiedmann J, Cox G (2007) EosFP - A multi-state photoconvertible protein from the coral *Lobophyllia hemprichii*, Progress in Biomedical Optics and Imaging - Proceedings of SPIE [ORS ID: 215575]
45. **Salih A.**, Wiedmann J, Matz M, Larkum A, Cox G (2006) Photoinduced activation of GFP-like proteins in tissues of reef corals, Progress in Biomedical Optics and Imaging - Proceedings of SPIE 6098, art. no. 60980B [ORS ID: 215581]
46. **Salih A.**, Cox G, Coles S, Baird A, Dunstan A, Mills J. & AWD Larkum (2006) Role of coral host-based fluorescent pigments in reducing coral bleaching stress. 10th International Coral Reef Symposium, Okinawa, Japan.
47. Cox G, **Salih A** (2005) Fluorescence lifetime imaging of symbionts and fluorescent proteins in reef corals, Progress in Biomedical Optics and Imaging - Proceedings of SPIE, pp 162-170, [Pre-UWS], [ORS ID: 215583]
48. **Salih A**, and G Cox (2005) Novel GFP-like proteins from reef corals with unique light-inducible properties highly suited for fluorescence imaging technologies. Microscopy & Microanalysis Conference p.21-24.
49. Cox G, and **A Salih** (2005) Fluorescence lifetime imaging of symbionts and fluorescent proteins in reef corals. Progress in Biomedical Optics and Imaging - Proceedings of SPIE 5700, art. no. 30, pp. 162-170. (citations 1).

50. **Salih A**, Larkum A, Cronin T, Wiedenmann J, Szymczak R, Cox G (2004) Biological properties of coral GFP-type proteins provide clues for engineering novel optical probes and biosensors, Proceedings of SPIE - The International Society for Optical Engineering , pp 61-72, [ORS ID: 215587}
51. Quinnell R, Rodriguez-Lanetty M, Kazandjian A, **Salih A**, Cox G and AWD Larkum (2004) Isolation of *Zooxanthus-Symbiodinium* symbiosomes and associated membrane proteins. Fundamental Aspects to Global Perspectives, Photosynthesis Congress, Montreal. Allen Press. Lawrence, KS 54-58
52. **Salih A**, Larkum AWD, Cronin T, Wiedenmann J, Szymczak R, Cox G (2004) Biological properties of coral GFP-type proteins provide clues for engineering novel optical probes and biosensors. Proceedings of SPIE - The International Society for Optical Engineering 5329, pp. 61-72. (citations 3).
53. **Salih A**, Cox G and Larkum AWD (2003) Cellular organization & spectral diversity of GFP-like proteins in coral cells studied by single & multiphoton imaging & microscpectroscopy. Proceedings of SPIE - The International Society for Optical Engineering 4963, pp. 194-200.
54. **Salih A**, Larkum AWD and Cox G (2001) Photoprotection from photoinhibion of symbiotic algae in corals by fluorescent pigments. PS2001 Proceedings: 12th International Congress Photosynthesis CSIRO Publish http://www.publish.csiro.au/ps2001/cf/search/article.cfm?ID=453066196
55. **Salih A**, O Hoegh-Guldberg and Cox G (1997) Bleaching Responses of Symbiotic Dinoflagellates in Corals: The Effect of Light and Elevated Temperature on their Morphology and Physiology. Proceedings of Australian Coral Reef Society 75th yr conference pp 194-199.
56. **Salih A**, O Hoegh-Guldberg and Cox G (1997) Photoprotection of Symbiotic Dinoflagellates by Fluorescent Pigments in Reef Corals. Proceedings of Australian Coral Reef Society 75th year conference pp 217-230.

Consultancy / Grant Reports

1. Dalton SJ, Carroll AG, Salih A, Diamond-Tissue S, Harrison PL (2011) Distribution of Nearshore Reef Assemblages and Resilience of Lagoon Benthic Communities on Lord Howe Island: Impact of 2010 Coral Bleaching Event. Draft Scientific Report for Northern Rivers Catchment Management Authority. pp. 42.
2. Salih A, Matz M, Wiedenmann J, Hoffman R (2010) Fluorescent proteins from reef corals in bioimaging and cancer research. ARC Discovery grant report.
3. Salih A, Savitsky A, Bagratashvilli V. (2009) Confocal time-resolved and Raman spectra of photoactive red FPs. FABLS ARC/NHMRC Network project grant report. 7 pages.
4. Carter D, Salih A, Holmes AJ (2007) Integrating morphological and molecular approaches to describe the taxonomy and phylogeny of symbiotic dinoflagellates from the Great Barrier Reef. Report Biol. Resources Study. Pp. 12.
5. Salih A, A Larkum, G Cox (2004) The role of fluorescent proteins in photoprotection and climate change related responses of reef corals. APDI ARC Linkage Grant report to the Undersea Explorer and the Great Barrier Reef Marine Parks Authority. pp.19.
6. Salih A (2001) Cellular assessment of coral-algal morphologies for characterising cellular stress responses due to climate change. Report to the Great Barrier Reef Marine Park Authority as part of SPIRT ARC project. pp. 21.

Invention Disclosures/ Patent Applications (not a full list)

Salih A., Ma Y. Fluorescent proteins and uses thereof. PCT/AU2013/000437, 2012901767.
Matz M, Kelmanson I, Meleshkevitch E, Salih A. USA 60/472196 Novel fluorescent and colored proteins, and polynucleotides that encode these proteins.
Matz M, Kelmanson I, Meleshkevitch E, Salih A. USA 10/851636,. 7160698 Novel fluorescent and colored proteins, and polynucleotides that encode these proteins.
Matz M, Kelmanson I, Meleshkevitch E, Salih A. USA 11/637340, No. 7541433 Novel fluorescent and colored proteins, and polynucleotides that encode these proteins.

Matz M, Kelmanson I, Meleshkevitch E, Salih A. USA 12/420448, No. 7893207 Novel fluorescent and colored proteins, and polynucleotides that encode these proteins.

Committees, Symposia, Workshops:

2014 – present	Reviewer ARC, NHMRC
2011 – present	Member, Sydney Cell Imaging Forum, Australia
2006 – present	Member, International Coral Reef Society; Australian Coral Reef Society
2008-2010	Convenor & Organizer, BioImaging Forum & Advanced BioImaging Workshop, UWS
2009	Committee Member, Light in Life Sciences Conference, Melbourne, Australia
2006-2008	Executive Committee Member and Strategic Initiatives Committee Member, ARC/NHMRC Fluorescence Applications in Biotechnology & Life Sciences Network, Australia
2005–2006	Committee Member and Convenor, Genetically Engineered Probes Conference, SPIE - International Society for Optical Engineering San Jose, US
2006	Convenor and organiser 'Photoactivatable Fluorescent Proteins in Live Cell Imaging' Minisymposium, Australian Key Center for Microscopy and Microanalysis, University Sydney.

Grants and variously funded projects

- 2014-2019 R01 GM109984-01, National Institute of Health (NIH), General Medical Sciences (NIGMS) Fluorescent proteins for superresolution imaging, Principal Investigator N Shaner, co-investigators A. Salih, A. Royant US$940,000.
- 2014 - 2015 ANSTO Australian Institute of Nuclear Science (ANSTP) and Engineering Ltd (ACRG) P00021798 Stability and responses of coral fluorescent proteins to ionising radiation $ 7,000 01 Jan 2014 31 Dec 2014
- 2014 - 2015 ANSTO Australian Institute of Nuclear Science (ANSTP) and Engineering Ltd (ACRG)P00021785 Photoactivatable fluorescent proteins as novel ionising radiation frequency receptors Anya Salih $ 8,000 % of FTE 3%
- 2013 NSW Northern Rivers CMA Lord Howe Island corals $22,000 % of FTE 5%
- 2011 UWS Research (UWS School Natural Sciences) Conference and Res. Travel Fellowship $4,500
- 2010 Development of an effective knowledge base for sustainable marine resource management NSW Northern Rivers CMA (co-CI) $22,000
- 2010 Effect of fishing and nutrient enrichment on fish communities of Lord Howe Island UWS IRIS (co-CI) (co-CI) $20,000
- 2010 Eutrophication of Lord Howe Island reefs: stable isotope analysis as a 'fingerprint' of sewage contamination AINSE/ANSTO $11,900
- 2010 Tracking molecules with light – training in advanced bio-imaging techniques for life sciences and biomedical research Study Overseas Short Term Mobility Program, DEEWR $9,500
- 2009 Super-resolution Fluorescence Microscopy ARC LIEF (co-CI) UNSW $650,000
- 2009 2st Advanced BioImaging Workshop at UWS NHMRC/ARC FABLS Network $4,000
- 2009 Impacts of environ-mental stress on terrestrial vegetation and marine algae UWS Eminent Visitor Scheme $24,800
- 2009 Fluorescence of corals in biotechnology and climate change multimedia installation development. NSW Synapse Art & Science Residency grant at Confocal facility UWS, Australian Network Art &Technology. $60,000

- 2008 1st Advanced BioImaging Workshop at UWS NHMRC/ ARC FABLS Network $10,000
- 2008 Optical spectroscopic instruments for live cell research equipment $16,000
- 2008 Genetic tuning of novel GFP-type probes from reef organisms for bio-imaging at molecular scales UWS IRIS $20,000
- 2008 Confocal lifetime and Raman spectral characterisation of photoactive red fluorescent proteins. NHMRC/ARC FABLS Network 2008 $9,700
- 2007 Screening reef corals for novel fluorescent proteins NHMRC/ARC FABLS Network 2007 $32,000
- 2007 Development of novel optical probes and biosensors from GFP-like pigments of marine organisms. ARC Discovery ASalih sole CI $205,000
- 2005 Interactive multi-media installations: Fluorescent colours of reef corals, function & biotechno-logical application of pigments. Synapse NSW Art Council Awa$60,000
- 2004 Light energy transfer mechanisms and functions of GFP-type proteins in corals.SESQUI University of Sydney Fellowship Grant 2004 $142,000
- 2004 Fluorescence Applications in Biotechnology and Life Sciences II. ARC/NHMRC Network Grant. $3 million (one of 10)
- 2004 Symbiosomes and symbiosome membranes of corals and other Cnidaria. ARC Discovery 2004 Y $92,000
- 2004 Environment modelling of Great Barrier Reef habitats using Autonomous Transect Surveying. ARC Linkage Grant 2004 Y $250,762.
- 2004 Morphological and molecular insights into the taxonomy and phylogeny of symbiotic dinoflagellates from the Great Barrier Reef. Environmental Trust EPA $32,000
- 2003 Morphological and molecular insights into the taxonomy and phylogeny of symbiotic dinoflagellates from the Great Barrier Reef. Environmental Trust EPA Diversity $16,000
- 2003 Symbiosomes and Symbiosome Membranes of Corals and other Cnidaria. ARC Discovery $60,000
- 2001 Fluorescent corals of the Great Barrier Reef: their distributional patterns, stress resistance and capacity to survive climate change.ARC Linkage $171,859
- 2000 Sub-chronic indicators of stress in reef building corals. ARC - APAI Linkage 2000 $61,290

Public outreach and science promotion

2020 – Emmy award for Awavena VR Film.

I am collaborating with a multi-media artist Lynette Wallworth, resident artist UWS Confocal Facility (2009), contributed imagery to the film ***Coral: Rekindling Venus*** for full dome planetariums and for related augmented reality work for iPADs/iPhones, featuring corals from my research. In 2012-2013, Rekindling Venus film was shown in planetariums around the world – New York, London, New Delhi, Manilla, Tokyo, Amsterdam, Melbourne, Seoul, Paris, etc., and was launched as part of London 2012 Festival and Olympics. I participated as an invited speaker at its World Premier at New York's World Science Festival, gave a televised interview (Bill Ritter); public talks about coral fluorescence at the American Museum Natural History and Milstein Hall of Ocean Life Series. Gave 12 presentations at World Economic Forum 2014. Regularly give radio interviews about my research, which has been featured in over 100 media releases, several TV interviews and documentaries (National Geographic, Australian Channel 9, Catalyst, etc)

Seminars, Public lectures and presenatations (not a full list)

1. Coral fluorescent proteins – imaging of molecules in science. Environmental Film Festival at Melbourne Planetarium
2. Coral fluorescence: an art – science collaboration, Australian Museum, Sydney

3. ARC – Science Collaboration: Fluorescent coral biology and biotechnologies Western Australia Museum, Perth, Dec 2014
4. Reef luminescence and science. Space for Life Biodome Montreal, Apr 2014
5. Biology of coral fluorescent proteins, energy transfer and solar energy, Apr 2014, School Chemical Engineering, Yale University
6. UWS School Medicine Oct 2014
7. Oceans Institute, Western Australia University May 2014
8. Hawkesbury Institute for Environment, Western Sydney University Jun 2013
9. Scripps Oceanographic Institute May 2013
10. University California Irvine July 2013
11. New York World Science Festival 2012
12. American Natural History Museum 2012
13. Salih, A. (2010) Fluorescent proteins of corals for visualising molecular events in live cells and cancer. Bio-Imaging Expo, University Western Sydney
14. Salih, A (2009) Bioimaging applications of coral photoactive proteins to track molecular events in cells, Bio-Imaging Forum, University Western Sydney.
15. Salih, A. (2009) Invited Public Talk: Fluorescent proteins of reef corals determine responses to climate change. Macleay Museum, University of Sydney
16. Salih, A. (2008) Advances in live cell labeling using coral-derived fluorescent proteins. Bio-Imaging Forum, University Western Sydney.
17. Salih, A (2005) Monaco
18. Salih, A. (2004) Invited Public Talk: Coral fluorescent colors and biological function. Monterey Bay Aquarium Research Institute, University California, US.
19. Salih, A. (2003) Colors of the Reef: Biology and Biotechnological applications. Public Lecture, part of the 'Liquid Sea' Exhibition at the NSW Contemporary Art Gallery.

MSc and PhD Students

Supervisor - K. Ferguson (PhD) – Project "Morphological, molecular taxonomy and phylogeny of symbiotic dinoflagellates of reef corals". Department of Microbiology & Biochemistry, Univ. of Sydney

Co-supervisor - Rigby (PhD) - Project "Environmental Modeling of Great Barrier Reef Habitats using Autonomous Transect Surveying". School of Aerospace, Mechanical Engineering, Uni. of Sydney

Supervisor - C. Lo – (MSc) Project "Cellular localization and photosensory roles of GFP-like proteins of corals" Electron Microscope Unit, University of Sydney

Supervisor - C. Hammang (PhD) – Project "Shuttling of actin between nuclear and cytoplasmic cellular compartments" University Western Sydney

Supervisor - A Yang Ma (MSc) – Project "Photoconverting red fluorescent protein from reef coral *Acropora millepora*" MSc Research

Supervisor - T Mann (MSc) – Project "Photoconverting and proton pumping properties of GFP-type fluorescent proteins of reef corals". Western Sydney University

Co-supervisor - T. Mann (PhD) – Project "Pathway and interaction of hGIIA with vimentin in prostate cancer", Ingham Institute and WSU (current)