

BIOGRAPHICAL SKETCH

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NAME	HUI, George	POSITION TITLE		
eRA COMMONS USER NAME	georgehui	Research Professor		
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>				
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY	
University of Hawaii at Manoa	B.A.	1982	Microbiology	
University of Hawaii at Manoa	Ph.D.	1987	Tropical Medicine	

Academic Positions:

- 1987 - 1991: Assistant Res. Professor, Dept. of Tropical Medicine, University of Hawaii.
1991 - 1996: Associate Res. Professor, Dept. of Tropical Medicine, University of Hawaii.
1995 - 1996: NIH-TMRC Visiting Scientist, Research Institutes for Tropical Medicine, Philippines.
1996 - present: Research Professor (with tenure), Dept. of Tropical Medicine, University of Hawaii.

Other research-related position/membership:

- 1991 - 2000: American Society of Tropical Medicine & Hygiene, member.
1994 - 1996: American Society of Tropical Medicine & Hygiene, Scientific Program Committee.
1994 - 1996: Chairperson, University of Hawaii, System-wide Animal Care and Use Committee.
1998: Ad hoc Consultant, Trop.Diseases Res. (TDR), WHO, Vaccine Discovery Research.
1997 - 1999: University of Hawaii Committee on Human Subjects (IRB).
1999: External grant review consultant for the Austrian Science Fund.
1999 - present: Consultant, Hawaii Biotechnology Inc.
2005 - present: Consultant, Neugenesis Inc.
2008: President. American Society for Microbiology, Hawaii Branch.
2009-present: External consultant for AIBS, Military Malaria Vaccine Program.

NIH Study Sections:

- 1999: NIAID/NIH, Tropical Medicine & Parasitology (TMP) Special Study Section for RFA.
1997, 2000, 02-03: NIAID/NIH, Vaccine Study Section (VAC 01, VAC 04, VAC 10).
2003: NIAID/NIH, SEP, Member of parent panel, and Sub-committee Chair. Regional Centers of Excellence for Biodefense and Emerging Infectious Diseases (RCE).
2004: NIAID, SEP, Operation of a Facility for Testing of Malaria Vaccines in Adult Human Subjects.
2006: CSR/NIH, ZRG1 IMM-K (13) B, Influenza Vaccine Development.
2006: NIAID/NIH, ZAI1-MH-M-C2. Malaria Vaccine Production and Support Services.
2004 - 09: CSR/NIH, Vaccines for Microbial Diseases (VMD).
2010: NIAID/NIH, ZAI1 AWA-M, M2. SEP. Int. Center of Excellence for Malaria Research.
CSR/NIH, ZRG1 IMM-G 12B Small Business Grant App.: Microbial Vaccine Development.
2010/2011: CSR/NIH, ZRG1 ZRG1 IMM-F07-C(20)L B cell Regulation & Tolerance to Cancer Antigens
2011: CSR/NIH, Bioengineering & Biosciences IRG, Biomaterials and Biointerfaces.
CSR/NIH, ZRG1 IMM-K(02)M, Immunology.

Narrative: My research is on the development of blood stage malaria vaccines; and studies on the use of different vaccine adjuvants for the malaria vaccines. Specifically, we focus on the design of vaccines based on the Merozoite Surface Protein 1 (MSP1) by defining critical T and B epitopes of the molecule. We also evaluate the use of a variety of immunological adjuvants to enhance

vaccine potency and at the same time define the critical pathway for adjuvants' mode of action. Our approaches also study the use of nanoparticle platforms for antigen delivery. Beside research, I am also the director of a biomedical sciences research training for high school and college bound students (STEP-UP Program, <http://stepup.niddk.nih.gov>), supported by NIDDK/NIH. The project recruits minority and disadvantage students from the Pacific Regions, Alaska and Puerto Rico into university/college research laboratories to engage in health related research under the mentorships of university faculty.

Publications (in chronological order):

1. Palmer KL, Hui G & Siddiqui WA 1982. A large scale in vitro production system for *Plasmodium falciparum*. J. Parasitol. 68:1180.
2. Hui GSN, Palmer KL & Siddiqui WA 1983. Synchronization of *Plasmodium falciparum* in continuous in vitro culture: Use of colchicine. Am. J. Trop. Med. Hyg. 32:1451.
3. Ono, T., Nakabayashi T, Kramer KJ, Hui G, & Siddiqui WA. 1983. Electron microscopic observations on alterations in cultured *Plasmodium falciparum* infected erythrocytes after treatment with cyclic AMP in vitro. Biken Journal 26:75.
4. Hui GSN, Palmer KL & Siddiqui WA 1984. Use of human plasma for continuous in vitro cultivation of *Plasmodium falciparum*. Trans. Royal. Soc. Trop. Med. Hyg. 78:625.
5. Siddiqui WA, Tam LQ, Kan SC, Kramer KJ, Case SE, Palmer KL, Yamaga KM & Hui GSN. 1986. Induction of protective immunity to monoclonal-antibody-defined *Plasmodium falciparum* antigens required strong adjuvant in Aotus monkeys. Infect. Immun. 52:314.
6. Siddiqui, W A., Tam LQ, Kan SC, Kramer KJ, Case SE, Palmer KL, Yamaga KM, & Hui G. 1986. The induction of protective immune responses to *Plasmodium falciparum* in Aotus monkeys. In Proceedings of the Asia and Pacific Conference on Malaria. ed. Siddiqui W. A. Univ. of Hawaii Press. p.249.
7. Palmer, K L, Hui GSN, & Siddiqui WA. 1986. Native proteins for malaria vaccine produced by large scale in vitro culture systems. In Proc. of the Asia and Pacific Conference on Malaria. ed. Siddiqui W.A. Univ. of Hawaii Press. p.329.
8. Siddiqui WA, Tam LQ, Kramer KJ, Hui GSN, Case SE, Yamaga KM, Chang SP, Chan EBT & Kan SC 1987. Merozoite surface coat precursor protein completely protects *Aotus* monkeys against *Plasmodium falciparum* malaria. Proc. Natl. Acad. Sci. U.S.A. 84:3014.
9. Atkinson, C., M. Aikawa, L. Q. Tam, G. S. N. Hui, and W. A. Siddiqui W.A. 1987. Ultrastructural localization of protective and non-protective *Plasmodium falciparum* proteins using serum from vaccinated *Aotus* monkeys. J. of Parasitol. 73:1235.
10. Hui GSN & Siddiqui WA 1987. Serum from Pf195 protected *Aotus* monkeys inhibits *Plasmodium falciparum* growth in vitro. Exp. Parasitol. 64:519.
11. Hui GSN & Siddiqui WA. 1988. Characterization of a *Plasmodium falciparum* polypeptide associated with membrane vesicles in the infected erythrocytes. Mol. Biochem. Parasitol. 29:283.
12. Chang, S P, Kramer KJ, Barr PJ, Hui GSN, Yamaga KM, Kato A, Case SE, & Siddiqui WA. 1988. The major surface antigen Pf195. in "Report of the tenth meeting of the scientific working group on the immunology of malaria.", the World Health Organization Geneva. TDR/IMMAL/SWG(10)/88.3, p28.
13. Chang SP, Hui GSN, Kato A & Siddiqui WA. 1989. Generalized immunological recognition of the major merozoite surface antigen (gp195) of *Plasmodium falciparum*. Proc. Natl. Acad. Sci. 86:6343.
14. Hui GSN, Chang SP, Tam LQ, Kato A, Case SE, Hashiro C., Kotani S., Shiba T., Kusumoto S, Siddiqui WA. 1990. Characterization of antibody responses induced by different synthetic adjuvants to the *Plasmodium falciparum* major merozoite surface precursor protein, gp195. In Vaccine 90. eds. Chanock R M et al. Cold Spring Lab. N.Y. pp. 477.
15. Hui GSN., Tam LQ, Chang SP, Case SE, Hashiro C, Siddiqui WA, Shiba T, Kusumoto S, & Kotani S. 1991. Synthetic low toxicity muramyl dipeptide and monophosphoryl lipid A replace Freund's complete adjuvant in

- inducing growth inhibitory antibodies to the *Plasmodium falciparum* major merozoite surface protein, gp195. *Infect. Immun.* 59:1585.
16. Hui GSN, Chang SP, Gibson H, Hashimoto A, Hashiro C, Barr P J & Kotani S. 1991. Influence of adjuvants on the antibody specificity to the *Plasmodium falciparum* major merozoite surface protein, gp195. *J. Immunol.* 147:3935.
 17. Hui GSN, Hashimoto A, & Chang SP. 1992. Role of conserved and allelic regions of the major merozoite surface protein (gp195) in immunity against *Plasmodium falciparum*. *Infect. Immun.* 60:1422.
 18. Chang SP, Gibson HL, Lee-Ng CT, Barr PJ & Hui GSN. 1992. An authentic carboxy terminal fragment of *P. falciparum* gp195 expressed by a recombinant baculovirus induces antibodies that completely inhibit parasite growth. *J. Immunol.* 149:548.
 19. Hui GSN & Chang SP 1992. *Plasmodium falciparum*: Induction of biologically active antibodies to gp195 is dependent on the choice of adjuvants. *Exp. Parasitol.* 75:155.
 20. Bathurst IC, Gibson HL, Kanspoon J, Hahm BK, Green KM, Chang SP, Hui GSN, Siddiqui W A, Inselburg J., Millet P, Quakyi IA, Kaslow D C, & Barr PJ. 1993. An experimental vaccine cocktail for *Plasmodium falciparum* malaria. *Vaccine.* 11:449.
 21. Hui GSN, Hashiro C, Nikaido C, Case SE, Hashimoto A, Gibson H, Barr PJ & Chang SP. 1993. Immunological cross-reactivity of the C-terminal 42-kilodalton fragment of *Plasmodium falciparum* merozoite surface protein 1 expressed in baculovirus. *Infect. Immun.* 61:3403.
 22. Hui, GSN. 1994. Liposomes, muramyl dipeptide derivatives, and nontoxic lipid A derivatives as adjuvants for human malaria vaccines. *Am. J. Trop. Med. Hyg.* 50 Suppl. p41.
 23. Kaslow DC, Hui GSN & Kumar S. 1994. Expression and antigenicity of *P. falciparum* major merozoite surface protein (MSP1-19) variants secreted from *S. cerevisiae*. *Mol. Biochem Parasitol.* 63:283.
 24. Chang SP, Nikaido C, Hashimoto A, Hashiro C, Yokota BT & Hui GSN. 1994 Co-regulation of antibody specificity to *Plasmodium falciparum* merozoite surface protein MSP-1 by adjuvant and MHC haplotype. *J. Immunol.* 152:3483.
 25. Hui, GSN, Hashimoto A, Nikaido C, Choi J & Chang SP 1994. Induction of antibodies to the *P. falciparum* merozoite surface protein 1 (MSP1) by cross-priming with heterologous MSP1s. *J. Immunol.* 153:1195.
 26. Hui, GSN, Gosnell W L, Case S E, Hashiro C, Nikaido C, Hashimoto A & Kaslow D C. 1994. Immunogenicity of the C-terminal 19 kDa fragment of the *Plasmodium falciparum* merozoite surface protein 1 (MSP1), YMSP1-19 expressed in *S. cerevisiae*. *J. Immunol.* 153: 2544.
 27. Chang S, Case S, Gosnell W, Hashimoto A, Kramer K, Tam L, Hashiro C, Nikaido C, Gibson H, Lee-Ng CT, Barr P, Yokota B & Hui G 1996. A recombinant baculovirus 42-kilodalton C-terminal fragment *Plasmodium falciparum* merozoite surface protein 1 protects *Aotus* monkeys against malaria. *Infect. Immun.* 64:253.
 28. Hui GSN, Nikaido C, Hashiro C, Kaslow DC & Collins WE 1996. Dominance of conserved B-cell epitopes of the *Plasmodium falciparum* merozoite surface protein, MSP1, in blood-stage infections of naive *Aotus* monkey. *Infect. Immun.* 64:1502.
 29. Tine JA, Lanar DE, Smith DM, Wellde BT, Schultheiss P, Ware LA, Kauffman EB, Wirtz RA, De Taisne, Hui GSN, Chang SP, Church P, Hollingdale MR, Kaslow DC, Hoffman S, Guito KP, Ballou WR, Sadoff JC, & Paoletti E 1996. NYVAC-Pf7: a Pox-vectored, multiantigen, multistage vaccine candidate for *Plasmodium falciparum* malaria. *Infect. Immun.* 64:3833.
 30. Al-Yaman F, Genton B, Kramer KJ, Tanika J, Chang SP, Hui GS, & Alpers M. 1995. Acquired antibody levels to *Plasmodium falciparum* merozoite surface antigen 1 in residents of a highly endemic area of Papua New Guinea. *Trans. Royal Soc. Trop. Med. Hyg.* 89:555.
 31. Al-Yaman F, Genton B, Kramer KJ, Chang SP, Hui GSN, Baisor M & Alpers MP 1996. Assessment of the role of naturally acquired antibody levels to *Plasmodium falciparum* merozoite surface protein-1 in protecting Papua New Guinean children from malaria morbidity. *Am. J. Trop. Med. Hyg.* 54:443.
 32. Hui GSN. & Hashimoto CN. 1998. Pathways for Potentiation of Immunogenicity during Adjuvant-assisted

- Immunizations with the *Plasmodium falciparum* MSP1. Infect. Immun. 66:5329.
33. Parra M, Hui G, Johnson A, Berzofsky J, Roberts T, Quakyi I, & Taylor D. 2000. Characterization of conserved T- and B-cell epitopes in *P. falciparum* Major Merozoite Surface Protein 1. Infect. Immun. 68:2685.
 34. Stowers AW, Cioce V, Shimp RL, Lawson M, Hui G, Muratova O, Kaslow D, Robinson R, Miller L, Long CA. 2001. Efficacy in an Aotus challenge trial of two vaccines based on *Plasmodium falciparum* merozoite surface protein 1. Infect. Immun. 69:1536.
 35. Pang AY, Hashimoto C, Tam LQ, Meng ZQ, Hui GSN, & Ho WKK. 2002. In vivo expression and immunological studies of the 42 kDa carboxyl-terminal processing fragment of *Plasmodium falciparum* Merozoite Surface Protein 1 (MSP-142) in the Baculovirus-Silkworm system. Infect. Immun. 70:2772.
 36. Leung, WH, Meng, ZQ, Hui G, Ho, WKK. 2004. Expression of an Immunologically Reactive Merozoite Surface Protein (MSP-142) in *E. coli*. Biochim. Biophys. Acta. 1675: 62.
 37. Yuen, D., H. Leung, R. Cheung, C. Hashimoto, W. Ho, and G. S. Hui. 2007. Antigenicity and Immunogenicity of the N-terminal 33 kDa fragment of the *P. falciparum* MSP1-42: Implications for Vaccine Development. Vaccine 25:490.
 38. Hui, G. S. and C. Hashimoto. 2007. *P. falciparum* anti-MSP1-19 Antibodies Induced by MSP1-42 and MSP1-19 Based Vaccines Differed in Specificity and Parasite Growth Inhibition in terms of Recognition of Conserved versus Variant Epitopes. Vaccine 25:948.
 39. Nagata, M., T. Wong, D. Clements, and G. S. Hui. 2007. Immunization with a *P. falciparum* MSP1-42 Vaccine Induced Non-inhibitory Antibodies that have No Blocking Activities but Enhanced the Potency of Inhibitory Anti-MSP1-42 Antibodies. Exp. Parasitol. 115:403.
 40. Hui, G. S. and C. Hashimoto. 2007. Interleukin 6 has Differential Influence on the Ability of Adjuvant Formulations to Potentiate Antibody Responses to a *Plasmodium falciparum* Blood-Stage Vaccine. Vaccine. Vaccine 25:6598.
 41. Hui, G.S & C. Hashimoto. 2007. The Requirement of CD80, CD86, & ICAM-1 on the Ability of Adjuvant Formulations to Potentiate Antibody Responses to a *Plasmodium falciparum* Blood-Stage Vaccine. Vaccine 25:8549.
 42. Hui, G. S. and C. Hashimoto. 2008. Adjuvant Formulations Possess Differing Efficacy in the Potentiation of Antibody and Cell Mediated Responses to a Human Malaria Vaccine under Selective Immune Genes Knockout Environment. Int. Immunopharm. 8:1012.
 43. Hui, G.S., Choe, D., and C. Hashimoto. 2008. The Biological Activities of the Anti-Merozoite Surface Protein-1 Antibodies Induced by Adjuvant-Assisted Immunizations in Different Immune Gene Knock-out Mice. Clin. Vacc. Immunol. 15:1145.
 44. Pusic, K., Hashimoto, C., Lehrer, A., Anya, C., Clements, D., and Hui, G. T Epitope Regions of the *P. falciparum* MSP1-33 Critically Influence Immune Responses and Efficacy of MSP1-42 Vaccines. Submitted.

Patents Issued:

2002: US Patent: 6,420,523 B1. Baculovirus produced *Plasmodium falciparum* vaccine.

2003: US Patent: 6,660,498 B1. Malaria Immunogenic Composition.

Current Support:

1. R25DK078386-01 George Hui (PI). NIH/NIDDK. 4/1/07 – 3/31/2012.
“High School Students STEP-UP to Biomedical Research”. Role: PI.
2. R25DK078386-03S1 George Hui (PI), NIH/NIDDK. 8/01/09 – 7/31/2011.
3. R25DK078386-04S1 George Hui(PI), NIH/NIDDK 05/21/2010 – 05/20/2011
4. R21AI076955-02 George Hui (PI), NIH/NIAID. 9/17/08 – 8/31/11.
“Novel Engineering of a *P. falciparum* Merozoite Surface Protein 1 Malaria Vaccine. Role: PI
5. R21AI076955-02S1 George Hui (PI) NIH/NIAID 04/12/2010 – 03/31/2011

4. P20RR018727 Richard Yanagihara (PI), NIH/NCRR. 10/1/03 - 6/30/10 (no cost extension)
"Pacific Center for Emergent Infectious Diseases Research." Role: Co-investigator / Faculty mentor.

Past Support.

- 1989-90 The Rockefeller Foundation, title: "Identification and Establishment of Adjuvants for Blood Stage Malaria Vaccine" GA HS 8932. Role: PI.
- 1990-92 USAID, Malaria Vaccine Development Program, "Malaria Immunity and Vaccination: Studies towards the development of a Blood Stage *P. falciparum* vaccine using parasite gp195, recombinant gp195 & synthetic adjuvants". DPE-0453-A00-9015-00. Role: Co-PI
- 1991-93 Pasteur Merieux Institute, "Antigenicity and immunogenicity of the vaccinia recombinant gp195". Role: PI.
- 1993-99 NIH/NIAID, "Adjuvants and Immune Responses to the *P. falciparum* gp195" R29AI30589, Role: PI.
- 1992-95 US Agency for International Development, Malaria Vaccine Development Program, project title: "Recombinant gp195 and synthetic adjuvant malaria vaccine" HRN6001A00202000. Role: PI.
- 1995-96 Principal Investigator, NIH-Tropical Medicine Research Center, Visiting Scientist Grant, title: "Studies on human antibody response to the *P. falciparum* merozoite surface protein 1, MSP1".
- 1996-98 The Queen Emma Foundation, title: "Pre-clinical development of a malaria vaccine.". Role: PI
- 1997-98 Allegheny University-NIH/NIAID-subcontract, project title: "In vitro correlates of protective immunity to *P. falciparum* MSP1". Role: Subcontract PI.
- 2005-07 The Queen Emma Foundation, title "Pre-clinical development of a malaria vaccine". Role: PI
- 2001-08 NIH/NIAID (R01AI457680) "Immune Pathways as Prerequisites for Adjuvants' Efficacy". Role: PI.
- 2005-08. 3U01DK065455-01S1 Keith Norris (PI) "Drew AASK Cohort Study". "NIDDK/Drew Summer High School Student Research Apprenticeship Program". Role: Subcontract PI.