

รายการอ้างอิง

ภาษาไทย

กาญจนา รังษีหิรัญรัตน์. 2538. ความหลากหลายของแอนติเจนอินตองชนิด (เอ็มเอสพี 1 และ เอ็มเอสพี 2) ของ *Plasmodium falciparum* ในประเทศไทย ตรวจสอบโดยพีซีอาร์และดีเอ็นเอติดตาม. ISBN 974-631-450-5.

ประยงค์ ระคมยศ, อัญชลี ตั้งตรงจิตร, ศรชัย หล่ออารีย์สุวรรณ และแทน จงศุกชัยสิทธิ์. 2523. Atlas of medical parasitology. กรุงเทพมหานคร: สำนักพิมพ์ ที.พี.พรินท์.

วิสุทธิ ไบไม้. 2532. ความหลากหลายทางชีวภาพ. ใน: การสัมมนาชีววิทยาครั้งที่ 7 เรื่อง ความหลากหลายทางชีวภาพในประเทศไทย. สิริวัฒน์ วงษ์ศิริ และศุกชัย หล่อโลหการ บริษัทประชาชนจำกัด หน้า 1-13.

_____. 2538. สถานภาพความหลากหลายทางชีวภาพในประเทศไทย. สำนักงานกองทุนสนับสนุนการวิจัย 254 หน้า.

ศุณีย์ สิริธรรมใจ. 2538. การตรวจสอบอัลลีลของอินที่สร้างโปรตีนบนผิวเมอร์โรซอซท์ (MSP1) ของ *Plasmodium falciparum* อย่างรวดเร็วโดยพอลิเมอเรสเชนรีแอ็กชันและการวิเคราะห์โดยเอนโดนิวคลีเอสชนิดตัดจำเพาะ. ISBN 974-631-753-9.

ภาษาอังกฤษ

Aikawa, M. Torii, M., Sjolander, A., Berzins, K., Perlmann, H., and Miller, L.H. 1990.

Pf155/RESA antigen is localization dense granules of *Plasmodium falciparum* merozoites. Experimental Parasitology 71: 326-329.

Anders, R.F., Brown, G.V., and Edward, A.E. 1983. Characterization of an S-antigen synthesized by several isolates of the *Plasmodium falciparum*. Proceeding of the National Academy of Sciences of the USA 80: 6652-6656.

_____. Coppel, R.L., Brown, G.V., and Kemp, D.J. 1988. Antigen with repeated amino acid sequence from the asexual blood stages *Plasmodium falciparum*. Progress in Allergy. 41: 148-172.

_____. Shi, P.T., Scanlon, D.B., Leach, S.J., Coppel, R.L., Brown, G.V., Stahl, H.D., and Kemp, D.J. 1986. Antigenic repeat structures in proteins of *Plasmodium falciparum*. In "Synthetic peptides as antigens". Ciba Foundation Symposium no. 199, pp. 164-175.

A°slund, L. 1990. Identification of structures important for diagnosis and prophylaxis of malaria infections. Doctoral thesis, Uppsala, Uppsala University, ISBN 91-554-2624-7.

Babiker, J. A., Creasey, A.M., Fenton, B., Bayoumi, R.A.L., Arnot, D.E., and Walliker, D.1990. Genetic diversity of *Plasmodium falciparum* in a village in eastern Sudan 1. Diversity of enzyme , 2D-Page proteins and antigens. Transaction of The Royal Society of Tropical Medicine and Hygiene 85: 572-577.

Berzins, K., Perlmann, H., Wahlin, B., Carlsson, J., Wahlgren, M., Udomsangpetch. R.,

- Bjorkman, A., Patarroyo, M.E., and Perlmann, P. 1986. Rabbit and human antibodies to a repeated amino acid sequence of a *Plasmodium falciparum* antigen, Pfl55, react with the native protein and inhibit merozoite invasion. Proceeding of the National Academy of Sciences of the USA 83: 1065-1069.
- Beulter, B., Cerami, A. 1987. Cachectin-tumor necrosis factor: a cytokine that mediates injury initiated by invasion parasite. Parasitology Today 3:345-346.
- Bhattacharya, P., Malhotra, P., Sharma, P., Okenu, D. M.N., and Chauhan, V. S. 1995. Merozoite surface antigen 2 (MSA-2) gene of *Plasmodium falciparum* strains from India. Molecular and Biochemical Parasitology 74: 125-127.
- Bickle, Q., Anders, R.F., Day, K., Coppel, R.L. 1993. The S-antigen of *Plasmodium falciparum*: repertoire and origin diversity. Molecular and Biochemical Parasitology 61: 189-196.
- Blackman, M.J., Heidrich, H.G., Donachie, S., McBride, J.S., and Holder, A.A. 1990. A single fragment of a malaria merozoite surface protein remains on the parasite during red cell invasion and is the target of invasion-inhibiting antibodies. Journal of Experimental Parasitology 172: 379-382.
- Borre, M., Dziegiel, M., Hogh, B., Petersen, E., Rieneck, K., Riley, E., Meis, J.F., Aikawa, M., NaKamura, K., Harada, M., Wind, A., Jakobson, P.H., Cowland, J., Jepsen, S., Axelsen, N.H., and Vuust, J. 1991. Primary structure and localization of a conserved immunogenic *Plasmodium falciparum* glutamate rich protein (GLURP) expressed in both the preerythrocytic and erythrocytic

stages of the vertebrate life cycle. Molecular and Biochemical Parasitology 49: 119-132.

Brown, G.V., Culvenor, J.G., Crewther, P.E., Bianco, A.E., Coppel, R.B., Stahl, H.D.

Kemp, D.J., and Ander, R.F. 1985. Localization of the ring-infected erythrocyte surface antigen (RESA) of *Plasmodium falciparum* in merozoite and ring-infected erythrocyte. Journal of Experimental Medicine 162: 774-779.

Cappai, R., van Schravendijk, M.R., Anders, R.F., Peterson, M.G., Thomas, L.M.,

Cowman, A.F., and Kemp, D. 1989. Expression of the RESA gene in *Plasmodium falciparum* isolate FCR3 is prevented by a subtelomeric deletion. Molecular and Cellular Biology 9: 3584-3587.

Collins, W.E., Anders, R.F., Pappaioanou, M., Campbell, G.H., Brown, G.V., Kemp,

D.J., Coppel, R.L., Skinner, J.C., Andrysiak, P.M., Favaloro, J.M., Corcoran, L.M., Broderon, J.R., Mitchell, G.F., and Campbell, C. 1986. Protection of *Aotus* monkeys by immunization with recombination proteins of the ring-infected erythrocyte surface antigen (RESA) of *Plasmodium falciparum*. Nature 323: 259-262.

Conway, D.J., Greenwood, B.M., and McBride, J.S. 1992. Longitudinal study of

Plasmodium falciparum polymorphic antigens in a malaria-endemic population. Infection and Immunity 60: 1122-1127.

_____. Rosario, V.E., Odola, A., Salako, L., Greenwood, B., and McBride, J.S. 1991.

Intragenic recombination and nonrandom association between polymorphic domains of the precursor to the major merozoite surface antigens. Experimental Parasitology 73: 469-480.

Cooper, J.A. 1993. Merozoite surface antigen-1 of *Plasmodium*. Parasitology Today 9: 50-54.

Coppel, R.L., Cowman, A.F., Anders, R.F., Bianco, A.E., Saint, R.B., Lingelbach, K.R., Kemp, D.J., and Brown, G.V. 1984. Immune sera recognize on erythrocytes a *Plasmodium falciparum* antigen composed of repeated amino acid sequences. Nature 310: 789-791.

Corcoran, L.M., Forsyth, K.P., Bianco, A. E., Brown, G.V., and Kemp, D.J. 1986. Chromosome size polymorphism in *Plasmodium falciparum* can involve deletions and are frequent in natural parasite population. Cell 44: 87-95.

Cowman, A.F., Coppel, R.L., Saint, R.B., Favaloro, J., Crewther, P.E., Stahl, H.D., Bianco, A.E., Brown, G.V., Anders, R.F., and Kemp, D.J., 1984. The ring-infected erythrocytes surface antigen (RESA) polypeptide of *Plasmodium falciparum* contains two separate blocks of tandem repeats encoding antigenic epitopes that are naturally immunogenic in man. Molecular and Biological Medicine 2: 207-221.

Creasey, A., Fenton, B., Walker, A., Thaithong, S., Oliverson, S., Mutambu, S., and Walliker, D. 1990. Genetic diversity of *Plasmodium falciparum* shows geographical variation. The American Journal of Tropical Medicine and Hygiene 42: 403-413.

- De Silva, E., Foley, M., Dluzewski, A., Murray, L., Anders, R.F., and Tilley, L. 1994. The *Plasmodium falciparum* protein RESA interacts with the erythrocyte cytoskeleton and modifies erythrocytes thermal stability. Molecular and Biochemical Parasitology 66: 59-69.
- Doolan, D., Saul, A., and Good, M. 1992. Geographically restricted heterogeneity of the *Plasmodium falciparum* circumsporozoite protein: Relevance for vaccine development. Infection and Immunity 60(2): 675-682.
- Epping, R.J., Goldstone, S.D., Ingram, L.I., Uperoft, J.A., Ramasamy, R., Cooper, J.A., Bushell, G.R., and Geysen, H.M. 1988. An epitope recognized by inhibitory monoclonal antibodies that react with a 51 kilodalton merozoite surface antigen in *Plasmodium falciparum*. Molecular and Biochemical Parasitology 28: 1-10.
- Favaloro, J.M., Coppel, R.L., Corcoran, L.M., Foote, S.J., Brown, G.V., Anders, R.F., and Kemp, D.J. 1986. Structure of the RESA gene of *Plasmodium falciparum*. Nucleic Acid Research 14: 8265.
- Felger, I., Tavul, L., and Beck, H.P. 1993. *Plasmodium falciparum* : A rapid technique for genotyping the merozoite surface protein 2. Experimental Parasitology 77:372-375.
- Fenton, B., Clark, J.T., Wilson, C.F., McBride, J.S., and Walliker, D. 1989. Polymorphism of a 35-45 kDa *Plasmodium falciparum* merozoite surface antigen Molecular and Biochemical Parasitology 63: 203-212.

- _____. Khan, C.M.A., Robinson, J.V., Walliker, D., Ridley, R., Scaife, J. G., and McBride, J.S. 1991. Structural and antigenic polymorphism of the 35 to 48 kilodalton merozoite surface antigen (MSA-2) of the malaria parasite *Plasmodium falciparum*. Molecular and Cellular Biology 11: 963-971.
- Foley, M., Corcoran, L., Tilley, L., and Anders, R. 1994. *Plasmodium falciparum*: Mapping the membrane-binding domain in the ring-infected erythrocyte surface antigen. Experimental Parasitology 79: 340-350.
- Hall, R., McBride, J., Morgan, G., Tait, A., Zolg, J.W., Walliker, D., and Scaife, J. 1983. Antigens of the erythrocytic stages of the human malaria parasite *Plasmodium falciparum* detected by monoclonal antibodies. Molecular and Biochemical Parasitology 7: 247-265.
- Herrington, D.A., Clyde, D.F., Losonsky, G., Cortesia, M., Murphy, J.R., Davis, J., Baqar, S., Felix, A.M., Heimer, E.P., Gillessen, D., Nardin, E., Nussenzweig, R.S., Nussenzweig, V., Hollingdale, M.R., and Levin, M.M. 1987. Safety and immunogenicity in man of a synthe peptide malaria vaccine against *Plasmodium falciparum* sporozoites. Nature 328: 257-259.
- Hinterberg, K., Muanza, K., Hernandez-Rivas., Gay, F., Gysin, J., Mattei., D., Scherf., A. 1995. Karyotype analysis of vilulent *Plasmodium falciparum* strains propagated in *Saimiri sciureus*: Strain adaptation leads to deletion of the RESA gene. Infection and Immunity 63(2): 693-695.
- Holder, A.A. 1988. The precursor to major merozoite surface antigen: structure and

role in immunity. Progress in Allergy 41: 72-97.

_____. and Freeman, R.R. 1982. Biosynthesis and processing of a *Plasmodium falciparum* schizont antigen recognized by immune serum and a monoclonal antibody. Journal of Experimental Medicine 156: 1528-1538.

_____. 1984. The three major antigens on the surface of *Plasmodium falciparum* merozoites are derived from a single high molecular weight precursor. Journal of Experimental Medicine 160: 624-629.

Holmberg, M., Wahlberg, J., Lundeberg, J., Pettersson, U., and Uhlen, M. 1992. Colorimetric detection of *Plasmodium falciparum* and direct sequencing of amplified gene fragments using a solid phase method. Molecular and Cellular Probes 6: 201-208.

Howard, R.J. 1986. Malaria: Antigen and host-parasite interaction. In T.W.Pearson (ed.), Parasite antigen :Toward new strategies for vaccine, pp.111-165. New York: Maccel Dekker, INC.

Hultman, Y., Stahl, S., Homes, E., and Uhlen, M. 1989. Direct solid phase sequencing of genomic DNA using magnetic beads as solid support. Nucleic Acid Research 17:4936-4949.

Jongwutiwes, S., Tanabe, K., Hughes, M.K., Kanbara, H., and Hubhes, A. 1994. Allelic variation in the circumsporozoite protein of *Plasmodium falciparum* from the field isolates. The American Journal of Tropical Medicine and Hygiene 51(5): 659-668.

- _____. Nakasawa, S., Yanagi, T. and Kanbara, H. 1992. Sequence variation in the tripeptide repeats and T cell epitopes in p190 of *Plasmodium falciparum* from field isolates. Molecular and Biochemical Parasitology 51: 81-90.
- Kabilan, L., Troye-Blomberg, M., Perlmann, H., Andersson, G., Hogg, B., Petersen, E., Bjorkman, A, and Perlmann, P. 1988. T-cell epitopes in Pf155/RESA, a major candidate for a *Plasmodium falciparum* malaria vaccine. Proceeding of the National Academy of Sciences of the USA 85: 5659-5663.
- Kemp, D.J., Coppel, R.L., Cowman, A.F., Saint, R.B., Brown, G.V., and Ander, R.F. 1983. Expression of *Plasmodium falciparum* blood stage antigens in *Escherichia coli*: detection with antibodies from immune humans. Proceeding of the National Academy of Sciences of the USA 80: 3787-3791.
- _____. Cowman, A.F., and Walliker, D. 1990. Genetic diversity in *Plasmodium falciparum*. Advanced in Parasitology 29: 75-149.
- Knell, A.J. 1991. Malaria. Oxford University Press, New York.
- Koenen, M., Scherf, A., Mercereau, O., Langsley, G., Sibilli, L., Dubois, P., da Silva, L.P., and Muller-Hill, B. 1984. Human antisera detect a *Plasmodium falciparum* genomic clone encoding a nonapeptide repeat. Nature 311: 382-385.
- Krotoski, W.A., Collins, W.A., Bray, R.S., Garnham, P.C.C., Cogswell, F.B., Gwadz,

- R.W., Killick-Kendrick, R., Wolf, R., Sinden, R., Koontz, L.C., and Stanfill, P.S. 1982. Demonstration of hypnozoites in sporozoite-transmitted *Plasmodium vivax* infection The American Journal of Tropical Medicine and Hygiene 31: 1291-1293.
- Kun, J.F., Leet, M., Anthony, R., Kun, J.E., and Anders, R.F. 1994. *Plasmodium falciparum*: A region of polymorphism in the 3' end of the gene for the ring-infected erythrocyte surface antigen. Experimental Parasitology 78: 418-421.
- Kwiatkowski, D., Hill, A.V., Sambou, I., *et al.* 1990. TNF concentration in fatal cerebral, non-fatal cerebral and uncomplicated *Plasmodium falciparum* malaria. Lancet 336: 1201-1204.
- Kyte, J., and Doolittle, R.F. 1982. A simple method for displaying the hydrophobic character of a protein. Journal of Molecular Biology 157: 105-132.
- Lockyer, M.J., Marsh, K., and Newbold, C.I. 1989. Wild isolates of *Plasmodium falciparum* show extensive polymorphism in T cell epitope of the circumsporozoite protein. Molecular and Biochemical Parasitology 37: 275-280.
- Marshall, V., Anthony, R., Bangs, M., Purnomo, Anders, R.F., and Coppel, R. 1994. Allelic variants of the *Plasmodium falciparum* merozoite surface antigen 2 (MSA-2) in a geographically restricted area of Irian Jaya. Molecular and Biochemical Parasitology 63: 13-21.
- McBride, J.S., Newbold, C.I., and Anand, R. 1985. Polymorphism of a high molecular

weight schizont antigen of the human malaria parasite *Plasmodium falciparum*.
Journal of Experimental Medicine 161: 160-180.

Mettei, D., Berzins, K., Wahlgren, M., Udomsangpetch, R., Perlmann, P., Griesser, H.W., Scherf, A., Muller-Hill, B., Bonnefoy, S., Guillote, M., Langsley, G., Pereira da Silva, L., Mercereau-Puijalon, O. 1989. Cross-reactive determinants present on different *Plasmodium falciparum* blood-stage antigens. Parasite Immunology 11: 15-30.

_____. Langsley, G., Braun-Breton, C., Guillote, M., Dubremetz, J.F., and Mercereau-Puijalon, O. 1988. Molecular and Biochemical Parasitology 27: 171-180.

Migot, F., Chougnat, C., Perichon, B., Danze, P., Lepers, J., Krishnamoorthy, R., and Deloron, P. 1995. Lack of correlation between HLA class II alleles and immune responses to Pf155/Ring-infected reythrocyte surface antigen (RESA) from *Plasmodium falciparum* in Madagascar. The American Journal of Tropical Medicine and Hygiene 53(3): 252-257.

Miller., Roberts, T., Shahabuddin, M., and McCutchan, T.F. 1993. Analysis of sequence diversity in the *Plasmodium falciparum* merozoite surface protein-1 (MSP-1). Molecular and Biochemical Parasitology 59: 1-14.

Nussenzweig, R.S., and Nussenzweig, V. 1990. Rationale for the development of an engineered sporozoite malaria vaccine. Advance in Immunology 45: 283-335.

_____. Vanderberg, I., Most, H., and Orton, C. 1967. Protective immunity produced by

the injection of X-irradiated sporozoites of *Plasmodium berghei*. Nature 216: 160-162.

Perlmann, H., Berzin, K., Wahlin, B., Udomsangpetch, R., Ruangjirachuporn, W., Wahlgren, M., and Perlmann, P.H. 1987. Absence of antigenic diversity in Pf155, a major parasite antigen in membranes of erythrocytes infected with *Plasmodium falciparum*. Journal of Clinical Microbiology : 25(12): 2347-2354.

____. Berzins, K., Wahlgren, M., Carlsson, J., Bjorkman, A., Patarroyo, M.E., and Perlmann, P., 1984. Antibodies in malarial sera to parasite antigens in the membrane of erythrocytes infected with early asexual stages of *Plasmodium falciparum*. Journal of Experimental Medicine 159: 1686-1704.

____. Perlmann, P., Berzins, K., Wahlin, B., Troye-Blomberg, M., Hagstedt, M., Andersson, I., Hogh, B., Pertersen, E., and Bjorkman, A. 1989. Dissection of the human antibody response to the malaria antigen Pf155/RESA into epitope specific components. Immunological Reviews 112: 115-132.

Perrin, L.H., Merkli, B., Locke, M., Chizzolini, C., Smart, J., and Richle, R. 1984. Antimalarial immunity in *Saimiri* monkeys. Immunization with surface component of asexual blood stage. Journal of Experimental Medicine 160: 441-451.

Peterson, M.G., Coppel, R.L., Molony, M.B., and Kemp, D.J. 1988. Third form of the precursor to the major merozoite surface antigen of *Plasmodium falciparum*. Molecular and Cellular Biology 8: 2664-2667.

- Picot, S., Peyron, F., Deloron, P., Boudin, C., Chumpitazi, B., Barbe, G., Vuillez, J.P., Donadille, A., and Ambroise-Thomas, P. 1993. Ring-infected erythrocyte surface antigen (Pf155/RESA) induces tumor necrosis factor-alpha production. Clinical Experimental Immunology 993: 184-188.
- Prescott, N., Stowers, A. W., Cheng, Q., Bobogare, A., Rzepczyk, C. M., and Saul, A. 1994. *Plasmodium falciparum* genetic diversity can be characterised using the polymorphic merozoite surface antigen 2 (MSP-2) gene as a single locus marker. Molecular and Biochemical Parasitology 63 : 203-212
- Qari, S. H., Collins, W. E., Lobel, H. O., Taylor, F., and Lal, A. A. 1994. A study of polymorphism in the circumsporozoite protein of human malaria parasites. The American Journal of Tropical Medicine and Hygiene 50(1): 45-51.
- Ramasamy, R. 1987. Studies on glycoproteins in the human malaria parasite *Plasmodium falciparum*. Identification of a myristilated 45 kDa merozoite membrane glycoprotein. Immunological and Cell Biology 65: 419-424.
- Reese, R.T. 1985. Two *Plasmodium falciparum* merozoite surface polypeptides share epitopes with a single Mr 185,000 parasite glycoprotein. Molecular and Biochemical Parasitology 17: 61-77.
- Sanger, F., Nicklen, S., and Coulson, A.R. 1977. DNA sequencing with chain-termination inhibitors. Proceeding of the National Academy of Sciences of the USA 74:5463.

- Saiki, R.K., Gelfand, D.H., Stoffel, S., Scharf, S.J., Higuchi, R., Horn, G.G.T., Mullis, K.B., and Erlich, H.A. 1988. Primer-directed enzymatic amplification of DNA with a thermostable DNA polymerase. Science 239: 487-491.
- Saint, R.B., Coppel, R.L., Cowman, A.F., Brown, G.V., Shi, P.T., Barzaga, N., Kemp, D.J., and Anders, R.F. 1987. Changes in repeat number, sequence, and reading frame in S-antigen genes of *Plasmodium falciparum*. Molecular and Cellular Biology 7: 2968-2973.
- Saul, A., and Battistutta, D. 1988. Codon usage in *Plasmodium falciparum*. Molecular Biochemical and Parasitology 27:35-42.
- _____. Cooper, J., Ingrem, L., Anders, R.F., and Brown, G.V. 1985. Invasions of erythrocytes in vitro by *Plasmodium falciparum* can be inhibited by a monoclonal antibody directed against an S antigen. Parasite Immunology 7: 587-593.
- Scherf, A., Mattei, D., and Sarthou, J.L. 1991. Multiple infections and unusual distribution of block 2 of the MSA1 gene of *Plasmodium falciparum* detected in West Africa clinical isolates by polymerase reaction analysis. Molecular Biochemical and Parasitology 44: 297-300.
- Seesod, N., Lundeberg, J., Hedrum, A., Aslund, L., Holder, A., Thaithong, S., and Uhlen, M. 1993. Immunomagnetic purification to facilitate DNA diagnosis of *Plasmodium falciparum*. Journal of Clinical Microbiology 31(10): 2715-2719.
- _____. Sueblinwong, T., Chatmongkolkul, M., Ahlborg, N., Rydaker, M., Thaithong,

- S., Pettersson, U., Perlmann, P., and Aslund L. 1996. Allelic variation of the Pfl55/RESA antigen among field isolates of *Plasmodium falciparum* in Thailand. The American Journal of Tropical Medicine and Hygiene (in press).
- Shi, Y., Alper, M.P., Povoia, M.M., and Lal, A.A. 1992. Diversity in the immunodominant of the circumsporozoite protein of *Plasmodium falciparum* parasite from malaria-endemic region Papua New Guinea and Brazil. The American Journal of Tropical Medicine and Hygiene 47(6): 844-851.
- Siddiqui, W.A., Tam, L.Q., Kan, Siu-Chow, Kramer, K.J., Case, S.E., Palmer, K.L., Yamaga, K.M., and Hui, G.S. 1986. Induction of protective immunity to monoclonal-antibody-defined *Plasmodium falciparum* antigens requires strong adjuvant in Aotus monkeys. Infection and Immunity 52: 314-318.
- Sjolander, A., Hansson, M., Lovgren, K., Wahlin, B., Berzins, K., and Perlman, P. 1993. Immunogenicity in rabbit and monkeys of influenza ISCOMs conjugated with repeated sequences of the *Plasmodium falciparum* antigen Pfl55/RESA. Parasite Immunology 19: 355-359.
- Smythe, J.A., Coppel, R.L., Brown, G.V., Ramasamy, R., Kemp, D.J., and Anders, R.F. 1988. Identification of two integral membrane proteins of *Plasmodium falciparum*. Proceeding of the National Academy of Sciences of the USA 85: 5195-5199.
- _____. Peterson, M.G., Coppel, R.L., Saul, A.J., Kemp, D.J., and Anders, R.F. 1990. Structural diversity in the 45-kilodalton merozoite surface antigen of *Plasmodium falciparum*. Science 236: 1661-1666.

Snounou, G., Viriyakolsol, V., Jarra, W., Thaithong, S., and Brown, K.N. 1993.

Identification of the four human malaria species in field samples by the polymerase chain reaction and detection of a high prevalence of mixed infections. Molecular and Biochemical Parasitology 58: 283-292.

Stahl, H.D., Bianco, A.E., Crewther, P.E., Anders, R.F., Kyne, A.P., Coppel, R.L.,

Mitchell, G.F., Kemp, D.J., and Brown, G.V. 1986. Sorting large numbers of clones expressing *Plasmodium falciparum* antigens in *Escherichia coli* by differential antibody screening. Molecular and Biological Medicine 3: 351-368.

_____. Crewther, P.E., Anders, R.F., Brown, G.V., Coppel, R.L., Bianco, A.E.,

Mitchell, G.F., and Kemp, D.J. 1985. Interspersed blocks of repetitive and charged amino acids in a dominant immunogen of *Plasmodium falciparum*. Proceeding of the National Academy of Sciences of the USA 82: 543-547.

_____. Crewther, P.E., Anders, R.F., and Kemp, D.J. 1987. Structure of the FIRA-gene of *Plasmodium falciparum*. Molecular and Biological Medicine 4: 199-211.

Tanabe, K Mackay, M., Goman, M., and Scaife, J.G. 1987. Allelic dimorphism in a surface antigen gene of the malaria parasite *Plasmodium falciparum*. Journal of Molecular Biochemistry 195: 273-287.

Tan-ariya, P., Yang, Y.F., and Kilejian, A. 1988. *Plasmodium falciparum*: comparison of genomic organization and rearrangements by pulsed field gradient in knobby and knobless variants. Experimental Parasitology 67: 129-136.

- Taylor, D.W., Parra, M., Chapman, G.B., Stearn, M.E., Rener, J., Aikawa, M., Uni, S., Aley, S.B., Panton, L.J., and Howard, R.J. 1987. Localization of *Plasmodium falciparum* histidin-rich protein 1 in the erythrocyte skeleton under knobs. Molecular and Biochemical Parasitology 25: 165-174.
- Thaithong, S., Beale, G.H., Fenton, B., McBride, J., Rosario, V., Walker, A., and Walliker, D. 1984. Clonal diversity in a single isolate of the malaria parasite *Plasmodium falciparum*. Transaction of The Royal Society of Tropical Medicine and Hygiene 78:242-245.
- Tolle, R., Bujard, H., and Cooper, J.A. 1995. *Plasmodium falciparum*: Variation within C-terminal region of merozoite surface antigen-1. Experimental Parasitology 81: 47-54.
- Udhayakumar, V., Shi, Y.P., Kumar, S., Jue, D., Wohlhueter, R., and Lal, A. 1994. Antigenic diversity in the circumsporozoite protein of *Plasmodium falciparum* abrogates cytotoxic-T-cell recognition. Infection and Immunity 62(4): 1414-1413.
- Udomsangpetch, R., Brown, A., Smith, C.D., and Webster, H.K. 1993. *Plasmodium coatneyi* ring-infected erythrocyte surface antigens. The American Journal of Tropical Medicine and Hygiene 49(1) 127-134.
- Uni, S., Masuda, A., Stewart, M.J., Igarashi, I., Nussenzweig, R., and Aikawa, M.

1987. Ultrastructural localization of the 150/130 Kd antigens of the blood stages of *Plasmodium falciparum*-infected human erythrocytes. The American Journal of Tropical Medicine and Hygiene 36: 481-488.

Viriyakosol, S., Zhu, X. P., Jarra, W., Seugorn, A., Brown, K. N., and Snounou, G.

1994. *Plasmodium falciparum* : Selective growth of subpopulation from field samples following in vitro culture, as detected by the polymerase chain reaction. Experimental Parasitology 79: 517-525.

Wahlin, B., Schmidt, A., Aikawa, M., Miller, L.H., and Green, I. 1984. Human antibodies to a Mr 155000 *Plasmodium falciparum* antigen efficiently inhibit merozoite invasion. Proceeding of the National Academy of Sciences of the USA 81: 7912-7916.

Wanidworanum, C., Barnwell, J.W., Shear, S., L. 1987. Protective antigens in the membranes of mouse erythrocytes infected with *Plasmodium chabaudi*. Molecular and Biochemical Parasitology 25: 195-201.

WHO. 1992. World malaria situation 1990. World Health sat Q 43: 68-88.

Yoshida, N., Di Santi, S., Dutre, A., Nussenzweig, R.S., Nussenzweig, V., and Enea, V. 1990. *Plasmodium falciparum* : restricted polymorphism of T cell epitopes of the circumsporozoite protein in Brazil. Experimental Parasitology 71: 386-392.

ภาคผนวก

ตารางที่ 1 แสดงตัวอย่างเชื่อมโลหะจากจังหวัด ดาก

ตัวอย่างจากจังหวัดตาก	Type	ปีที่เก็บ
T25	F32	2525
T34	F32	2525
T36	4 th	2525
T43	F32	2525
T101	F32	2536
T114	F32	2536
T115	F32	2536
T116	F32	2536
T120	F32:4 th	2536
T130	F32	2536
T131	F32	2536
T132	F32	2536
T134	F32	2536
T136	F32	2536
รวม	14 ตัวอย่าง	

สถาบันวิทยบริการ
จุฬาลงกรณ์มหาวิทยาลัย

ตารางที่ 2 แสดงตัวอย่างเชื่อมมาลาเรียจากจังหวัดชลบุรี

ตัวอย่างเชื่อมมาลาเรียจากอำเภอศรีราชา จังหวัดชลบุรี	Type	ปีที่เก็บ
S3	F32	2526
S70	4 th	2526
S73	3 rd	2526
S79	F32	2526
S90	F32	2526
S98	F32;3 rd	2526
S102	F32	2526
S103	FC27	2526
S107	F32	2526
S110	3 rd	2526
S111	F32	2526
S114	F32	2526
S118	3 rd	2526
S127	F32	2526
S132	3 rd	2526
S142	F32	2526
S145	F32	2526
S147	F32	2526
S148	3 rd	2526
S149	4 th	2526
S151	F32; 3 rd	2526
S152	F32	2526
S153	F32;3 rd	2526
รวม 23 ตัวอย่าง		

ตารางที่ 3 แสดงตัวอย่างเชื่อมเวลาเรือจากจังหวัดตราด

ตัวอย่างจากจังหวัดตราด	Type	ปีที่เก็บ
TD16	F32	2534
TD21	F32;3 rd	2534
TD33	3 rd	2534
TD37	F32	2534
TD50	F32;4 th	2534
TD378	F32	2536
TD379	F32	2536
TD380	F32	2536
TD381	F32	2536
TD384	4 th	2536
TD385	F32	2536
TD386	F32	2536
TD388	3 rd	2536
TD395	F32	2536
TD398	F32	2536
TD413	3 rd	2536
TD427	F32	2536
TD431	F32;3 rd	2536
TD433	F32;FC27	2536
TD434	F32	2536
TD436	4 th	2536
TD439	F32	2536
TD446	F32	2536
TD459	FC27;4 th	2536
TD460	F32	2536
รวม 25 ตัวอย่าง		

ตารางที่ 4 แสดงตัวอย่างเชื่อมมาลาเรียจากจังหวัดจันทบุรี

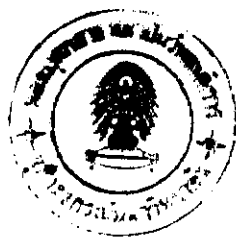
ตัวอย่างเชื่อมมาลาเรียจากจังหวัดจันทบุรี	Type	ปีที่เก็บ
CH12	F32;4 th	2526
CH13	4 th	2524
CH15	4 th	2524
CH18	4 th	2524
CH25	F32	2524
CH26	3 rd ;4 th	2524
CH27	F32	2524
CH28	F32	2524
CH31	F32	2524
CH32	F32	2524
CH33	F32	2524
CH34	F32	2524
CH48	F32	2525
CH50	F32	2524
CH60	F32	2524
CH61	F32	2524
CH66	F32	2524
CH81	F32	2525
CH85	FC27	2525
CH86	F32	2525
CH91	3 rd	2525
CH98	F32	2526
CH141	F32;FC27	2526
CH142	3 rd	2526
รวม	24 ตัวอย่าง	

ตารางที่ 5 แสดงตัวอย่างเชื่อมมาลาเรียจากจังหวัดสงขลา

ตัวอย่างเชื่อมมาลาเรียจากจังหวัดสงขลา	TYPE	ปีที่เก็บ
SK1	F32;3 rd	2523
SK3	F32	2523
SK13	F32	2524
SK15	F32	2524
SK16	F32	2524
SK17	3 rd	2524
SK18	F32	2524
SK19	F32	2524
SK20	F32	2524
SK23	4 th	2524
SK25	F32	2524
SK30	4 th	2524
SK32	F32	2524
SK33	F32	2524
SK37	F32	2524
รวม 15 ตัวอย่าง		

ตารางที่ 6 แสดงตัวอย่างเชื่อมมาลาเรียจากโรงพยาบาลเวชศาสตร์เขตร้อน

ตัวอย่างเชื่อมมาลาเรียจากคนไข้โรงพยาบาลเวชศาสตร์เขตร้อน	Type	ปีที่เก็บ
TM1	F32	2528
TM2	F32	2528
TM3	F32	2528
TM4	F32; 4 th	2528
TM6	F32	2528
TM8	4 th	2528
TM19	F32; 3 rd	2528
TM20	4 th	2528
TM28	F32; 4 th	2528
TM29	3 rd	2528
TM31	3 rd	2528
TM32	3 rd	2528
TM33	F32	2528
TM53	3 rd	2529
TM54	3 rd	2529
TM67	3 rd	2529
TM69	F32	2529
TM79	3 rd	2529
TM82	4 th	2529
TM84	F32	2529
TM87	F32	2529
TM91	F32	2529
TM99	F32	2529
รวม 23 ตัวอย่าง		



ประวัติผู้เขียน

นางสาวศิริวดี ชมเดช เกิดวันที่ 25 กุมภาพันธ์ พ.ศ. 2515 จังหวัดประจวบคีรีขันธ์
 สำเร็จการศึกษาปริญญาตรีวิทยาศาสตร์บัณฑิต สาขาชีววิทยา คณะวิทยาศาสตร์ มหาวิทยาลัย
 เชียงใหม่ ในปีการศึกษา 2536 และเข้าศึกษาต่อในหลักสูตรวิทยาศาสตรมหาบัณฑิต ที่
 จุฬาลงกรณ์มหาวิทยาลัย เมื่อ พ.ศ. 2536



สถาบันวิทยบริการ
 จุฬาลงกรณ์มหาวิทยาลัย