



รายการอ้างอิง

ภาษาไทย

ประยงค์ ระดมยศ, อัญชลี ตั้งตรงจิตร, ศรชัย หล่ออารีย์สุวรรณและแทน จงสุขชัยสิทธิ์. 2535.
Atlas of medical parasitology. กรุงเทพมหานคร: สำนักพิมพ์ ที.พี.พรีนซ์.

ภาษาอังกฤษ

Amersham: ECL 3' oligolabelling and detection system.

Anders, R.F. 1986. Multiple cross reactivities amongst of *Plasmodium falciparum* impair the development of protective immunity against malaria. Parasite immunology. 8: 529-539.

———. 1991. Antigenic diversity in *Plasmodium falciparum*. Acta Leidensia . 60: 57-67.

———., Brown, G.V., and Edwards, A.E. 1983. Characterization of an S-antigen synthesized by several isolate of *Plasmodium falciparum*. Proc. Natl. acad. Sci. USA. 80: 6652-6656.

Bianco, A.E., Culvenor, J.G., Coppel, R.L., Crewther, P.E., McIntype, P., Favalovo, J.M., Brown, G.V., Kemp, D.J., and Anders, R.F. 1987. A putative glycoprotein-binding protein is secreted from schizonts of *Plasmodium falciparum*. Mol. Biolchem. Parasitol. 23: 91-102.

Blackburn, E.H. 1984. Telomeres: do the ends justify the means? Cell. 37: 7-8.

———., and Szostak, J.W. 1984. Molecular structure of centromeres and telomeres. Annual Review of Biochemistry. 53: 163-194.

Brown, H., Kemp, D.J., Barzaga, N., Brown, G.V., Anders, R.F., and Coppel, R.L. 1987. Sequence variation in S-antigen genes of *Plasmodium falciparum*. Mol. Biol. Med. 4: 369-376.

- Carle, G.F., and Olson, M.V. 1984. Separation of chromosomal DNA molecules from yeast by orthogonal field-alternation gel electrophoresis. *Nucl. Acids. Res.* 12: 5647-5664.
- Certa, U., Rotmann, D., Matile, H., and Reberliske, R. 1987. A naturally occurring gene encode the major surface antigen precursor p190 of *Plasmodium falciparum* lacks tripeptide repeats. *EMBO J.* 6: 4137-4142.
- Cheung, A., Leban, J., Shaw, A.R., Merkli, B., Stocker, J., Chizzolini, C., Sander, C., and Perrin, L.H. 1986. Immunization with synthetic peptides of a *Plasmodium falciparum* surface antigen induces antimerozoite antibodies. *Proc. Natl. Acad. Sci. USA.* 83: 8328-8332.
- Clark, J.T., Donachie, S., Anand, R., Wilson, C.F., Heidrich, H.G., and McBride, J.S. 1989. 46-53 kilodalton glycoprotein form the surface of *Plasmodium falciparum* merozoite. *Mol. Biochem. Parasitol.* 32: 15-24.
- Clyde, D.F. 1990. Immunity to falciparum and vivax malaria induced by irradiated sporozoite: a review of university of Martland studies, 1971-5. *Bull. WHO.* 68(suppl.): 9-12.
- Conway, D.J., Greenwood, B.M., and McBride, J.S. 1991. The epidemiology of multiple-clone *Plasmodium falciparum* infections in Gambian patients. *Parasitology.* 103: 1-6.
- and McBride, J.S. 1991. Population genetics of *Plasmodium falciparum* within a malaria hyperendemic area. *Parasitology.* 103: 7-16.
- Coppel, R.L., Crewther, P.E., Culvenor, J.G., Perrin, L.F., Brown, G.V., Kemp, D.J., and Anders, R.F. 1988. Variation in p126 a parasitophorous vacuole antigen of *Plasmodium falciparum*. *Mol. Biochem. Parasitol.* 5: 155-166.
- 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 populations. *Cell.* 44: 87-95.

- Dame, J.B., Williams, J.L., McCutchan, T.F., Weber, L.J., Wirtz, R.A., Hockmeyer, W.T., Maloy, W.L., Haynes, J.D., Schneider, I., Roberts, D., Sanders, G.S., Reddy, E.P., Diggs, C.L., and Miller, L.H. 1984. Structure of the gene encoding the immunodominant surface antigen on the sporozoite of human malaria parasite *Plasmodium falciparum*. *Science*. 225: 593-599.
- Delplace, P., Fortier, B., Tronchin, G., Dubremetz, J.F., and Vernes, A. 1987. Localization, biosynthesis, processing and isolation of a major 126 Kdal antigen of the parasitophorous vacuole of *Plasmodium falciparum*. *Mol. Biochem. Parasitol.* 23: 193-201.
- Dubois, P., Dedet, J., Fandeur, T., Roussilhon, C., Jendoubi, M., Pauillac, S., Mercereau-Puijlon, O., and Pereira Da Silva, L. 1984. Protective immunization of the squirrel monkey against asexual blood stage of *Plasmodium falciparum* by use of parasite protein fraction. *Proc. Natl. Acad. Sci. USA*. 81: 229-232.
- Eichinger, D.J., Arnot, D.E., Tam, J.P., Nussenzweig, V., and Enca, V. 1986. The circumsporozoite protein of *Plasmodium falciparum*: gene cloning and identification of the immunodominant epitope. *Mol. Cell. Biol.* 6: 3965-3972.
- Ellis, J., Ozaki, L.S., Gwadz, R.W., Cochrane, A.H., Nussenzweig, V., Nussenzweig, R.S., and Godson, G.N. 1983. Cloning and expression in *E. coli* of the malarial sporozoite surface antigen gene from *Plasmodium knowlesi*. *Nature*. 302: 536-538.
- 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*. *Mol. Biochem. Parasitol.* 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*. *Nucl. Acids. Res.* 14: 8265-8277.
- Fenton, B., Clark, J.T., 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*. *Mol. Cell. Biol.* 11: 963-971.

- Foley, M., Cartwright, L.C.R., and Babiker, H.A. 1992. Rapid and simple method for isolating malaria DNA from fingerprick sample of blood. *Mol. Biochem. Parasitol.* 53: 241-244.
- Foote, S.J., Thompson, J.K., Cowman, A.F., and Kemp, D.J. 1989. Amplification of the multidrug-resistance gene in some chloroquine resistance isolates of *Plasmodium falciparum*. *Cell.* 57: 921-930.
- Gowman, A.F., Coppel, R.L. Saint, R.B., Favaloro, J., Crewther, P.F., and Kemp, D.J. 1984. The ring-infected erythrocyte surface antigen (RESA) polypeptide of *Plasmodium falciparum* contains two separate blocks of tandem repeats encoding antigenic epitopes that are naturally immunogenic in man. *Mol. Biol. Med.* 2: 207-221.
- Hall, R., Hyde, J.E., Goman, M., Simmons, D.L., Hope, I.A., Mackey, M., Scaife, J., Merkli, B., Richle, R., and Stocker, J. 1984. Major surface antigen of a human malaria parasite cloned and expressed in bacteria. *Nature.* 311: 379-382.
- , McBride, J.S., Morgan, G., Tait, A., Zolg, J.W., Walliker, D., and Scaife, J. 1983. Antigen of the erythrocytic stage of human malaria parasite *Plasmodium falciparum* detected by monoclonal antibodies. *Mol. Biochem. Parasitol.* 7: 247-265.
- Holder, A.A. 1988. The precursor to the major merozoite surface antigen: structure and role in immunity. *Prog. 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. *J. Exp. Med.* 156: 1528-1538.
- , and Freeman, R.R. 1984. The three major antigens on the surface of *Plasmodium falciparum* merozoite are derived from a single high molecular weight precursor. *J. Exp. Med.* 160: 624-629.
- Jongwutiwes, S., Tanabe, K., Nakazawa, S., Yonagi, T., and Kanbara, H. 1992. Sequence variation in the tripeptide repeats and T cell epitopes in p190 (MSP1) of *Plasmodium falciparum* from field isolates. *Mol. Biochem. Parasitol.* 51: 81-90.

- Kemp, D.J., Coppel, R.L., Cowman, A.F., Saint, R.B., Brown, G.V., and Anders, R.F. 1983. Expression of *Plasmodium falciparum* blood stage antigens in *Escherichia coli*: detection with antibodies from immune humans. *Proc. Natl. Acad. Sci. USA.* 80: 3787-3791.
- . Corcoran, L.M., Coppel, R.L., Stahi, H.D., Bianco, A.E., Brown, G.V., and Anders, R.F. 1985. Size variation in chromosomes from independent culture isolates of *Plasmodium falciparum*. *Nature.* 315: 247-350.
- ., Thompson, J.K., Walliker, D., and Corcoran, L.M. 1987. Molecular karyotype of *Plasmodium falciparum*: conserved linkage groups and expendable histidine-rich protein genes. *Proc. Natl. Acad. Sci. USA.* 84, 7672-7676.
- Kimura, E., Matti, D., Di Santi, S.M., and Scherf, A. 1990. Genetic diversity in the major antigen of *Plasmodium falciparum*: high prevalence of a third polymorphic form detected in strains derived from malaria patients. *Gene.* 91: 57-62.
- Kochan, J., Perkins, M., and Ravetch, J.V. 1986. A tandemly repeated sequence determines the binding domain for an erythrocyte receptor binding protein of *P. falciparum*. *Cell.* 44: 689-696.
- Knapp, B., Hundt, E., Nau, U., and Kasper, H.A. 1989. Molecular cloning, genomic structure and localization in a blood stage antigen of *Plasmodium falciparum* characterized by a serine stretch. *Mol. Biochem. Parasitol.* 32: 73-84.
- Kreier, J.P., and Baker, J.R. 1987. *Parasitic protozoa.* Allen & Unwin (publishers) Ltd. London.
- Langsley, G., Sibilli, L., Mattei, D., Falanga, P., and Mercereau-Puijolan, O. 1987. Karyotype comparison between *P. chabaudi* and *P. falciparum*: analysis of a *P. chabaudi* cDNA containing sequences highly repetitive in *P. falciparum*. *Nucl. Acids. Res.* 15: 2203-2211.
- Maniatis, T., Fritsch, E.F., and Sambrook, J. 1982. *Molecular cloning: a laboratory manual.* New York Cold Spring Harbor.
- Markell, E.K., Voge, M., and John, D.T. 1992. *Medical parasitology.* W.B. Saunders company.

- Marshall, V.M., Coppel, R.L., Martin, R.K., Oduola, A.M.J., Anders, R.F., and Kemp, D.J. 1991. A *Plasmodium falciparum* MSA-2 gene apparently generated by intragenic recombination between the two allelic families. *Mol. Biochem. Parasitol.* 4-5: 349-52.
- McBride, J.S., Newbold, C.I., and Anand, R. 1985. Polymorphism of a high molecular weight schizont antigen of human malaria parasite *Plasmodium falciparum*. *J. Exp. Med.* 161: 160-180.
- , Walliker, D., and Morgan, G. 1982. Antigenic diversity in the human malaria parasite *Plasmodium falciparum*. *Science.* 217: 254-257.
- Miller, L.H., Howard, R.J., Carter, R., Good, M.F., Nussenzweig, V., and Nussenzweig, R.S. 1986. Research toward malaria vaccines. *Science.* 234: 1349-1356.
- Moreno, A., and Patarroyo, M.E. 1989. Development of an asexual blood stage malaria vaccine. *Blood.* 74: 537-546.
- Nussenzweig, R.S., 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.
- Perrin, L.H., Merkli, B., Locke, M., Chizzolini, C., Smart, J., and Richle, R. 1984. Antimalarial immunity in Saimiri monkeys. Immunization with surface components of asexual blood stage. *J. Exp. Med.* 160: 441-451.
- Perkin, M.E. 1982. Surface proteins of schizont-infected erythrocytes and merozoites of *Plasmodium falciparum*. *Mol. Biochem. Parasitol.* 5: 55-64.
- . 1984. Surface proteins of *Plasmodium falciparum* merozoites binding to the erythrocyte receptor glycoprotein. *J. Exp. Med.* 160: 678-798.
- Peterson, M.G., Coppel, R.L., McIntyre, P., Langford, C.J., Woodrow, G., Brown, G.V., Anders, R.F., and Kemp, D.J. 1988. Variation in the precursor to the major merozoite surface antigen of *Plasmodium falciparum*. *Mol. Biochem. Parasitol.* 27: 291-302.
- Prensier, G., and Slomianny, C. 1986. The karyotype of *Plasmodium falciparum* determined by ultrastructural serial sectioning and 3D reconstruction. *J. Parasitol.* 72: 731-736.

- Ranford-Cartwright, L., Balfe, P., Carter, R., and Walliker, D. 1991. Genetic hybrids of *Plasmodium falciparum* identified by amplification of genomic DNA from single oocysts. *Mol. Biochem. Parasitol.* 49: 239-244.
- Reese, R.T. 1985. Two *Plasmodium falciparum* merozoite surface polypeptides share epitopes with a single Mr 185,000 parasite glycoprotein. *Mol. Biochem. Parasitol.* 17: 61-77.
- Saiki, R.K., Gelfand, D.H., Stoffel, S., Scharf, S.J., Higuchi, R., Horn, 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.
- , Scharf, S., Faloona, F., Mullis, K.B., Horn, G., Erlich, H.A., and Arnheim, N. 1985. Novel method for the prenatal diagnosis of sickle cell anemia. *Am. J. Hum. Genet.* 37: 172.
- Sual, A., Cooper, J., Ingram, 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., Matti, D., and Sarthou, J.L. 1991. Multiple infections and unusual distribution of block 2 of the MSP1 gene of *Plasmodium falciparum* detected in west African clinical isolates by polymerase chain reaction analysis. *Mol. Biochem. Parasitol.* 44: 297-300.
- Sheppard, M., Thompson, J.K., Anders, R.F., Kemp, D.J., and Lew, A.M. 1989. Molecular karyotyping of the rodent malaria *Plasmodium chabaudi*, *Plasmodium berghei* and *Plasmodium vinckei*. *Mol. Biochem. Parasitol.* 34: 45-52.
- Siddiqui, W.A., Tam, L.Q., Kramer, K.J., Hui, G.S.N., Case, S.E., Yamaga, K.M., Chang, S.P., Chan, E.B.T., and Kan, S.C. 1987. Merozoite surface coat precursor protein completely protects Aotus monkeys against *Plasmodium falciparum* malaria. *Proc. Natl. Acad. Sci. USA.* 84: 3014-3018.
- 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*. *Proc. Natl. Acad. Sci. USA.* 85: 5195-5199.

- ., Coppel, R.L., Cay, K.P., Martin, R.K., Oduola, A.M.J., Kemp, D.J., and Anders, R.F. 1991. Structural diversity in the *Plasmodium falciparum* merozoite surface antigen 2. *Proc. Natl. Acad. Sci. USA.* 88: 1751-1755.
- ., Peterson, M.G., Coppel, R., Kemp, D.J., and Anders, R.F. 1989. Allelic variation of Mr45000 merozoite surface antigen of *Plasmodium falciparum*. Cold Spring Harbor Laboratory, Cold Spring Harbor.
- ., Peterson, M.G., Coppel, R.L., Saul, A.J., Kemp, D.J., and Anders, R.F. 1990. Structural diversity in 45-kilodalton merozoite surface antigen of *Plasmodium falciparum*. *Mol. Biochem. Parasitol.* 39: 227-234.
- Snewin, V.A., Herrera, M., Sanchez, G., Scherf, A., Langsley, G., and Herrera, S. 1991. Polymorphism of the alleles of the merozoite surface antigens MSA1 and MSA2 in *Plasmodium falciparum* wild isolates from Columbia. *Mol. Biochem. Parasitol.* 49: 265-276.
- Southern, E.M. 1975. Detection of specific sequences among DNA fragments separated by gel electrophoresis. *J. Mol. Biol.* 98: 503-517.
- Tanabe, K. 1992. Structure, diversity and immunogenicity of the precursor to the major merozoite surface proteins of malaria parasites. *Jpn. J. Parasitol.* 41: 447-463.
- ., Mackey, M., Goman, M., and Scaife, J.G. 1987. Allelic polymorphism in a surface antigen gene of the malaria parasite *Plasmodium falciparum*. *J. Mol. Biol.* 195: 273-287.
- Thaithong, S., and Beale, G.H. 1992. *Malaria parasite*. Bangkok: Chulalongkorn university.
- ., Beale, G.H., Fenton, B., McBride, J.S., Rasario, V., Walker, A., and Walliker, D. 1984. Clonal diversity in a single isolate of the malaria parasite *Plasmodium falciparum*. *Trans. R. Soc. Trop. Med. Hyg.* 78: 242-245.
- Thomus, A.W., Carr, D.A., Carter, J.M., and Lyon, J.A. 1990. Sequence comparison of allelic forms of the *Plasmodium falciparum* merozoite surface antigen MSA2. *Mol. Biochem. Parasitol.* 43: 211-220.
- Trager, W., and Jensen, J.B. 1976. Human malaria parasite in continuous culture. *Science.* 193: 673-675.

- Van der Ploeg, L.H.T., Smits, M., Ponnuduria, T., Vermuelen, A., Meuwissen, J.H.E., and Langley, G. 1985. Chromosome size DNA molecules of *Plasmodium falciparum*. *Science*. 229: 658-661.
- Wahlin, B., Schmidt, A., Aikawa, M., Miller, L.H., and Green, I. 1984. Human antibodies to a Mr155000 *Plasmodium falciparum* antigen efficiently inhibit merozoite invasion. *Proc. Natl. Acad. Sci. USA*. 81: 7912-7916.
- Walliker, D. 1983. The genetic basis of diversity in malaria parasites. *Adv. in Parasitology*. 22: 217-259.
- . 1986. Genes, vaccines and variation in malaria. *Parasitology Today*. 2: 43-44.
- , Quakyi, I.A., Wellems, T.E., McCutchan, T.F., Szarfman, A., London, W.T., Corcoran, L.M., Burkot, T.R., and Certer, R. 1987. Genetic analysis of the human malaria parasite *Plasmodium falciparum*. *Science*. 236: 1661-1666.
- Werndorfer, W.H. 1986. "Malaria today" in second conference on malaria research, Thailand. pp. 15-22. The Merlin Pattaya, Pattaya city.
- Wilson, R.J.M., McGregor, I. O., and Williams, K. 1975. Occurrence of S-antigens in serum in *Plasmodium falciparum* infection in man. *Trans. Roy. Soc. Trop. Med. Hyg.* 69: 453-459.
- World Health Organization. 1990. World malaria situation. *Wkly. Epidem. Red.* No. 25(22 June). 189.
- Yoshida, N., Nussenzweig, R.S., Potocnjak, P., Nussenzweig, V., and Aikawa, M. 1980. Hybridoma produces protective antibodies directed against the sporozoite stage of malaria parasite. *Science*. 207: 71-73.
- Zavala, F., Cochrane, A.H., Nardin, E.H., Nussenzweig, R.S. and Nussenzweig, V. 1983. Circumsporozoite protein of malaria parasite contain a single immunodominant region with two or more identical epitopes. *J. Exp. Med.* 157: 1947-1957.

ภาคผนวก

ส่วนประกอบของน้ำยาและสารละลายต่างๆ

sodium phosphate pH 8.0 (5P8)

5 mM sodium phosphate (Na_2HPO_4)

10 X PCR buffer

100 mM Tris-HCl pH 8.8

500 mM KCl

25 mM MgCl_2

100 X dNTPs

7.5 mM dATP

7.5 mM dCTP

7.5 mM dGTP

7.5 mM dTTP

denaturing buffer

0.2 M NaOH

0.6 M NaCl

neutralizing buffer

1.0 M Tris-HCl

1.5 M NaCl

20 X SSC

0.3 M sodium citrate

3.0 M NaCl

10 X TBE

1 M Tris
 1 M Boric acid
 20 mM EDTA pH 8.0

5 X loading buffer

50 mM Tris-HCl
 75 mM EDTA pH 8.0
 0.5% (w/v) SDS
 0.2% (w/v) bromophenol blue
 30% (w/v) sucrose
 10% (w/v) ficoll

hybridization buffer

20 X SSC	250 มิลลิลิตร
hybridization buffer component	1 กรัม
10% SDS	2 มิลลิลิตร
blocking agent	5 กรัม

ละลายส่วนประกอบดังกล่าวในน้ำกลั่น ปรับปริมาตรให้เป็น 1000 มิลลิลิตร
 เก็บไว้ที่ -20°C

buffer 1

NaCl	8.77 กรัม
Tris	12.1 กรัม

ละลายส่วนประกอบดังกล่าวในน้ำกลั่น ปรับ pH ให้เป็น 7.5 ด้วยสารละลาย
 1 M HCl ปรับปริมาตรให้เป็น 1000 มิลลิลิตร

buffer 1 + 0.5% blocking agent

blocking agent 0.5 กรัม

ละลาย blocking agent 0.5 กรัม ในสารละลาย buffer 1 ปรับปริมาตรให้เป็น 100 มิลลิลิตร

buffer 2

NaCl 23.4 กรัม

Tris 12.1 กรัม

ละลายส่วนประกอบดังกล่าวในน้ำกลั่น ปรับ pH ให้เป็น 7.5 ด้วยสารละลาย 1 M HCl ปรับปริมาตรให้เป็น 1000 มิลลิลิตร

buffer 2 + 0.5% bovine serum albumin (BSA)

BSA 0.5 กรัม

ละลาย BSA 0.5 กรัม ในสารละลาย buffer 2 ปรับปริมาตรให้เป็น 100 มิลลิลิตร

10% SDS

sodium dodecyl sulfate (SDS) 10 กรัม

ละลาย SDS 10 กรัม ในน้ำกลั่น ปรับปริมาตรให้เป็น 100 มิลลิลิตร

0.4 M NaOH

ละลาย NaOH 16 กรัม ในน้ำกลั่น ปรับปริมาตรให้เป็น 1000 มิลลิลิตร

1.5% agarose gel

agarose 1.88 กรัม

ใส่ agarose 1.88 กรัม ลงใน 1 X TBE 125 มิลลิลิตร คัมให้เดือดจนละลายหมด ทิ้งไว้ให้เย็นลงประมาณ 50°C ก่อนนำไปเทลงในเจลแอมเบอร์



ประวัติผู้เขียน

นางสาวกาญจนา รังษิหิรัญรัตน์ เกิดวันที่ 24 เมษายน พ.ศ. 2509 จังหวัด กรุงเทพมหานคร สำเร็จการศึกษาปริญญาตรีวิทยาศาสตร์บัณฑิต สาขาชีววิทยา ภาควิชาชีววิทยา คณะวิทยาศาสตร์ มหาวิทยาลัยศิลปากร ในปีการศึกษา 2534 และเข้าศึกษาต่อในหลักสูตรวิทยาศาสตรมหาบัณฑิต ที่จุฬาลงกรณ์มหาวิทยาลัย เมื่อ พ.ศ. 2534 (ภาคปลาย)