

## APPENDIX A

### LIST OF CHEMICALS AND MATERIALS USED IN THIS STUDY

CHEMICALS	SOURCES
Absolute ethanol	Liquid distillery organization, Thailand
Acetic acid	E. Merck, Germany
Agarose	Invitrogen, USA
Antimalarial drugs - Pyrimethamine - Chloroquine - Mefloquine - Dihydroartemisinin	Sigma-Aldrich, USA
D-glucose (Dextrose)	Sigma-Aldrich, USA
D-Sorbitol	Sigma-Aldrich, USA
Dimethyl sulfoxide (DMSO)	Fisher Science, UK
Disodium hydrogen phosphate ( $\text{Na}_2\text{HPO}_4$ )	Sigma-Aldrich, USA
gDNA extraction mini Kit (1/2) Blood/Culture cell	Geneaid
Gentamicin sulfate 80 mg/2 ml	T.P. Drug Laboratories
Giemsa's stain	E. Merck, Germany
Glycerol	E. Merck, Germany
HEPES	Sigma-Aldrich, USA
Hydrochloric acid	E. Merck, Germany
Hypoxanthine	Sigma-Aldrich, USA

Magnesium chloride	E. Merck, Germany
Methanol	E. Merck, Germany
PCR DNA polymerase (Phusion high-fidelity DNA polymerase)	New England Biolabs Inc., USA
Potassium chloride	E. Merck, Germany
Potassium dihydrogen phosphate (KH <sub>2</sub> PO <sub>4</sub> )	Sigma-Aldrich, USA
QIAquick PCR and gel purification mini Kit	QIAGEN
RPMI 1640 medium	GIBCO, USA
Saponin	Sigma-Aldrich, USA
Sodium bicarbonate	E. Merck, Germany
Sodium chloride	E. Merck, Germany
Sodium dihydrogen phosphate	E. Merck, Germany
Sodium hydrogen carbonate	Sigma-Aldrich, USA
SYBR green I nucleic acid gel stain	Invitrogen, USA
Tris-base	E. Merck, Germany
Triton X-100	Sigma-Aldrich, USA

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## APPENDIX B

### LIST OF INSTRUMENTS USED IN THIS STUDY

INSTRUMENTS and EQUIPMENTS	COMPANY
96 black well plate	SPL Life Science
1.5 ml Microcentrifuge tube	Biologix
Automatic pipette	GIBCO
Balance for tube	Precisa
Balance for reagent	Sartorius
Bench top pH/mV/C meter, B200	Modek
Block heater, SBH130D	Stuart
Cellulose acetate membrane filter, pore size 0.2	Sartorius AG
Centrifuge model 5810R	Eppendorf
Centrifuge tube (15 ml and 50 ml)	Corning
Ceramic top hotplate stirrer	Stuart
Chemical Duty Vacuum/Pressure Pump 220v	Millipore
Cyogenic vial	Corning
Duran bottle (250 ml, 500 ml and 1000 ml)	Schott Duran
Electronic multichannel pipette	Eppendorf
Fluorescence Microscope, BX51	Olympus
Fluorescence microplate reader	SpectraMax
Gel documentation model Chemidoc XRS+	BIORAD

Glass pipette	Precicolour
Glass slide	Sail brand
Gloves	Sri Trang gloves
Incubator	Heraeus
Laminar flow	NUAIRE Biological
Liquid Nitrogen Tank, CryoSystem 2000	MVE
Microplate shaker	Eppendorf
Mini Microcentrifuge	Gyrozen
PCR model C1000	BIORAD
PCR model 22331 Hamburg	Eppendorf
Petri- dish, plastic	SPL Life Science
Pipette tips (30 $\mu$ l, 200 $\mu$ l and 1000 $\mu$ l)	Bioscience
Pipette tips (filter; 30 $\mu$ l, 200 $\mu$ l and 1000 $\mu$ l)	Corning
Plastic pipette (5 ml and 10 ml)	SPL Life Science
Power supply and tray for gel electrophoresis	Cosmo Bio
Refrigerator 4°C	SHARP
Refrigerator -20°C	SHARP
Refrigerator -80°C	Forma Scientific
Refrigerated Microcentrifuge, 5417R	Eppendorf
Reservoirs 230SD 1 channel	SPL Life Science
Spectrophotometer, ND-1000	NanoDrop
Speed vacuum Microcentrifuge, SPD1010	Thermo Savant
Syringe 10 ml	Scientific industries
Vortex	mixer Genie II
Water bath	Memmert
Whatman filter no.1	Whatman
UV Transilluminater, UV 2000	BIORAD

## APPENDIX C

### REAGENTS FOR VASCULAR ENDOTHELIAL CELLS ISOLATION

#### Incomplete culture medium

RPMI 1640 powder with L-glutamine without $\text{NaHCO}_3$	10.4	g
HEPES (Sigma)	5.94	g
Glucose (Sigma)	2.0	g
Gentamycin (80 mg/ml)	1.0	ml
Hypoxanthine (Sigma)	0.05	g

Dissolved in distilled water (final volume 1,000 ml) and adjusted pH to 7.4. This solution mixture was stored at 4-8 °C.

#### Complete culture medium

Sterile 5% $\text{NaHCO}_3$	4.2	ml
<i>Pooled human serum</i> (inactivated at 56 °C for 30 min)	10	ml
Incomplete culture medium add up to	100	ml

This solution mixture was stored at 4-8 °C.

**Complete culture medium for long-term culture of *P. falciparum* isolates from patients**

Sterile 5% NaHCO<sub>3</sub> 4.2 ml

*AB positive human serum* (inactivated at 56 °C for 30 min) 10 ml

(AB blood group)

Incomplete culture medium add up to 100 ml

This solution mixture was stored at 4-8 °C.

**Washed 50% RBC for subcultivation**

Blood type O Rh- or Rh+ RBC in CPDA

Wash 2 times in **incomplete culture medium** to remove the buffy coat

Add equal volume of RBC with **complete culture medium**

**5% Sorbitol (Synchronizing solution)**

D-Sorbitol (Sigma) 5 g

Dissolved in distilled water (final volume 100 ml)

Filter the solution through 0.8 μm and 0.2 μm and stored at 4-8 °C.

**5% NaHCO<sub>3</sub>**

NaHCO<sub>3</sub> 5 g

Dissolved in distilled water (final volume 100 ml)

Filter the solution through 0.8 μm and 0.2 μm and stored at 4-8 °C.

### 3.5% NaCl (Thawing solution)

NaCl 3.5 g

Dissolved in distilled water (final volume 100 ml)

Filter the solution through 0.8  $\mu\text{m}$  and 0.2  $\mu\text{m}$  and stored at 4-8 °C.

### Freezing solution

Glycerol (Sigma) 28 ml

Sorbitol (Sigma) 3 ml

NaCl 0.65 g

Dissolved in distilled water (final volume 100 ml)

Filter the solution through 0.8  $\mu\text{m}$  and 0.2  $\mu\text{m}$  and stored at 4-8 °C.

### 1.5 M Tris-HCl, pH 8.8

Tris-base 181.7 g

Dissolved in distilled water (final volume 1,000 ml) and adjusted pH to 8.8 with concentrated HCl. This solution mixture was stored at 4-8 °C.

### Giemsa's stain

Sigma-Aldrich

### **Lysis buffer (500 ml)**

Tris-HCl (20 mM; pH 7.5)	6.7 ml of 1.5 M Tris-HCl (pH 8.8)
EDTA (5 mM)	2.5 ml of 1 M EDTA
Saponin (0.008%; wt/vol)	0.04 g
Triton X-100 (0.08%; vol/vol)	400 $\mu$ l

Dissolved in distilled water (final volume 500 ml) and adjusted pH to 7.4.  
Prepared in advance and stored at room temperature.

### **6.7 mM Phosphate buffer Saline (PBS) for Giemsa staining, pH 7.1**

$\text{Na}_2\text{HPO}_4$	0.41 g
$\text{KH}_2\text{PO}_4 \cdot \text{H}_2\text{O}$	0.65 g
Dissolve in deionized water (final volume 1 L)	

### **Phosphate buffer saline (PBS) for cell culture, pH 7.4**

$\text{Na}_2\text{HPO}_4$	1.15 g
$\text{KH}_2\text{PO}_4$	0.2 g
NaCl	8.0 g
KCl	0.1 g

Dissolved in distilled water (final volume 1,000 ml) and adjusted pH to 7.4. This solution mixture was stored at 4-8 °C.



## CIRRICULUM VITAE

**Name** Patcharaporn Saengratwatchara

**Date of Birth** December 15, 1988

### **Educations:**

March, 2010 Bachelor of Science (Medical Technology), Faculty of Associated Medical Science, Chiang Mai University.

March, 2006 Certificate of senior high school, Montfort College (Secondary Section); M.C., Chiang Mai.

March, 2003 Certificate of junior high school, Regina Coeli College; R.C., Chiang Mai.

### **Scholarship:**

June, 2011-2013 Thailand Graduate Institute of Science and Technology (TGIST), National Science and Technology Development Agency (NSTDA), Thailand.

### **Award:**

January, 2011 Best Award of Medical Technology (MT) student; voted by MT students, Associated Medical Sciences, CMU 2010

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**Others:**

April, 2011 Secretary of Chiang Mai University Graduation,  
Committee' 46<sup>th</sup>, Graduation Ceremony.

June 2010 – April 2011

Chairman of CMU Young Blood project which was co-  
operated between Department of Medical  
Technology, Faculty of Associated Medical  
Science and Blood Bank, Suan Dok Hospital.

June, 2009 - 2010 Secretary of AMS Student Association 2009, Faculty of  
Associated Medical Sciences, CMU.



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