

CARDIOVASCULAR PERFUSION IN A TINY NATION OF A HUGE CONTINENT

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CHARLES CLAY REED

AUTHOR EDUCATOR

LEADER MENTOR

POET

PIANIST

HUNTER

AVIATOR

INNOVATOR

GLOBAL ROLE MODEL

HE MADE A DIFFERENCE TO PEOPLE'S LIVES

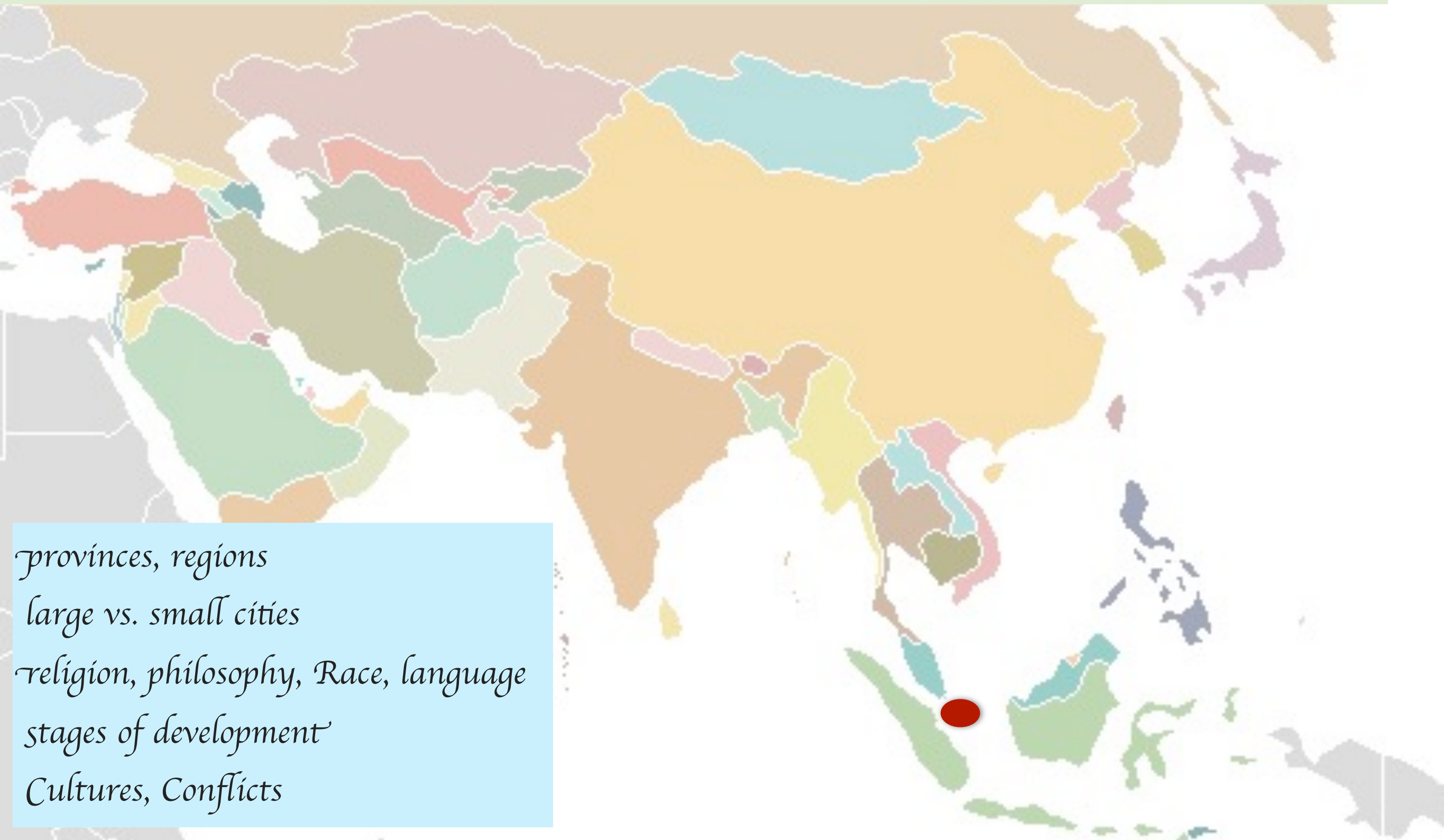


>60% OF WORLD'S POPULATION



48 COUNTRIES

CANNOT GENERALIZE



provinces, regions
large vs. small cities
religion, philosophy, Race, language
stages of development
Cultures, Conflicts



Hindu temple



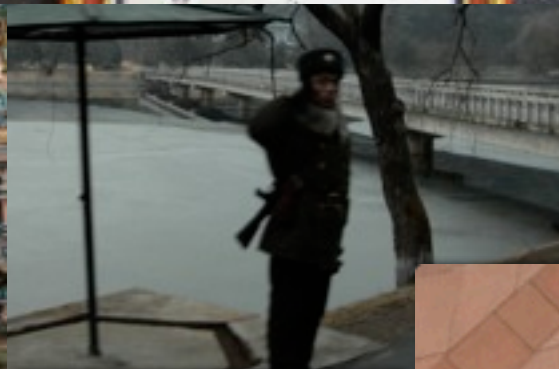
Iranian shop



North korean art



Kazakh market: Camel's Omentum



Shinto shrine



Taoist temple



WIDE RANGE IN STAGES OF DEVELOPMENT OF CARDIOVASCULAR PERFUSION

NON- EXISTENT : BHUTAN, EAST TIMOR

EARLY PHASE : MONGOLIA , CAMBODIA, LAOS

DEVELOPING : N KOREA, MYANMA, CENTRAL ASIAN STATES

RAPIDLY DEVELOPING / DEVELOPED :

INDIA , SINGAPORE , CHINA , THAILAND, JAPAN, IRAN, ISRAEL, TURKEY, MALAYSIA,
INDONESIA, VIETNAM, PAKISTAN, BANGLADESH, PHILIPPINES, SAUDI ARABIA, SYRIA,
JORDAN, ARMENIA, NEPAL, SRI LANKA, BRUNEI, RUSSIA

UNCERTAIN: IRAQ, YEMEN, OMAN, AZERBAIJAN, AFGHANISTAN



A map of Asia and surrounding regions. A red dot is placed in Southeast Asia, specifically in the Indonesian archipelago. Three callout boxes provide information about this location. The background map shows major countries like Russia, China, India, and various Southeast Asian nations, along with bodies of water like the Bay of Bengal and the Andaman Sea.

A SMALL LITTLE RED DOT

**268 Sq. miles
5 million people
(3.5 million citizens)**

population served:
500 million
indonesia,
bangladesh,
malaysia, myanmar,
russian far east

PERFUSION IN SINGAPORE

- *OPEN HEART SURGERY: 1965*
- *FIRST PERFUSIONISTS:
ANESTHETISTS, CARDIOLOGISTS,
SCIENCE LABORATORY TECHNICIANS*
- *CURRENTLY: AT LEAST A UNIVERSITY
SCIENCE, BIO-MEDICAL DEGREES.
ON THE JOB TRAINING, PERFUSION
COURSE*

SINGAPORE SOCIETY OF EXTRACORPOREAL CIRCULATION TECHNOLOGY

□ FOMRED AND REGISTERED

JUNE 2ND 1984

□ 10 MEMBERS.

□ 2 HOSPITALS

□ CURRENTLY 30 MEMBERS,
4 HOSPITALS

30 PERFUSIONISTS IN SINGAPORE

CHINA: >1500 PERFUSIONISTS

WHAT RELEVANT ROLES
FOR SUH A TINY GROUP ?

WHAT IS OUR PHILOSOPHY?



A MATTER OF PERSPECTIVE

TINY COUNTRY, WHAT ROLE?

- *ADVANTAGE: ENGLISH SPEAKING*
- *RELATIVELY WELL OFF AND WELL ORGANIZED*
- *PERFUSION IS A HIGHLY REGARDED PROFESSION ATTRACTING GOOD PEOPLE*
- *“WE ARE A FAMILY”*
- *CONDUCT COURSES, CONFERENCES*
- *VISIT OTHER COUNTRIES, TEACH & LEARN*
- *SERVE AS CATALYST FOR ASIA*
- *LEAD IN TECHNOLOGY DEVELOPMENT*



GDP PER CAPITA

WORLD BANK (2005-2010)

1) LUXEMBOURG (\$ 89,000)

2) QATAR (\$80,000)

3) SINGAPORE (\$57,000)

7) USA (\$47,000) INTERNATIONAL MONETARY FUND

(PURCHASING POWER PARITY 2010):

1) QATAR (\$88,000)

2) LUXEMBOURG (\$81,000)

3) SINGAPORE (\$56,000)

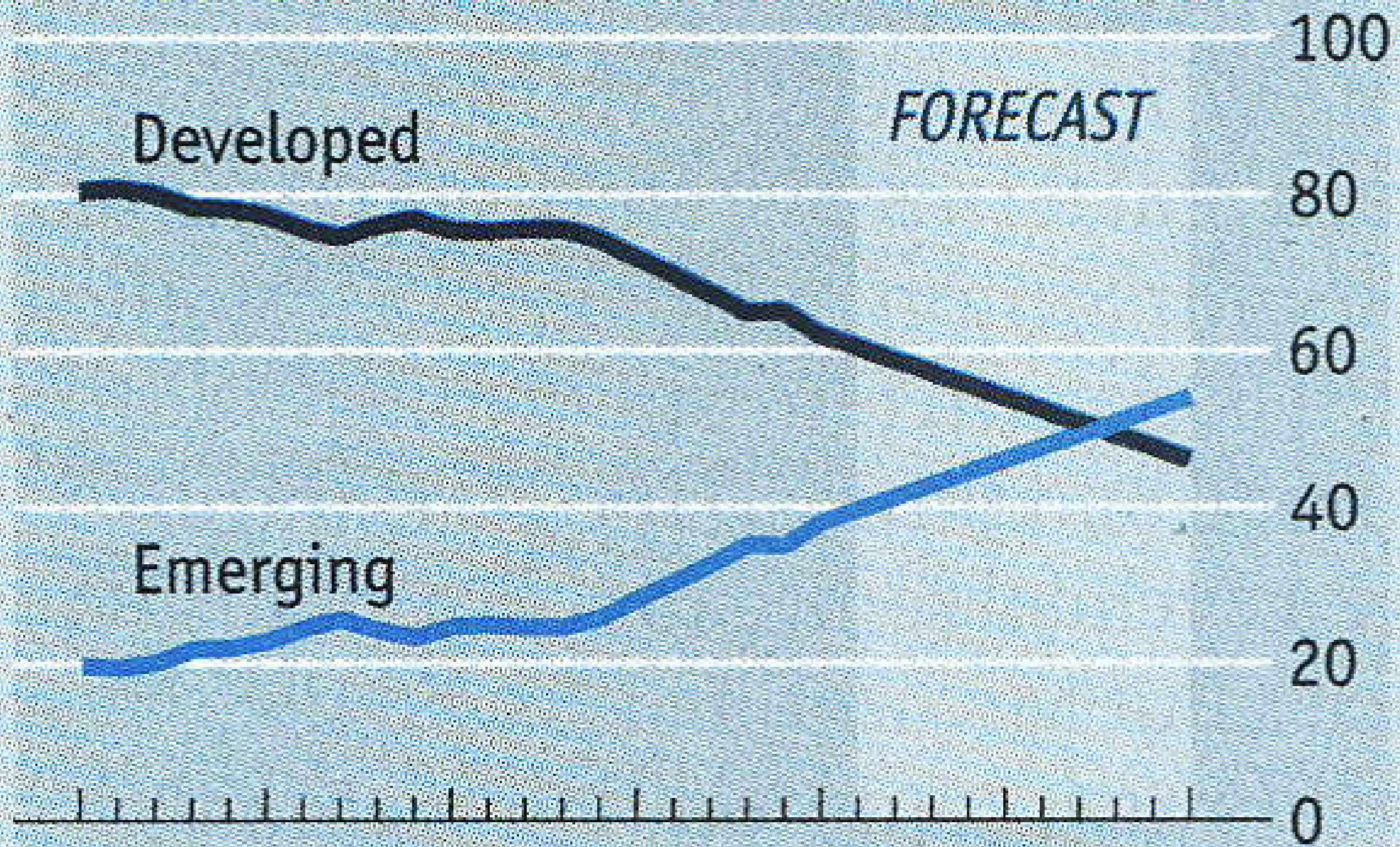
7) USA: (\$47,000)

ACTUAL GDP: \$292 BILLION (39) RESERVES: \$225BILLION (10)

USA: \$14,500 BILLION (1) RESERVES : \$142 BILLION (16)

Economies' share of world GDP, %

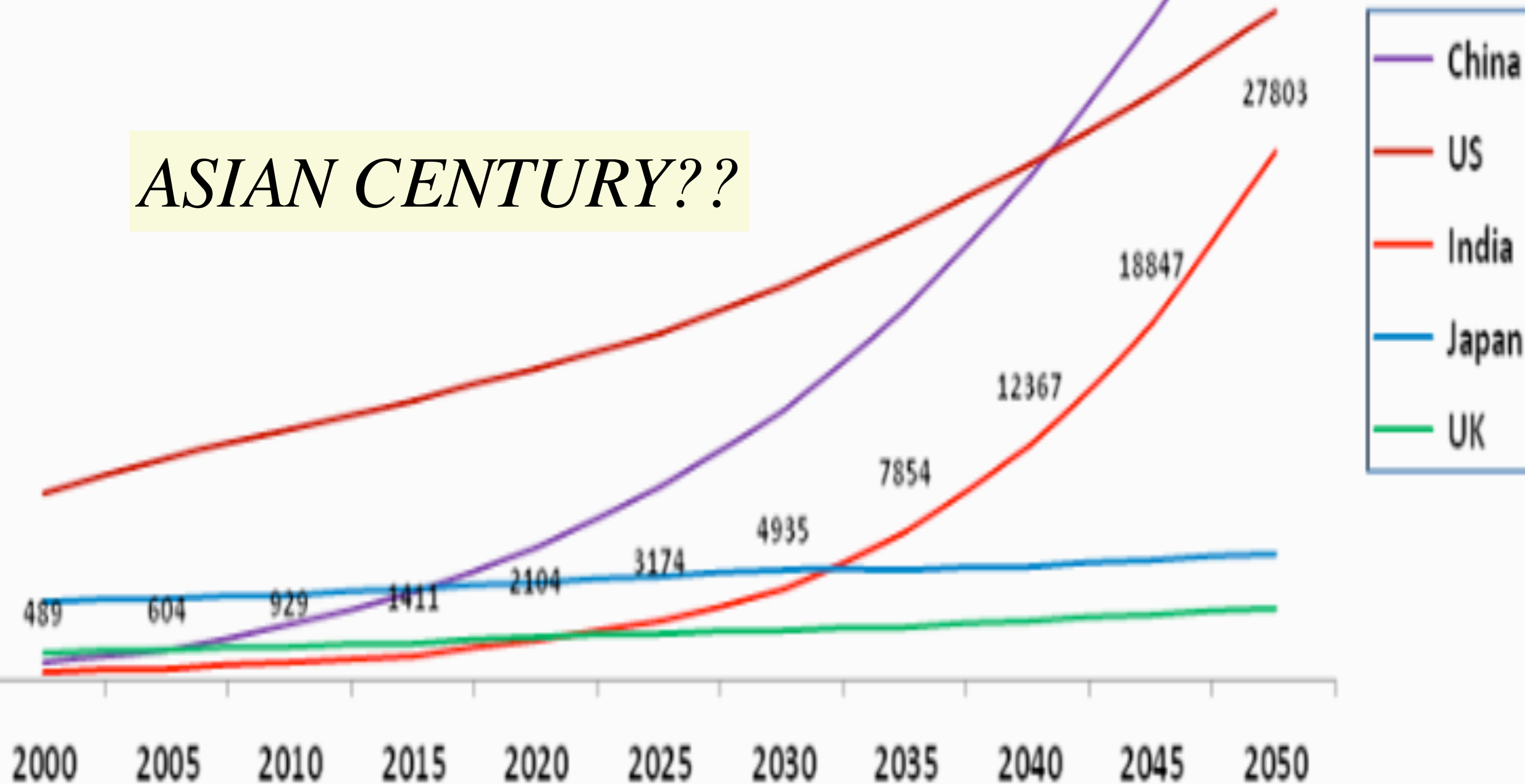
At market exchange rates



GDP growth forecast for selected countries 2000-2050

(In Billion US\$)

ASIAN CENTURY??



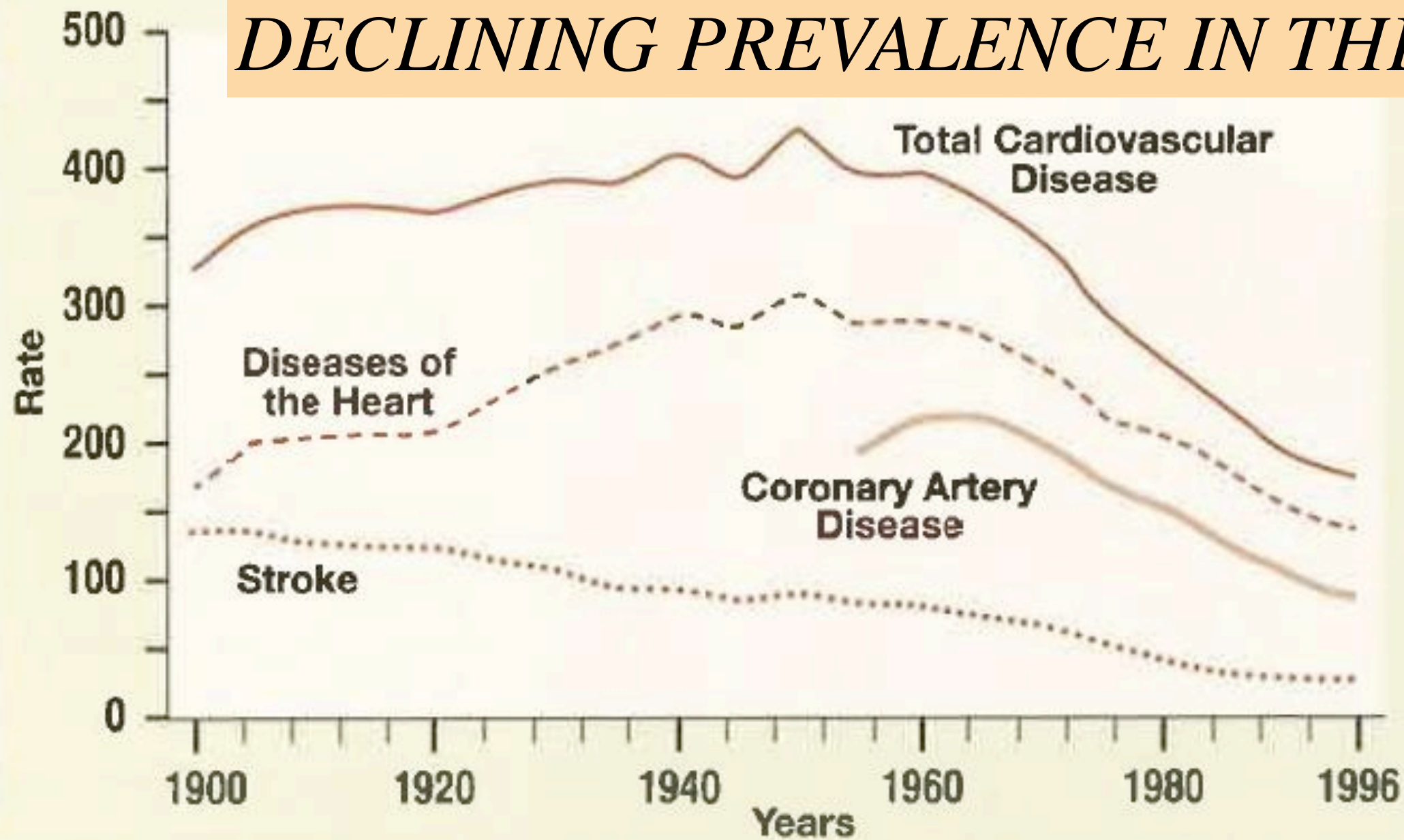
PATIENTS VOLUME

DISEASE PATTERN & BURDEN
DIFFER

INCREASING ACCESSIBILITY:
NUMBER OF PATIENTS IN
EMERGENT NATIONS

AGING POPULATIONS, URBANIZATION,
CHANGING DIETS, SMOKING

DECLINING PREVALENCE IN THE WEST



Age-adjusted death rates (per 100,000 population, standardized to the 1940 US population) for total cardiovascular disease, diseases of the heart, coronary artery disease, and stroke, in the United States, 1900-1996. Diseases were classified according to the International Classification of Diseases codes in use when the deaths were reported. Data adapted from Centers for Disease Control and Prevention.

INDIA 2010

3-10% POPULATION HAS CAD: 30 MILLION - 100 MILLION

60% of world's heart disease in 2010 ??

YOUNGER PATIENTS : 30-60 year old

average age of AMI: 40 years old

GENETICS , HIGH DIABETES RATES

CARDIAC SURGERY : 120,000 / YEAR.

POTENTIAL CARDIAC SURGICAL PATIENTS : 8 MILLION

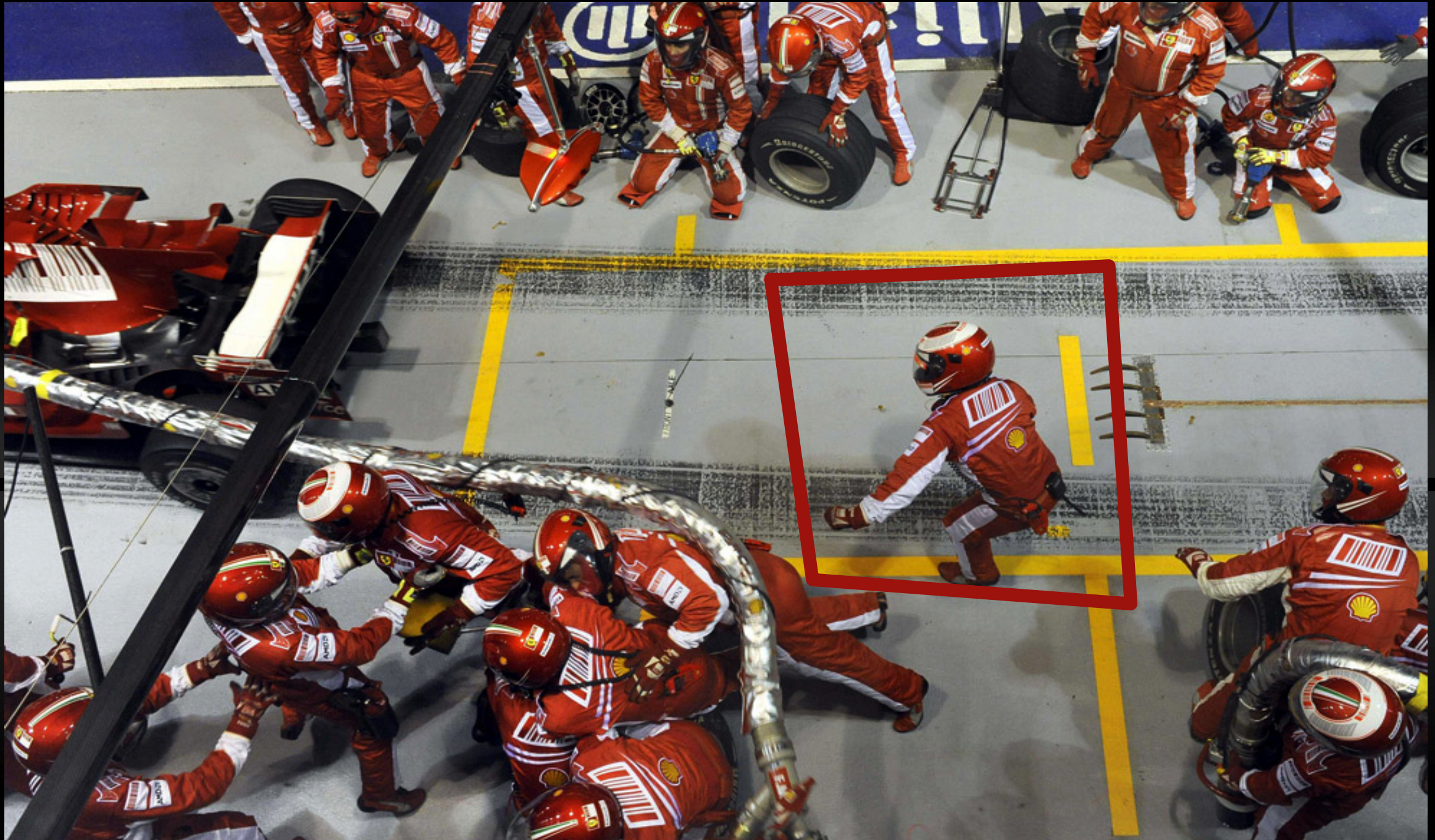
CHINA

- ◆ POPULATION > 65 YEARS
 - ◆ 2005 : 120 MILLION
 - ◆ 2008 : 200 MILLION
 - ◆ 2030 : 300 MILLION
- ◆ 60% OF MEN ARE SMOKERS
- ◆ RAPIDLY CHANGING LIFESTYLE
- ◆ INSUFFICIENT HEALTH COVERAGE SYSTEM

THE NEED FOR EXCELLENCE IN PERFUSION IN ASIA

- *TREMENDOUS NEED FOR GOOD PERFUSIONISTS*
- *DISEASE PREVALENCE, PATTERN, AGING*
- *INCREASING WEALTH, AFFORDABILITY , NUMBER OF PATIENTS AND DEMANDS*
- *NEED FOR PERFUSION LEADERS IN MED-TECH DEVELOPMENT*
- *AACP CAN PLAY A PIVOTAL ROLE*
- *INDIVIDUALS CAN EXPAND HORIZONS AND ENRICH LIFE'S EXPERIENCE*

A Team



✓ Is as weak as the weakest member

ISSUES

- *ABSENCE OF NATIONAL REGULATORY, ACCREDITATION OR LICENSING*
- *INADEQUATE TRAINING IN MANY COUNTRIES*
- *TECHNICIANS. POOR SCIENTIFIC FOUNDATION*
- *SELF RESPECT*
- *PROSPECTS*



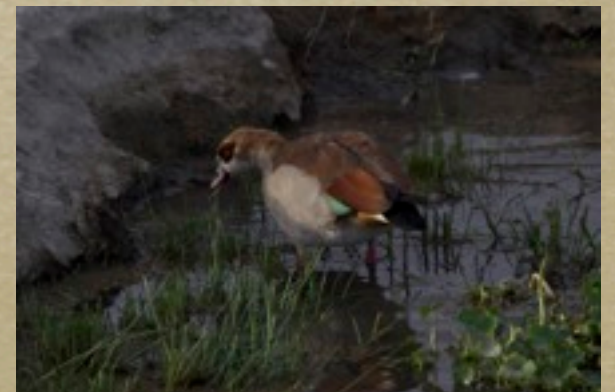
International Role

● 培，教

DEVELOP
EMERGENT
COUNTRIES

TRAINING PROGRAMS IN ASIA

- *SINGAPORE: (5 MONTH) 1991. fee: US\$5000 NEXT COURSE 2012*
- *THAILAND:*
- *(Rajvithi) (15 WEEKS) 2003-2007 fee: US\$ 1500
Naresuan University since 1998. BSc. instructions in Thai. on-going.*
- *HONG KONG: (3 MONTHS) 2004. fee: US\$ 4000. CEASED*
- *INDIA: (MEDTRONIC, MUMBAI) 1994 CEASED*
- *SETH MEDICAL COLLEGE (1 YEAR) (course fee: US\$ 30)*
- *(APOLLO) 2004, 1 year. fee: US\$ 1400*



SINGAPORE PERFUSION COURSE

- *FIRST COURSE: 1991*
- *DIVISION OF CARDIO-THORACIC SURGERY, NUH, NUS*
- *6 MONTH FULL TIME. EXAMINATIONS*
- *ONCE IN 2 YEARS*
- *SYMPOSIA AT COURSE ENDS*

CURRICULUM

- *BASED ON THE AMERICAN BOARD OF CARDIOVASCULAR PERFUSION*
- *EXTERNAL EXAMINERS INCLUDED:
JOE UTLEY (USA),
ALAN REBEYKA (CANADA),
BANG ON (THAILAND),
TIM WILCOX (NEW ZEALAND),
JON AUSTIN (USA)*

SINGAPORE PERFUSION COURSE

- *TOTAL TRAINED: 53 (MULTIPLIERS)*
- *TRAINEES FROM:*
SINGAPORE, THAILAND,
HONG KONG, PHILIPPINES,
INDIA, NEPAL, OMAN,
MALAYSIA, INDONESIA

RUNNING A PERFUSION TRAINING PROGRAM FOR ASIA

- *SMALL NUMBER OF TRAINEES ABLE TO AFFORD FEES, LIVING EXPENSES*
- *LIMITED LOCAL NUMBERS FOR VIABLE REGULAR COURSES*
- *ACADEMIC BACKGROUND, ENGLISH PROFICIENCY*
- *CONTINUED SUPERVISION ON RETURN*

COUNTRIES UNIVERSITY CARDIAC SURGICAL TEAM VISITED

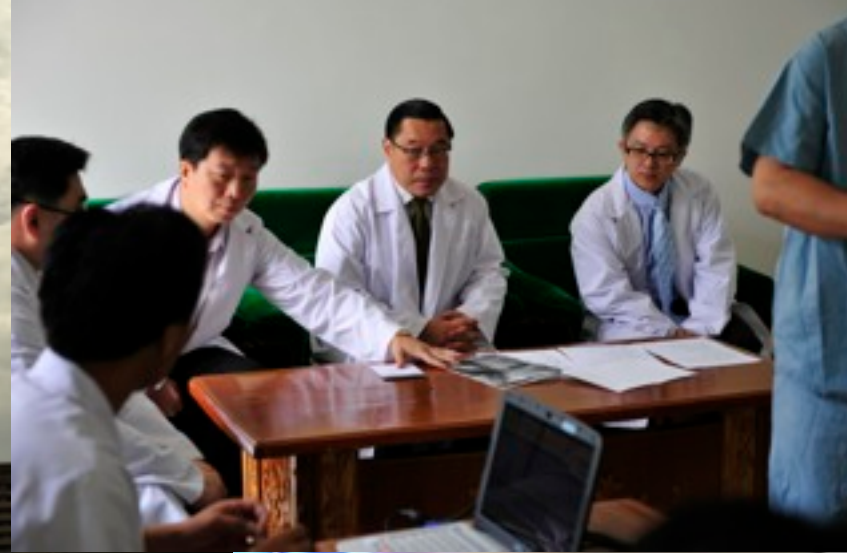
- *CITIES IN CHINA: BEIJING, XIAN, SHOU ZHOU, GUANG TONG, SHANGHAI*
- *INDONESIA*
- *VIETNAM: HANOI, HAI PHONG, HCMC*
- *ARMENIA*
- *DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA*
- *BANGLADESH*

FELLOWS TRAINED

- *ARMENIA*
- *CHINA*
- *INDIA*
- *JAPAN*
- *MALAYSIA*
- *NEPAL*
- *PAKISTAN*
- *RUSSIA*
- *TAIWAN*
- BANGLADESH*
- INDONESIA*
- 2 KOREAS*
- MYANMAR*
- NIGERIA*
- PHILIPPINES*
- SAUDI ARABIA*
- VIETNAM*

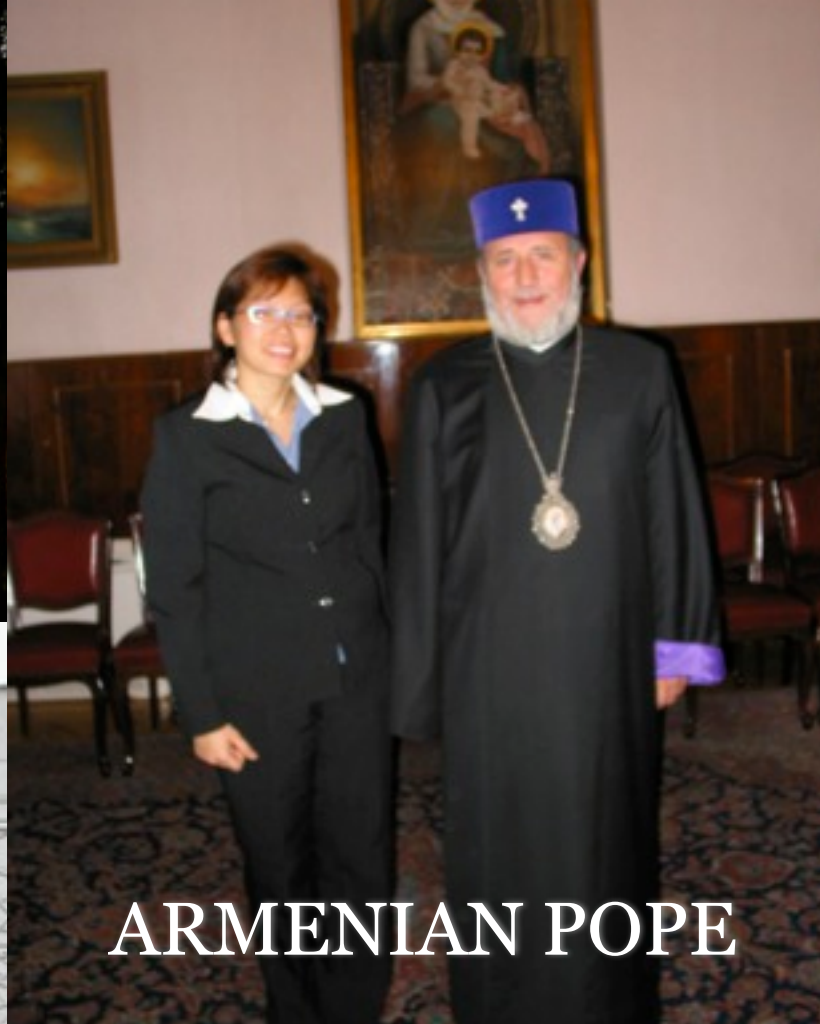


*GIVE A FISH VS.
TEACH HOW TO FISH*





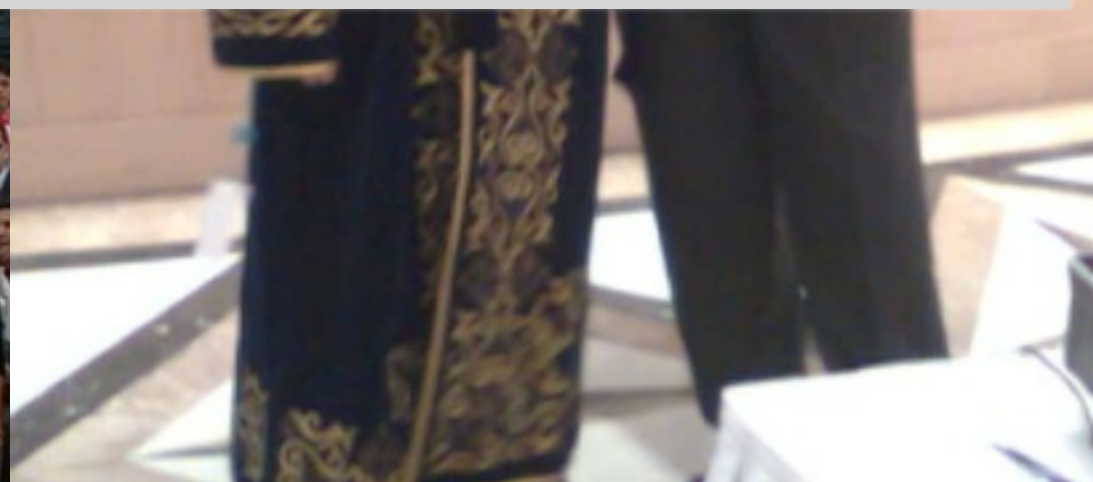
MOUNT ARARAT



ARMENIAN POPE



KAZAKHSTAN NATIONAL DRESS



KYOTO



HAIPHONG



OUTER-MONGOLIA



ASEAN

AFFILIATION WITH CARDIAC SURGICAL SOCIETIES

- *PERFUSION WORKSHOPS , COURSES WITH THE ASCVTS*
- *NETWORKING DISCUSSIONS ON FORMATION OF FEDERATION OF ASIAN PERFUSION SOCIETIES*

**THE ASIAN SOCIETY FOR
CARDIOVASCULAR & THORACIC
SURGERY**

THE ASCVTS ACADEMY

PAN-ASIAN DATABASE PROJECT (INCLUDING PERFUSION DATA)

ASCVTS

STARTING WITH : BANGLADESH, SOUTH KOREA, HONG KONG,
SAUDI ARABIA, SINGAPORE, JAPAN,



THE FEDERATION OF ASIAN PERFUSION SOCIETIES

- *SERIES OF ASIA CONFERENCES ON
EXTRA-CORPOREAL CIRCULATION
TECHNOLOGY IN BEIJING.
(few representatives other than chinese
and Taiwanese)*

THE FEDERATION OF ASIAN PERFUSION SOCIETIES

- *first exploratory meeting: 31 May, 1999
SINGAPORE. 7th ASCVTS CONGRESS*
- *DISCUSSIONS IN BEIJING 2001, 2007*
- *DECISION: 1ST FAPS CONFERENCE TO BE
IN SINGAPORE*
- *CONSTITUTION IN ENGLISH, SECRETARIAT
IN BEIJING*

FIRST FAPS CONFERENCE

- *SINGAPORE, 2011*
- *250 DELEGATES*
- *24 COUNTRIES. 12 COUNTRIES HAS NATIONAL SOCIETIES*
- *DRAFT CONSTITUTION. CONFERENCE ONCE IN 4 YEARS*
- *INTERIM PRESIDENT: MR GOH SI GUIM, SINGAPORE*
- *NEXT: KYOYO, JAPAN 2015.*
PRESIDENT: KIYOSHI YOSHIDA. JaSECT PRESIDENT.

**WE TREAT PATIENTS ONE AT A
TIME**

THERE IS AN INHERENT LIMIT

WE BENEFIT MORE PEOPLE IF WE DEVOTE OURSELVES TO:

- TEACH, TRAIN
- CONTRIBUTE TO RESEARCH
- DEVELOP NEW THINGS



OUR DREAM FOR PERFUSION AS A PROFESSION



- *ATTRACT THE BEST*
- *PROVIDE GOOD TRAINING*
- *FOCUS ON CAREER DEVELOPMENT & INCOME*
- *RESPECT AS PROFESSIONALS*
- *INFRASTRUCTURE TO INNOVATE, DO RESEARCH, DEVELOPMENT, PUBLICATION, NETWORK, TEACH, INFLUENCE AND LEAD*
- *DEVELOP LEADERS IN CARDIOVASCULAR PERFUSION*

OUR EFFORTS IN PUSHING FORWARD

- PERFUSION TRAINING
- PERFUSIONIST LEADERSHIP IN
RESEARCH & DEVELOPMENT
PERFUSION TECHNOLOGY
EXTRA-CORPOREAL CIRCULATION
SIMULATION
ASSIST DEVICES

DEVELOP INTELLECTUAL CAPABILITY



A CORE OF GOOD
PEOPLE
BUT WE NEED TALENTS
FROM ALL OVER THE
WORLD



TRAINING TO ENHANCE PERFUSION STANDARDS

- EXTRA-CORPOREAL CIRCULATION PROGRAMMED SIMULATOR
- SCENARIOS, PRACTICE RUNS
- ANIMAL LABS



ADJUNCT METHODS





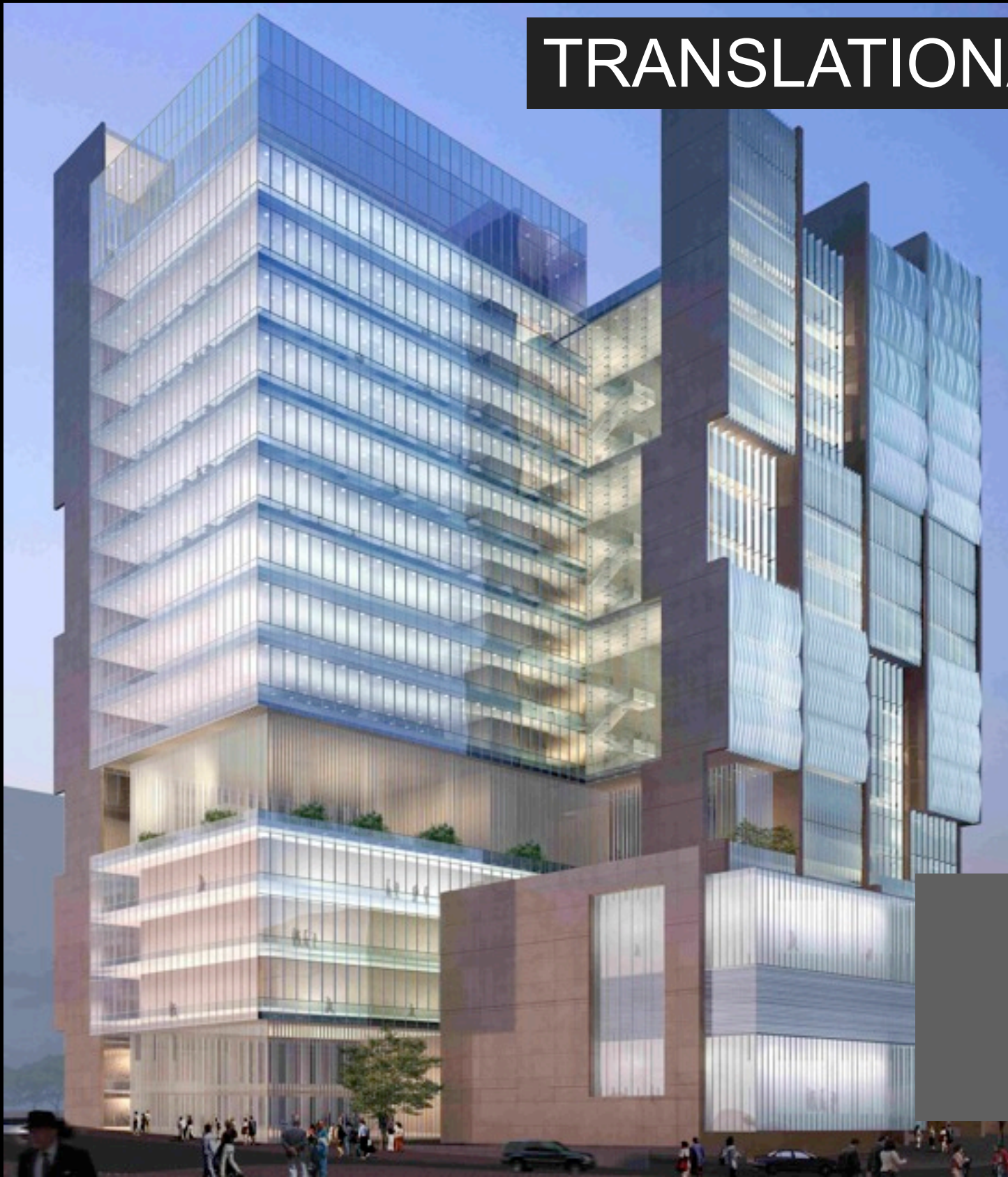
SURGERY TRAINING CENTER NATIONAL UNIVERSITY OF SINGAPORE

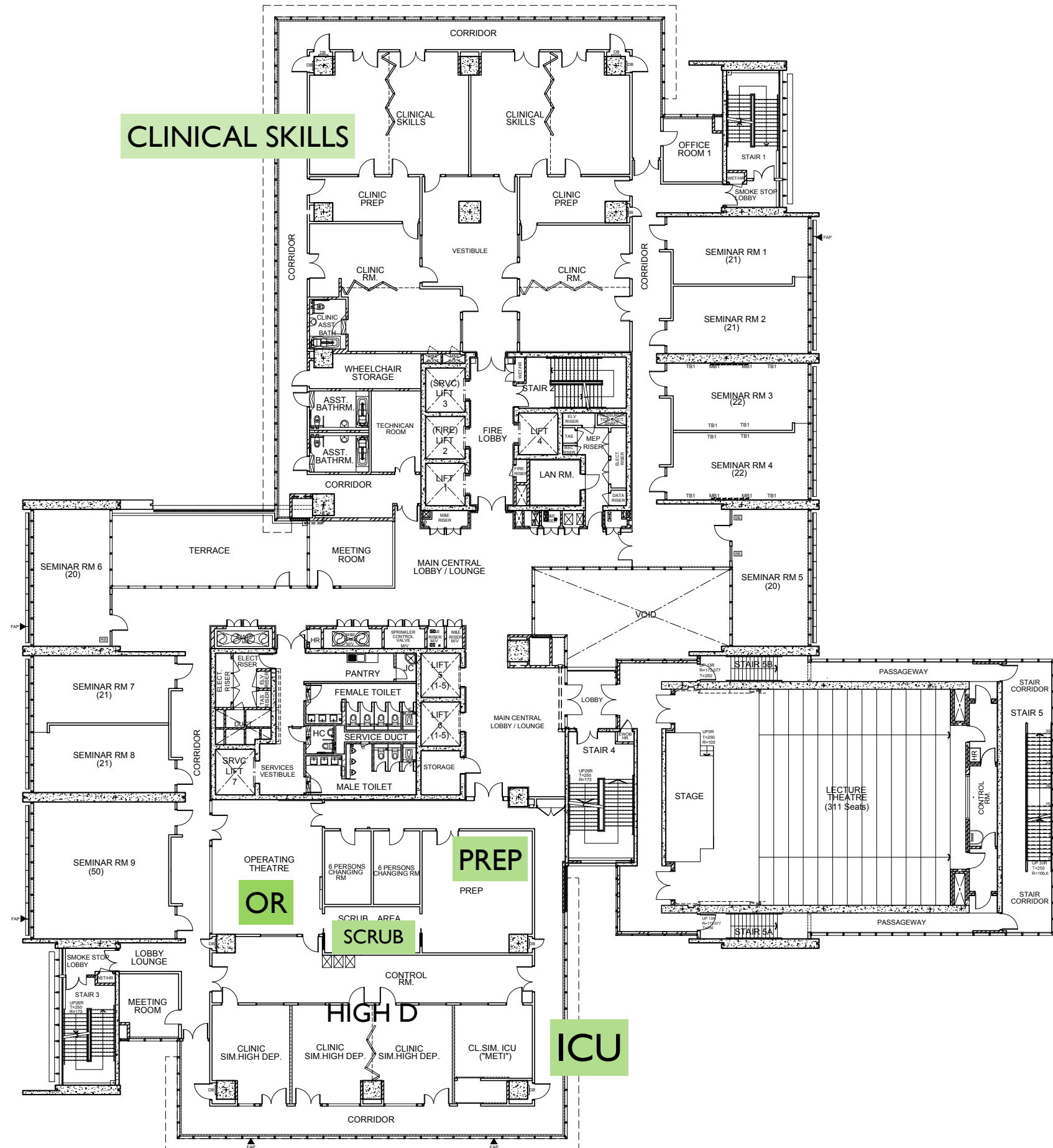
SIMULATION

TRANSLATIONAL MEDICINE CENTER

TWO FLOORS
ALLOCATED TO
SIMULATION TRAINING &
SIMULATION R & D

GRANT FUNDING,
RESEARCH
INFRASTRUCTURE





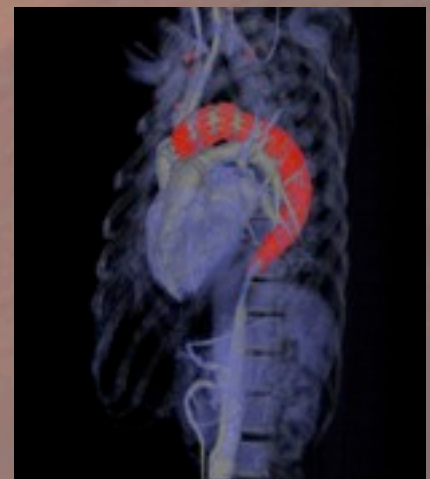
3RD STOREY PLAN

Our Direction of Simulation Development

LEADERSHIP FROM PERFUSIONISTS IS KEY

❏ High Realism

- Crisis scenarios, preventive + rescue measures
- Patient specific practice
- New devices
Material science
High Performance Computing
- Med-Tech R&D , Basic Science & Biology Convergence



INFRASTRUCTURE TO SUPPORT PERFUSION TECHNOLOGY DEVELOPMENT

- ✓ **Ideas.** Technological Potentials. Market Research
Medical Regulatory processes.
 - ✓ Intellectual property : search, strategy, protection.
 - ✓ Grants. Grant management. Core Facility.
 - ✓ ~~Engineering collaborations, prototyping.~~ ~~Convergence.~~
 - ✓ Animal Lab: Operating room, ICU, MRI, CT, Imaging facilities.
Clinical trial. IRB.
 - ✓ GLP, GMP labs. Early industry involvement.
Angel investor, Venture capital. Incubators. Accelerators.
Spin offs. Royalties. Commercialization. Manufacturing.
Production. Sale.
- Actual benefit to patients**



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- *DEVELOP LEADERS IN CARDIOVASCULAR PERFUSION*



We determine our own future, not the forecaster!

WE CAN

LET IT HAPPEN
MAKE IT HAPPEN

OR

WONDER WHAT HAPPENED

WHAT ROLE CAN AACCP ASSUME?

- *ADVANTAGE: ESTABLISHED LEADERSHIP.*
- *CONDUCT COURSES, CONFERENCES*
- *VISIT OTHER COUNTRIES, TEACH & TRAIN*
- *SERVE AS CATALYST FOR ASIA'S PROGRAMS*
- *CERTIFICATIONS, CURRICULUM, DISTANCE LEARNING*
- *LEAD IN TECHNOLOGY DEVELOPMENT*



СЧАСТЛИВОГО ПЛАВАНИЯ



CHARLIE MAY HAVE LIKED THIS POEM

*Take one of my tears,
Throw it into the ocean
and watch the wounds of men begin to disappear*

*Take one of my tears,
cradle it in your palm.
Mount a great white camel
And carry my love into every desert*

Stop weeping only for sadness!

Hafiz, of Shiraz



THANK YOU

謝

NUHS
National University
Health System



