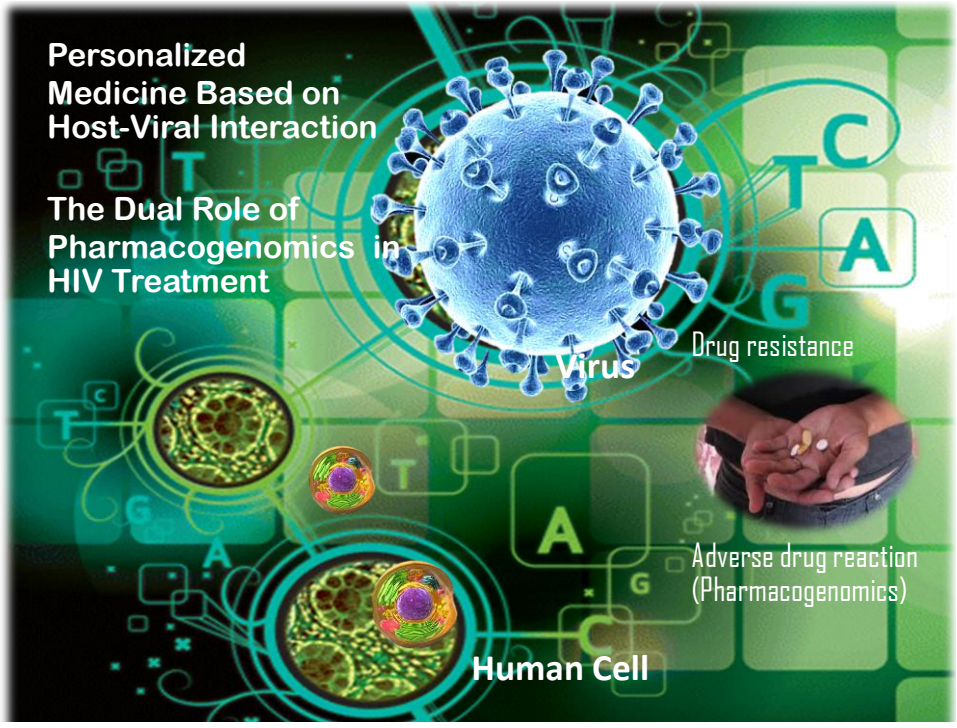
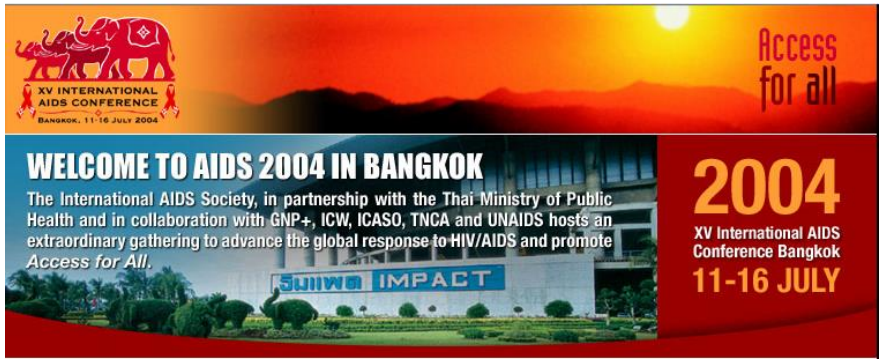


Role of Pharmacogenomics associated with HIV drug resistance (the viral genome).

Role of Pharmacogenomics of adverse effects due to antiretroviral drugs (the human genome).

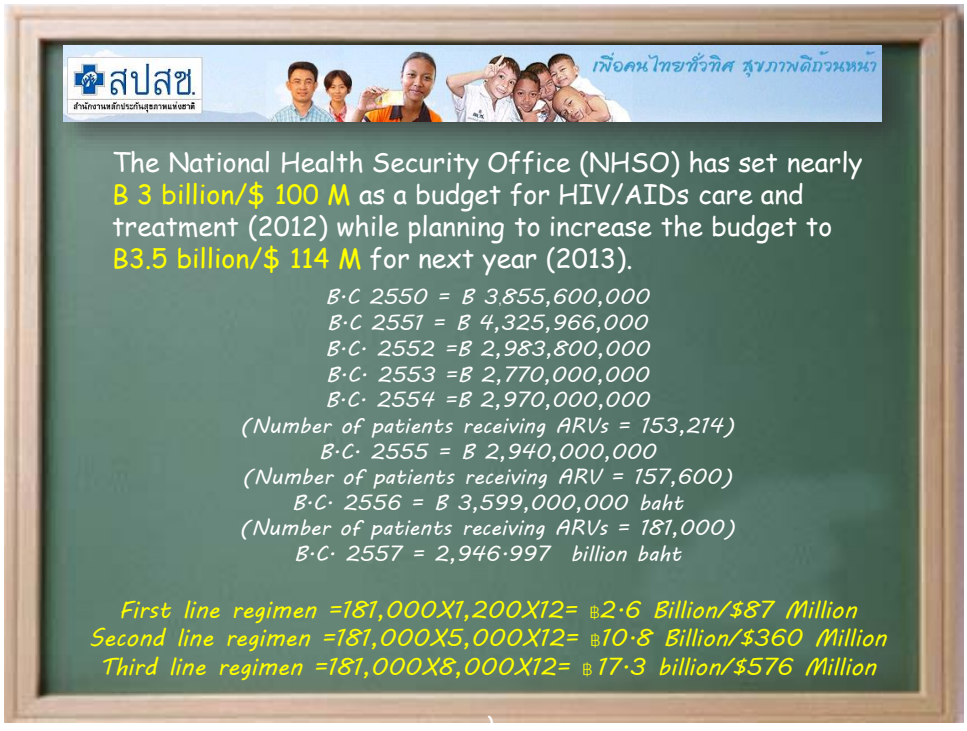


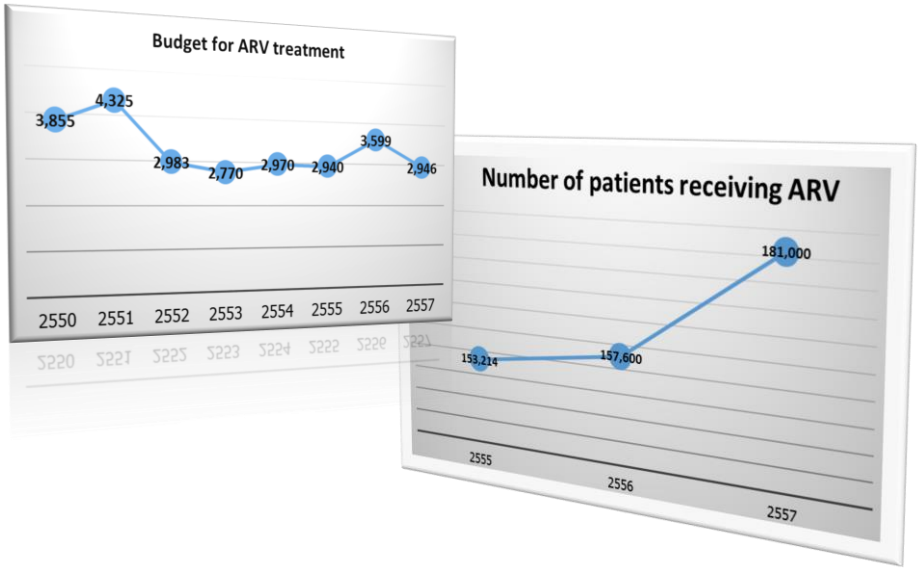
Thai Prime Minister Thaksin Shinawatra on Sunday in opening remarks at the XV International AIDS Conference pledged that his administration would provide antiretroviral drug treatment to all HIV-positive people who need it in Thailand, according to *Agence France-Presse* (*Agence France-Presse*, 7/11).

A remarkable event happened on World AIDS Day in 2004 (พ.ศ. 2547), when the Thai government adopted antiretroviral treatment in its Universal Health-Care System"

Thailand have had 1.17 million people with HIV/Aids over the years, with 447,640 living with the disease now. The number of new infections had been reduced to about 8,900 per year.

However, there is an issue of Drug-resistant HIV 'on increase' in Thailand.

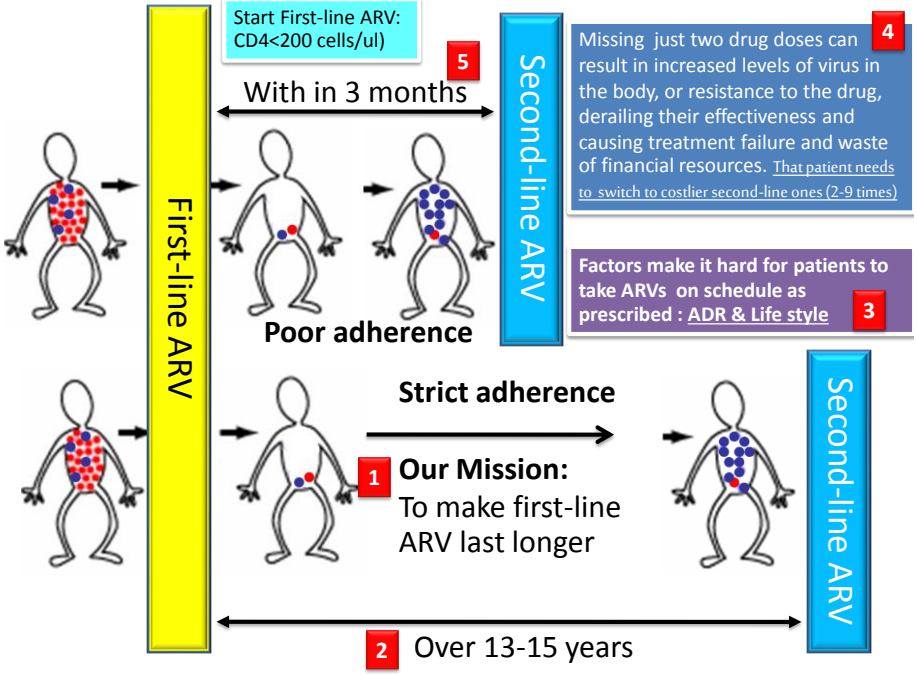

สปสช.
สำนักงานหลักประกันสุขภาพแห่งชาติ
เพื่อคนไทยทั่วทิศ สุขภาพดีถ้วนหน้า
The National Health Security Office (NHSO) has set nearly B 3 billion/$ 100 M as a budget for HIV/AIDs care and treatment (2012) while planning to increase the budget to B3.5 billion/$ 114 M for next year (2013).
B·C 2550 = B 3,855,600,000
B·C 2551 = B 4,325,966,000
B·C· 2552 =B 2,983,800,000
B·C· 2553 =B 2,770,000,000
B·C· 2554 =B 2,970,000,000
(Number of patients receiving ARVs = 153,214)
B·C· 2555 = B 2,940,000,000
(Number of patients receiving ARV = 157,600)
B·C· 2556 = B 3,599,000,000 baht
(Number of patients receiving ARVs = 181,000)
B·C· 2557 = 2,946·997 billion baht
First line regimen =181,000X1,200X12= ฿2·6 Billion/$87 Million
Second line regimen =181,000X5,000X12= ฿10·8 Billion/$360 Million
Third line regimen =181,000X8,000X12= ฿17·3 billion/$576 Million

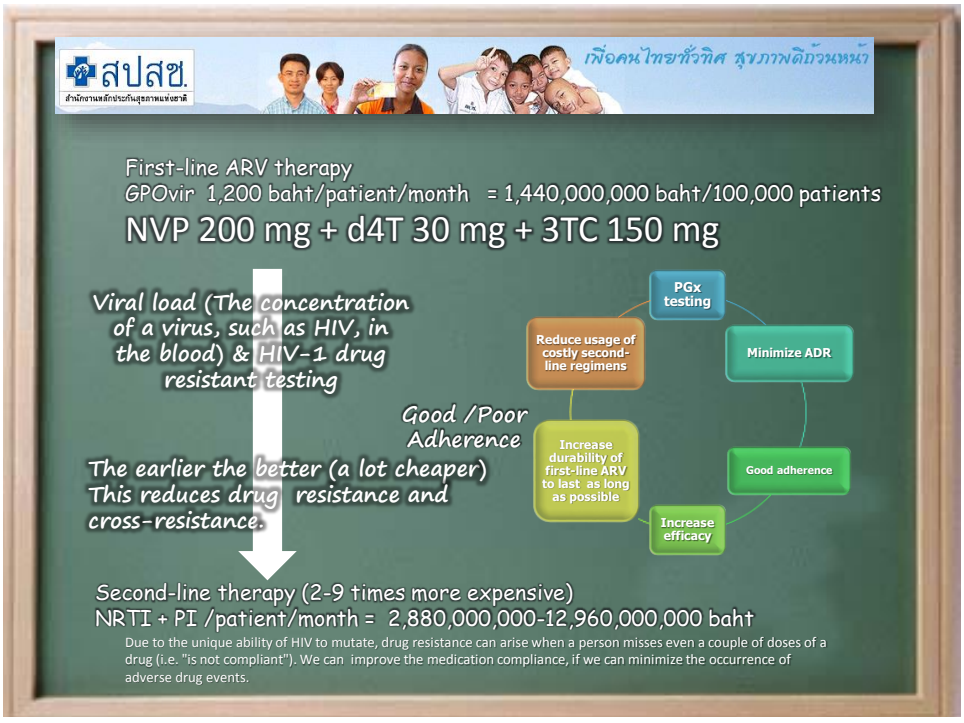

Budget for ARV treatment
3,855
4,325
2,983
2,770
2,970
2,940
3,599
2,946
2550
2551
2552
2553
2554
2555
2556
2557
Number of patients receiving ARV
153,214
157,600
181,000
2555
2556
2557

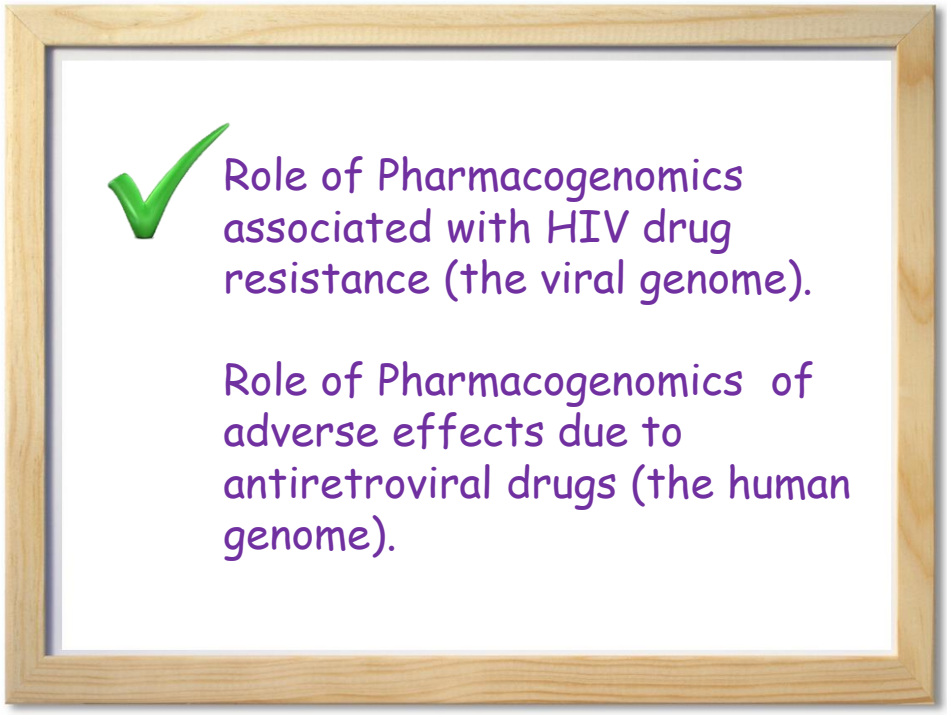
Ukraine's HIV battle

Twelve years ago Lucy Ash investigated Ukraine's fight against HIV infection, which was mainly caused by injecting drug users. After the Orange Revolution in late 2004, the government promised to do everything it could to fight the disease and the situation seemed to improve. But now Ukraine has the second highest infection rate in Europe, surpassed only by Russia. Around the world, other countries are managing to reduce rates of HIV infection and AIDS-related deaths. Lucy Ash travels to Kyiv and Odessa to see why fighting HIV is so difficult in Ukraine.
Producer: Julie Ball. < SHOW LESS

How lucky being Thai.



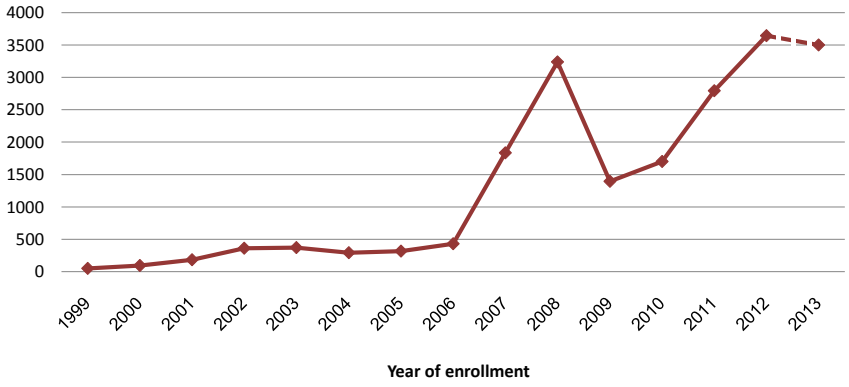

สปสช.
สำนักงานหลักประกันสุขภาพแห่งชาติ
เพื่อคนไทยทั่วทิศ สุขภาพดีถ้วนหน้า
First-line ARV therapy
GPOvir 1,200 baht/patient/month = 1,440,000,000 baht/100,000 patients
NVP 200 mg + d4T 30 mg + 3TC 150 mg
Viral load (The concentration of a virus, such as HIV, in the blood) & HIV-1 drug resistant testing
The earlier the better (a lot cheaper) This reduces drug resistance and cross-resistance.
Good /Poor Adherence
PGx testing
Minimize ADR
Good adherence
Increase efficacy
Increase durability of first-line ARV to last as long as possible
Reduce usage of costly second-line regimens
Second-line therapy (2-9 times more expensive)
NRTI + PI /patient/month = 2,880,000,000-12,960,000,000 baht
Due to the unique ability of HIV to mutate, drug resistance can arise when a person misses even a couple of doses of a drug (i.e. "is not compliant"). We can improve the medication compliance, if we can minimize the occurrence of adverse drug events.


Role of Pharmacogenomics associated with HIV drug resistance (the viral genome).
Role of Pharmacogenomics of adverse effects due to antiretroviral drugs (the human genome).

(1) Retrospective Study

Almost 20,000 HIV genotyping results

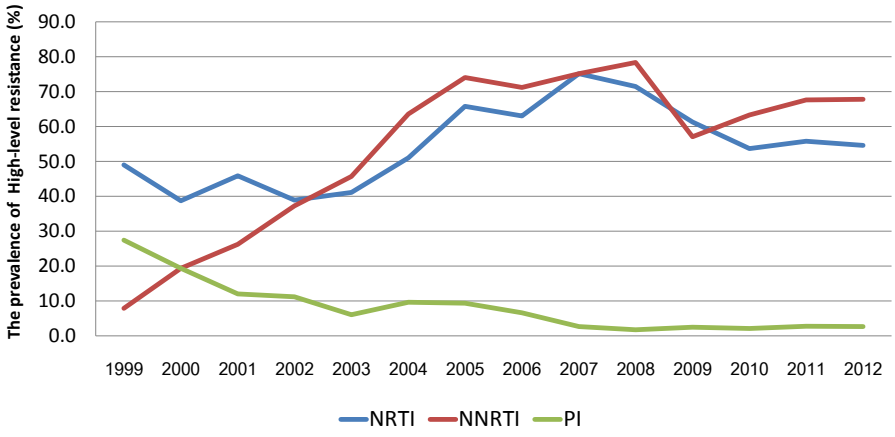
Number of samples for drug resistance testing from 1999 to the end of 2013 at Ramathibodi Hospital, Thailand



11

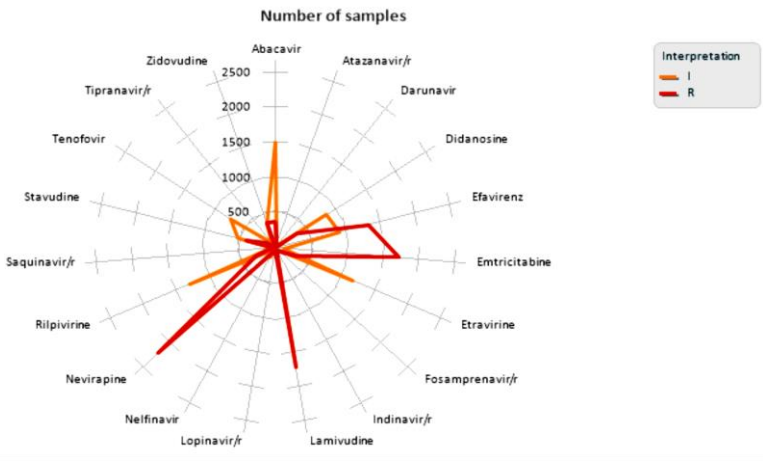
(1) Retrospective Study

Prevalence of NRTIs, NNRTIs and PIs resistance from 1999 - 2012



(1) Retrospective Study

Prevalence of NRTIs, NNRTIs and PIs resistance and possible resistance in 2012



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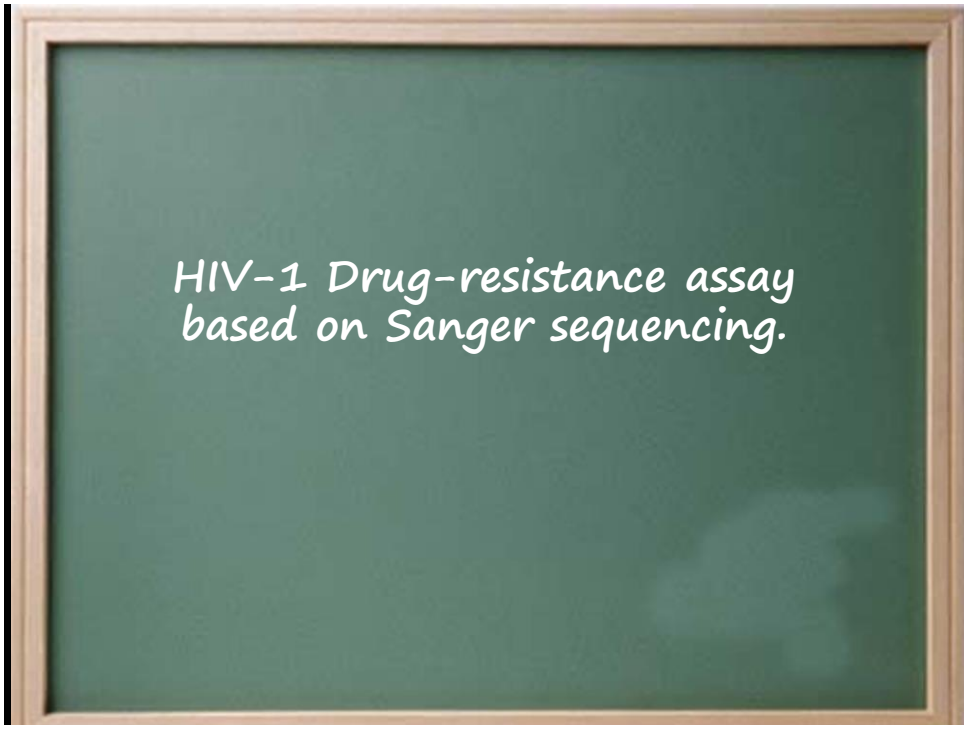


Interpretations:
- TruGene,
- ViroScore,
- ViroScore-Plus,
- RamaScore,
- VirtualPhenotype

US FDA
Approved HIV -DR Assays

TRUGENE® HIV-1
Genotyping Test
GuideLines™ Rules 13.0
RESISTANCE REPORT

Sample ID: 14-4242
Patient ID: NAP D4-2006-036703
Patient Name: [redacted]
Date Drawn: 20080530
Physician:
Institution: Songkhlanakharin Hospital
Report Date: 2008/06/06
Tel:
Fax:

Resistance associated RT Mutations: M41L, L74V*, V108I, V118I, Y181C*, M184V*, G190A, L210W*, T215F*

Nucleoside and Nucleotide RT Inhibitors	Resistance Interpretation
abacavir (ABC)	Resistance
didanosine (ddI)	Resistance
lamivudine (3TC)/emtricitabine (FTC)	Resistance
stavudine (d4T)	*Possible Resistance*
tenofovir (TDF)	Resistance
zidovudine (AZT)	*Possible Resistance*

NonNucleoside RT Inhibitors	Resistance Interpretation
efavirenz (EFV)	*Possible Resistance*
nevirapine (NVP)	Resistance

Nucleotide sequence (…AAGTCTC CGCATGCAT A…)

Resistance associated PR Mutations: I13V, M36I, M46L*, K55R, H69K, L89M

Protease Inhibitors	Resistance Interpretation
amprenavir (APV)/fosamprenavir (FPV)	Resistance
APV/r or FPV/r **	Resistance
atazanavir (ATV)	No Evidence of Resistance
ATV/r **	No Evidence of Resistance
darunavir + ritonavir (DRV/r)	No Evidence of Resistance
indinavir (IDV)	Resistance
IDV/r **	*Possible Resistance*
lopinavir + ritonavir (LPV/r)	No Evidence of Resistance
nelfinavir (NFV)	*Possible Resistance*
saquinavir + ritonavir (SQV/r)	No Evidence of Resistance
tipranavir + ritonavir (TPV/r)	*Possible Resistance*

** Protease Inhibitors administered with low-dose ritonavir for pharmacological boosting.

TherapyEdge

ViroScore
www.ViroScore.com

ABL/TE ID
Your sample ID All-in-one
Type of sample Plasma
Analysis RT-PROT-INT
Data report edition 06-11-2013,15:41:10
Data report version 10.2

Type of report Initial
Your patient ID

Genotyping method Homebrew
Date of sample 2013-11-06
Subtype: B(94.93 % similarity)

All Mutations Detected (HXB2 reference Sequence) Resistance mutations in bold

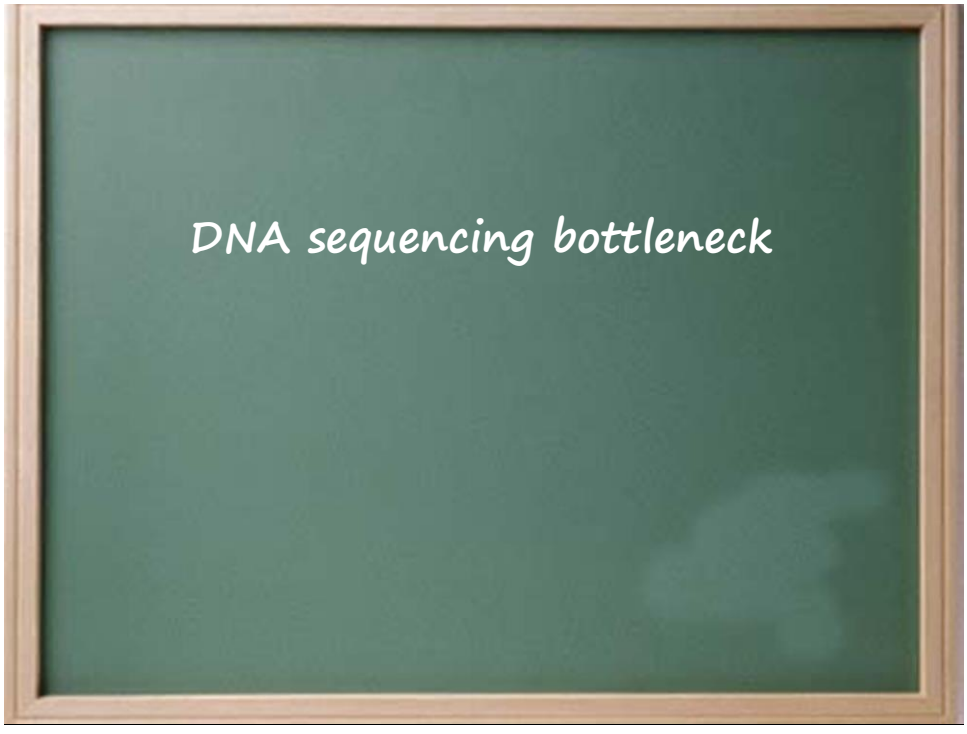
Reverse transcriptase	T27S, T39A, K43E, K49R, **K101E**, I142V, **V181C**, **G190A**, G196E, **L210W**, L214F, **T215Y**, V245K, P272A, R277K, I293V
Protease	V3I, **L10I**, S37N, **I54V**, **L63P**, H69R, **A71V**, **G73S**, **I84V**, **L90M**
Integrase	K111R, S119G, T122I, G128S, A124T, T125A, R127K, N255D, R284G
GP41	D78N, 172insK, P213S, V311E, R334wt/X
GP120 (Bad)	N301wt/K/R/S, T303K/wt, R304wt/K/Q, K305R/wt, del306, R306wt/Q/K, del307, Q310H, R311I, V318Y, T319A , I320A/T, G321D/E/wt, 321insK/N/I/I/E/D/V/V, K322I, E323E/V/wt/K, N325D/wt, M326I, Q328K, H330Y
Tropism	X4 Virus

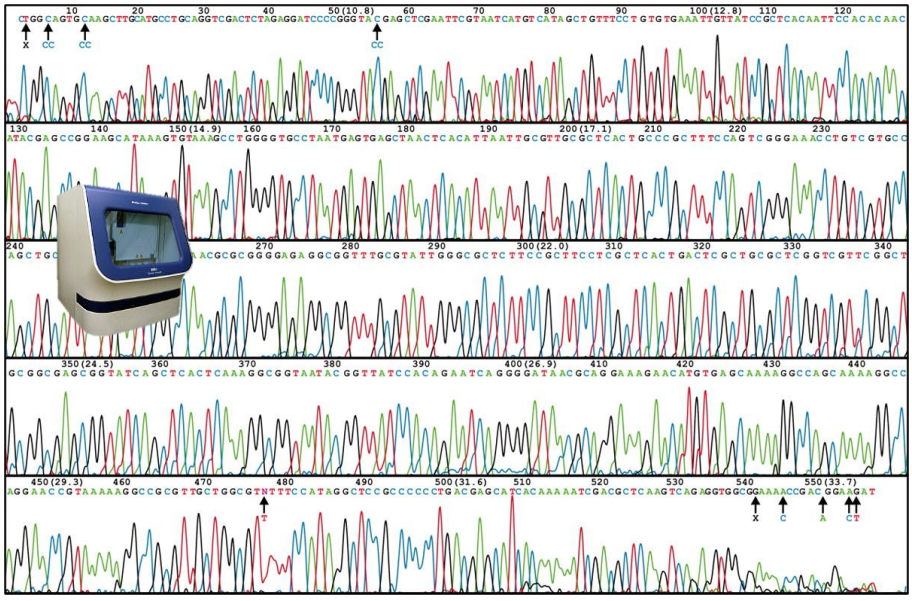
Class	Drug	* ANRS 23 2013-09	* STAN v6.3.1 20/09/2013	G2P v3.3 2013				
				Cutoff	SVM class.	RF	Z-Score	Prob.Score
NRTI	Zidovudine	R	R	8.5	resistant	66.512	7.439	1
	Didanosine	S	I	2.5	susceptible	1.888	2.187	0.54
	Stavudine	R	R	2.5	susceptible	2.493	4.766	0.99
	Lamivudine	S	S	8.5	susceptible	3.545	2.385	0.025
	Emtricitabine	S	S	Not available				
	Abacavir	S	I	2.5	resistant	3.006	6.057	1
	Tenofovir	S	I	2.5	resistant	2.672	4.069	0.98
NNRTI	Nevirapine	R	R	8.5	resistant	303.431	5.979	1
	Efavirenz	R	R	8.5	resistant	28.320	5.978	1
	Etravirine	I	R	1.0	--	2.821	1.723	0.44
	Rilpivirine	R	R	Not available				
PI/Boosted PI	Indinavir	R	Not available	Not available				
	Indinavir/r	Not available	R	3.5	resistant	60.541	11.287	1
	Saquinavir/r	R	R	3.5	resistant	118.296	17.143	1
	Nelfinavir	R	R	3.5	resistant	40.145	8.834	1
	Fosamprenavir/r	R	R	3.5	resistant	13.372	7.741	1
	Lopinavir/r	R	I	3.5	resistant	23.855	10.568	1
	Atazanavir/r	R	R	3.5	resistant	53.391	11.390	1
	Tipranavir/r	S	I	1.5	resistant	3.556	2.803	0.83
	Darunavir/r	S	S	1.5	resistant	7.599	4.788	1
GP41	Enfuvirtide	S	Not available	Not available				
II	Raltegravir	S	S	susceptible (Predicted FC: 2.4)				
	Elvitegravir	S	S	susceptible (Predicted FC: 2.1)				
	Dolutegravir	S	Not available	Not available				
EI	Maraviroc	Not available	Not available	CCR5-antagonists like Maraviroc (Celsentri/Selzentry) are **not** likely to be effective. **				

** **Selected false positive rate:** Recommendations from the European Consensus Group on clinical management of HIV-1 tropism testing (10% FPR)

Predictions are for research use only, we don't guarantee for any prediction!

not available | S | I | R





The limit of detection for Sanger sequencing is 15 to 20% mutant alleles.

In order to increase sensitivity in detecting drug resistant mutation, the Thailand Center of Excellence for Life Sciences (TCELS) started partial support in 2012 by using amplicon (ultra deep) sequencing; a new field that is being enabled largely through NGS technology.

THE NATION
www.nationmultimedia.com
December 1, 2013, 6:56 pm

NATIONAL

'Deep sequencing test' for people who have HIV

The Sunday Nation December 1, 2013 1:00 am
Mahidol University's Faculty of Medicine at Ramathibodi Hospital has succeeded in developing "HIV-1 Deep Sequencing" as a better test for drug-resistant HIV that will yield results 100 times more sensitive than before. To mark the World AIDS Day, the centre will provide this "HIV-1 Deep Sequencing" tests to patients and provide consultations when reading the test results to doctors treating people with HIV free-of-charge from December 1 on. For more details, call 02-201-1470 or download information from http://sdrv.ms/1dGGRwy.

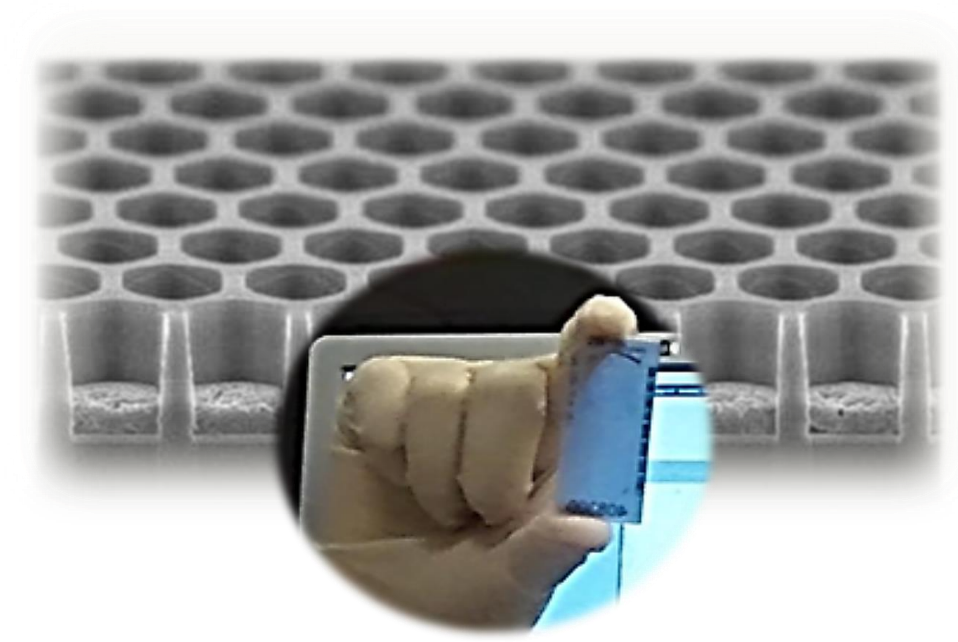
The centre's chief Dr Wasan Chantratita said Thailand had had 1.17 million people with HIV/Aids over the years, with 447,640 living with the disease now. He said the number of new infections had been reduced to about 8,900 per year. However, there was the issue of drug-resistant HIV, so the better testing method for drug-resistant HIV was timely and they could also adjust prescribed anti-retroviral drugs.

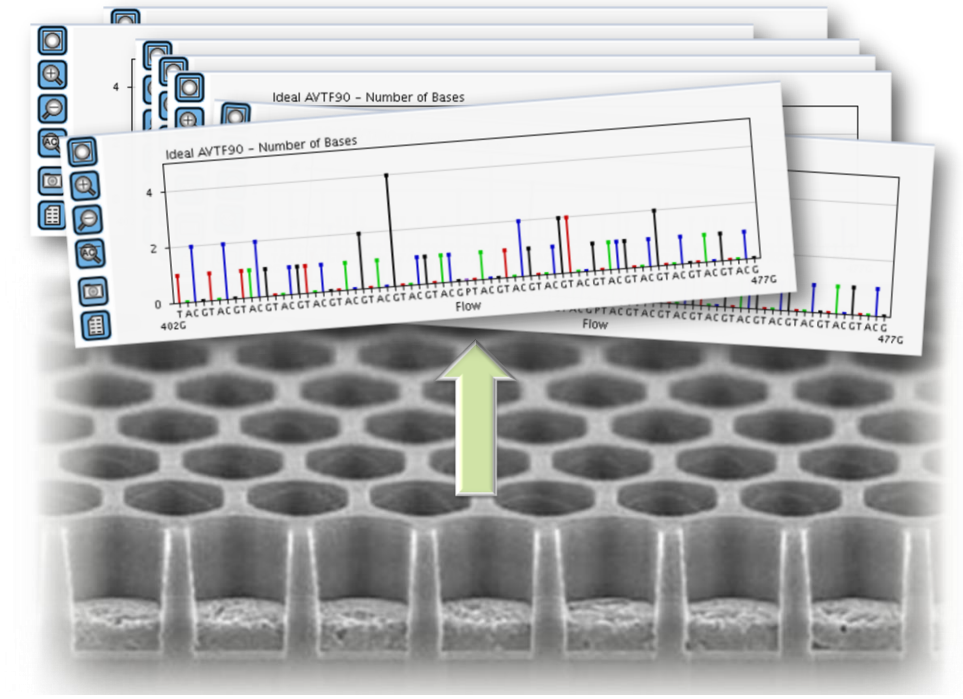
The collaboration between the centre, plus the Science and Technology Ministry's Thailand Centre of Excellence for Life Sciences (TCELS) and Roche Diagnostics (Thailand) Ltd would enable doctors to detect mutated HIV from a small amount of blood from a patient, Wasan said.

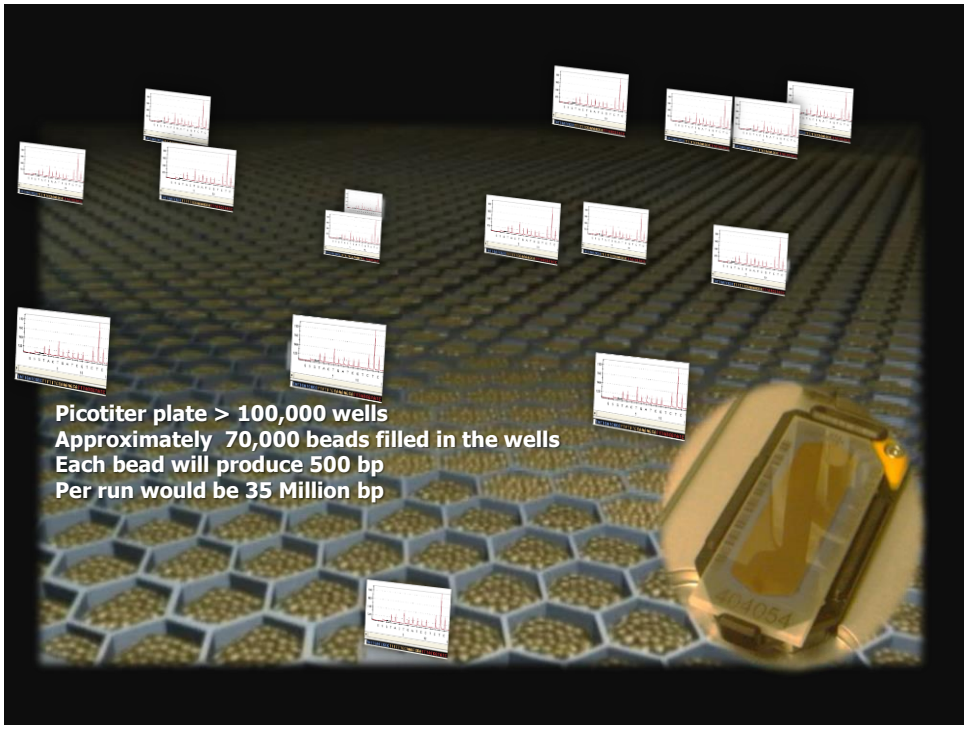
So, doctors could change prescribed anti-retroviral drugs and cut down a chance of cross-resistance occurring. This would also prevent drug-resistant patients from having to take the mostly imported and expensive second formula.

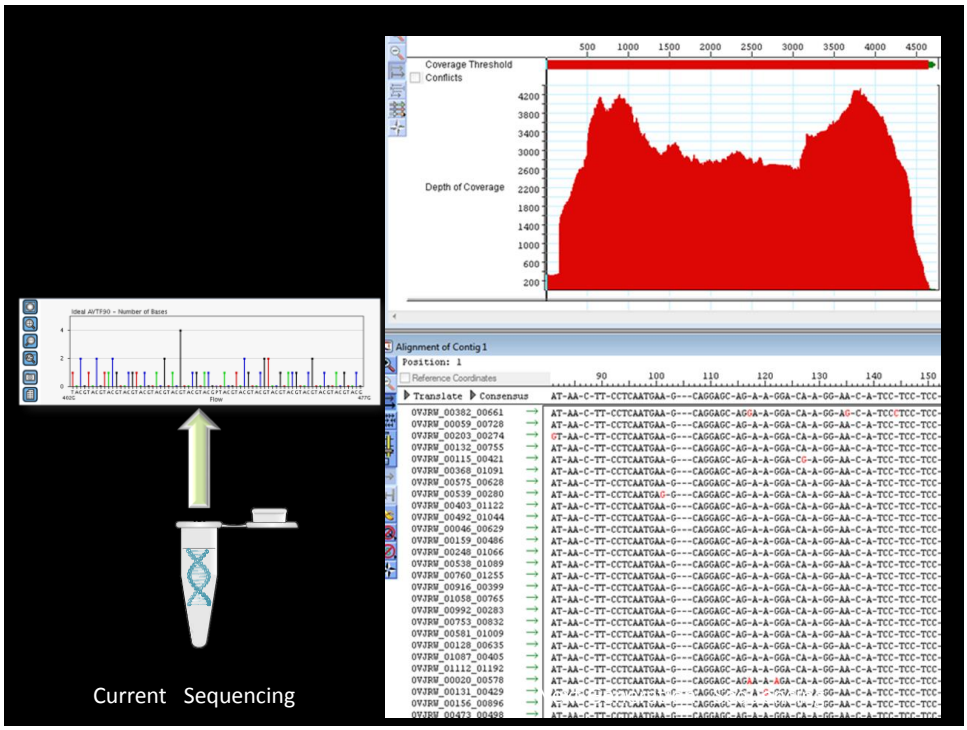
This would save the country money, he said.

Roche 454 GS-Junior

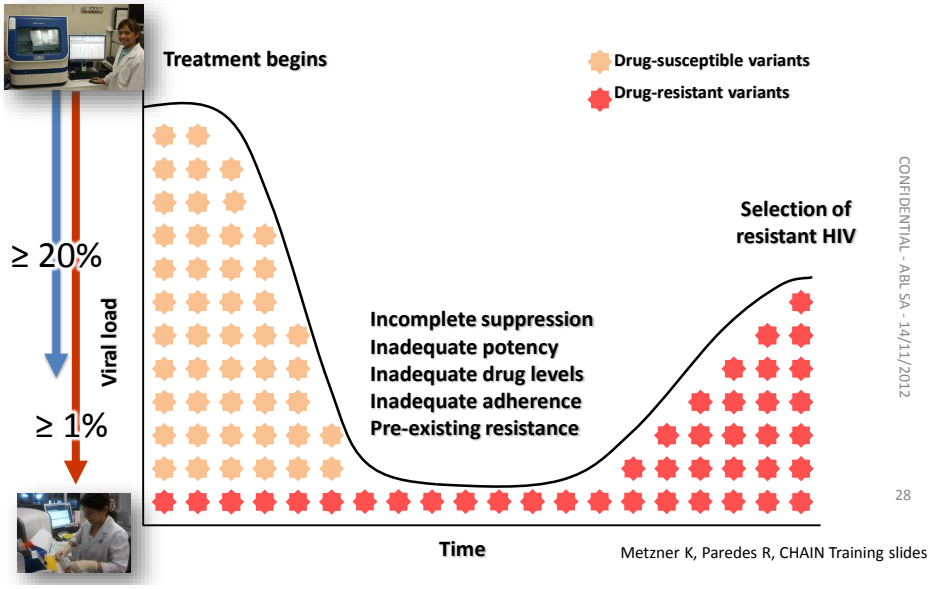



Ideal AVTF90 – Number of Bases
Ideal AVTF90 – Number of Bases
Flow
Flow

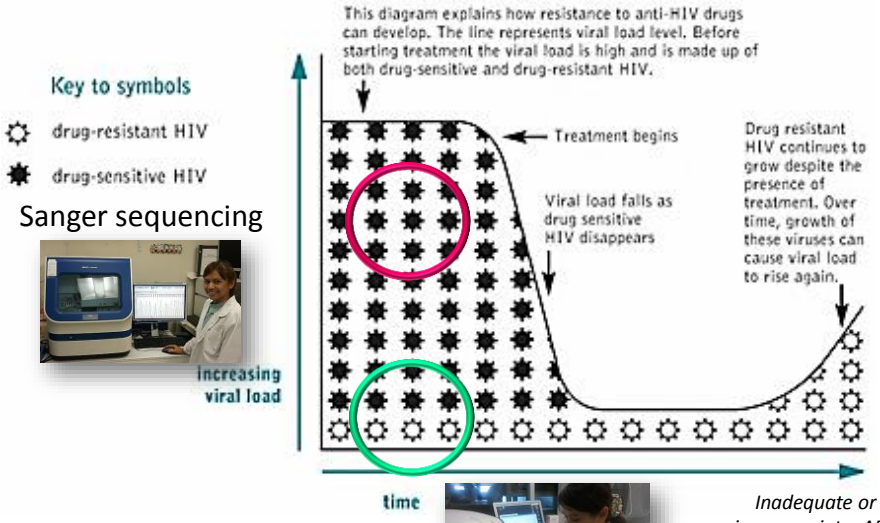

Picotiter plate > 100,000 wells
Approximately 70,000 beads filled in the wells
Each bead will produce 500 bp
Per run would be 35 Million bp



Quasispecies - As a survival strategy (2)



Metzner K, Paredes R, CHAIN Training slides

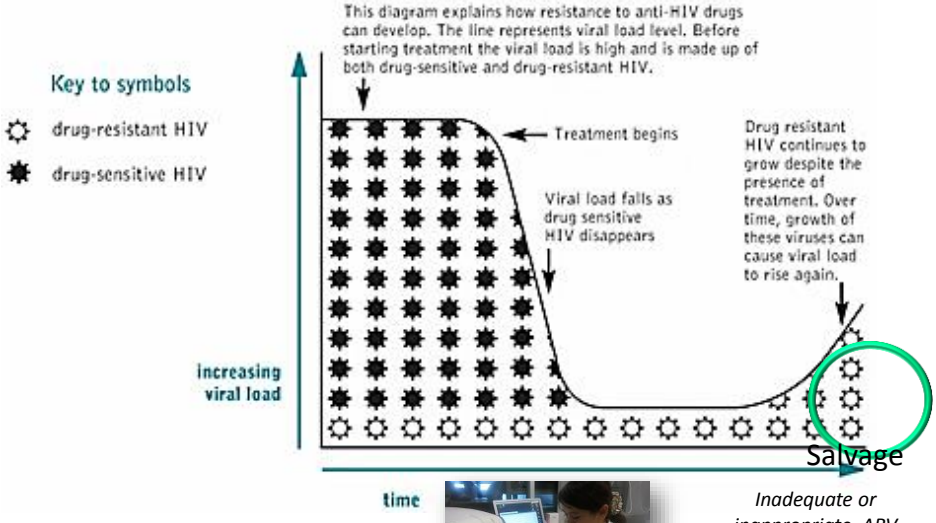


Sanger sequencing

Next generation sequencing
(Ultrasensitive resistance test)

Inadequate or inappropriate ARV treatment will quickly lead to treatment Failure

More than 10 % of HIV-1-positive persons (naïve) in Spain & 2.4-7.8% in Thailand become infected with viruses that are already resistant to at least one antiretroviral drug.



Next generation sequencing
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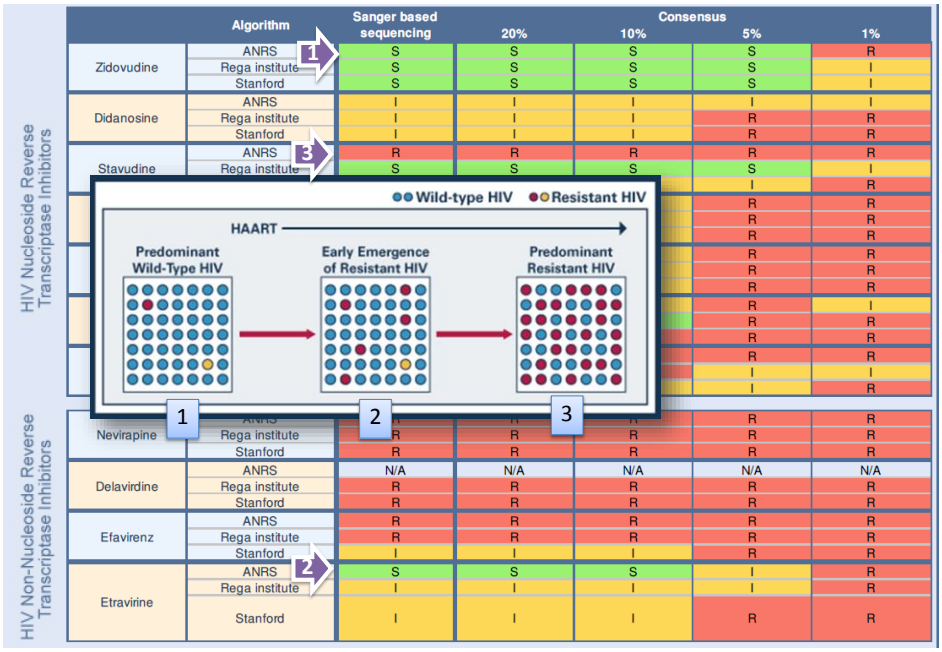


JAMA The Journal of the American Medical Association

April 6, 2011, Vol 305, No. 13 >

Review | April 6, 2011

Low-Frequency HIV-1 Drug Resistance Mutations and Risk of NNRTI-Based Antiretroviral Treatment Failure

A Systematic Review and Pooled Analysis FREE

Conclusion In a pooled analysis, low-frequency HIV-1 drug resistance mutations, particularly involving NNRTI resistance, were significantly associated with a dose-dependent increased risk of virologic failure with first-line ART.

JAMA. 2011;305(13):1327-1335 www.jama.com

Jon Li, et al (JAMA 2011)

Increased risk of virological failure

Risk of virological failure NOT increased

Risk increased in some subjects or non-significant trend towards increased risk

Table 1. Baseline Characteristics of Studies Included in the Pooled Analysis

Characteristic	Peuchant et al,[16] 2008	Simen et al,[15] 2009	Balduin et al,[17] 2009	Jakobsen et al,[18] 2010	Metzner et al,[19] 2011	Goodman et al,[20] 2011	Paredes et al,[21] 2010	Johnson et al,[22] 2008	Geretti et al,[23] 2009	Metzner et al,[24] 2009	Total
Study design	Cohort	Cohort	Cohort	Cohort	Cohort	Cohort	Case cohort	Case-control	Case-control	Case-control	
Virologic failure, No.	2	45	7	1	1	44	150	52	14	3	315
Total participants, No.	13	70	54	20	56	423	280	240	89	18	1263
Age, mean (SD), y	38 (16.8)	37 (8.8)	41 (11.7)	43 (12.3)	42 (11.1)	38 (9.4)	37 (9.6)	37 (9.5)	38 (8.5)	43 (9.5)	38 (9.8)
Men, No. (%)	12 (92)	56 (80)	41 (76)	19 (95)	45 (80)	365 (86)	227 (81)	196 (82)	78 (88)	13 (72)	1052 (83)
Race/ethnicity, No. (%) Participants, No.	13	70	52	NR	NR	422	279	240	89	17	1182
White	12 (92)	16 (23)	39 (75)			253 (6)	110 (39)	132 (55)	78 (88)	14 (82)	654 (55)
Black	1 (8)	38 (54)	11 (21)			94 (22)	110 (39)	61 (25)	10 (11)	3 (18)	328 (28)
Hispanic	0	14 (20)	0			61 (14)	54 (19)	42 (18)	0	0	171 (14)
Other	0	2 (3)	2 (4)			14 (3)	5 (2)	5 (2)	1 (1)	0	29 (2)
CD4 cell count, median (IQR), cells/mm^3	426 (303-522)	247 (38-344)	251 (196-326)	200 (48-278)	279 (191-368)	227 (127-319)	202 (69-331)	243 (145-327)	222 (126-299)	222 (59-249)	229 (125-324)
$\log_{10}$ HIV RNA, median (IQR), copies/mL	4.4 (4.2-5.3)	5.3 (4.9-5.8)	4.7 (4.0-4.9)	5.1 (4.6-5.8)	4.9 (4.5-5.3)	5.0 (4.6-5.4)	4.8 (4.4-5.4)	5.1 (4.5-5.5)	5.2 (4.9-5.5)	5.4 (4.9-5.9)	5.0 (4.6-5.4)

Abbreviations: HIV, human immunodeficiency virus; IQR, interquartile range; NR, not reported.

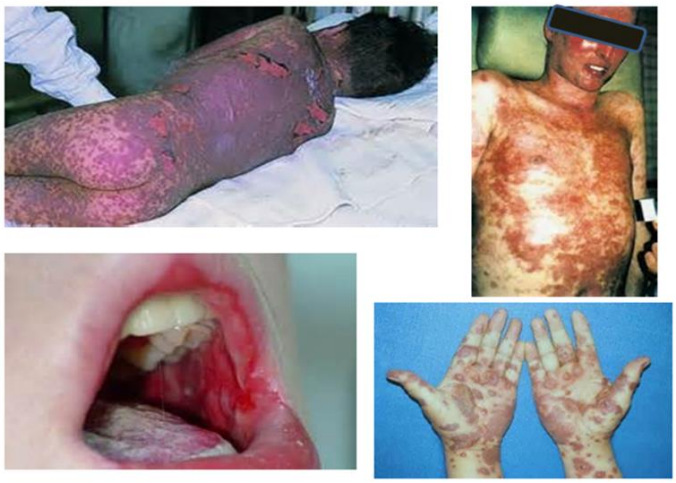
33

Therefore, doctors could change prescribed antiviral drugs and cut down the chance of cross-resistance occurring.

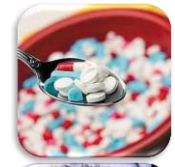
This would also prevent drug-resistant patients from having to take the mostly imported and expensive second formula, thus, saving the country medical expenditure.

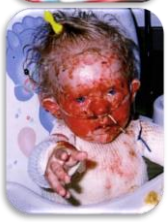
Role of Pharmacogenomics associated with HIV drug resistance (the viral genome).

✓ Role of Pharmacogenomics of adverse effects due to antiretroviral drugs (the human genome).



ผื่นแพ้ยารุนแรงชนิด Steven-Johnson syndrome (SJS) และ Toxic epidermal necrosis syndrome (TENS)





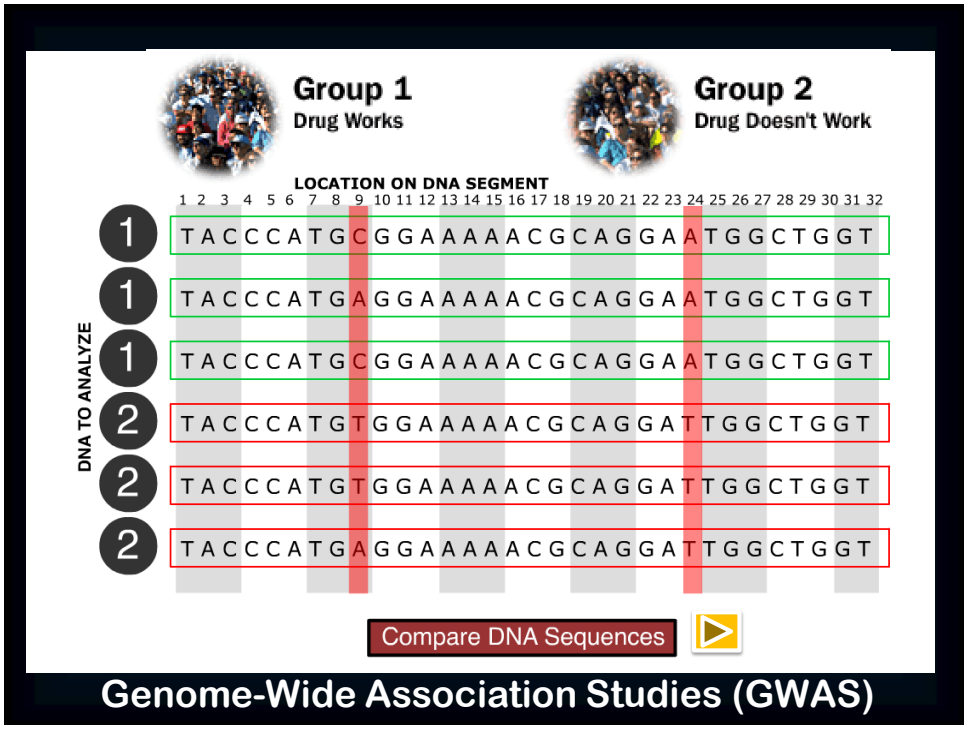
Drug induced SJS/TENs in Thailand 1998-2008

(Reference: Thai FDA 2008)

Drug name	Count
1. SULFAMETHOXAZONE+ TRIMETHOPRIM	1,234
2. CARBAMAZEPINE	703
3. ALLOPURINOL	664
4. PHENYTOIN	451
5. AMOXYCILLIN	342
6. STAVUDINE + LAMIVUDINE+NEVIRAPINE	313
7. PHNOBARBITAL	189
8. IBUPROFEN	156
9. NEVIRAPINE	122
10. TETRACYCLINE	113

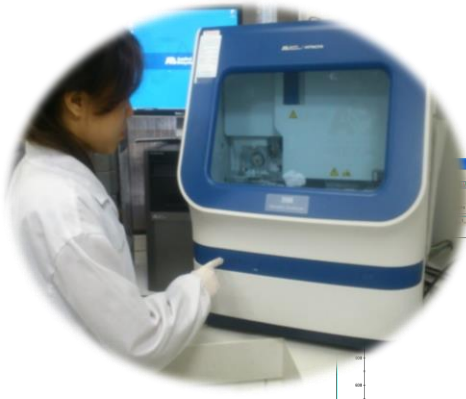
Genomic markers have been found and utilized as predictive tools by our group.

We revealed novel DNA screening assays for 8 of 10 drugs with the most severe ADRs, as listed by the Thai Food and Drug administration.



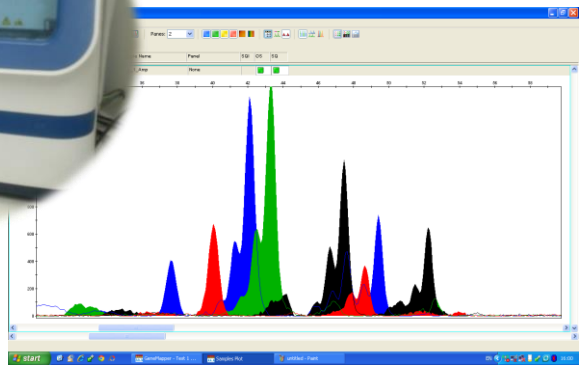
We performing more than 3,000 GWAS and comparing two large groups of individuals; one with no adverse drug reactions, as a control, and one case group affected by serious side effects after taking the drug in question.

These predictive markers have been included in the same test, under the code name “All-In-One PGX-HIV”. The above anti-retroviral drugs could cause severe ADRs, such as Stevens-Johnson syndrome, hypersensitivity, and lipodystrophy syndromes. The assay received the Thailand Innovation Award in 2011.



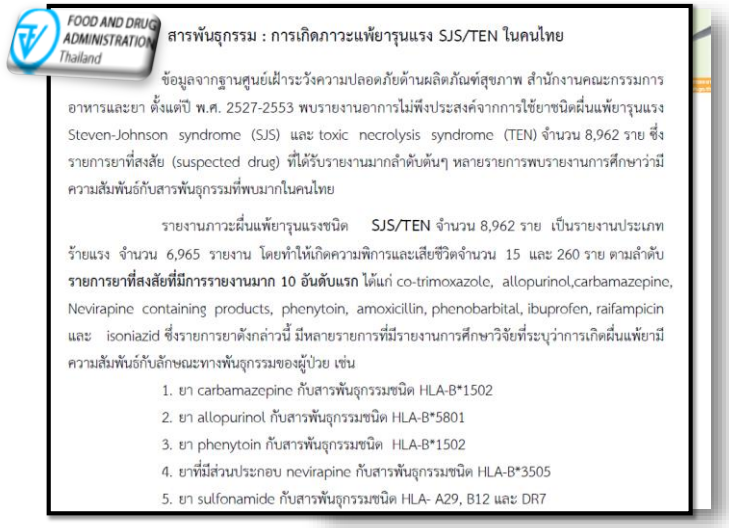
Interrogate up to 10 mutations from different amplicons in a single base extension reaction

Multiplexing capability up to 10-plex



Sensitive allele-frequency detection (typically 5%)

งานแถลงข่าว การนำเสนอผลงานวิชาการในการประชุม 7th IAS Conference on HIV Pathogenesis, Treatment and Prevention, International AIDS Society (IAS2013) Kuala Lumper, Malaysia, June 30-July 3, 2013



FOOD AND DRUG ADMINISTRATION Thailand

สารพันธุกรรม : การเกิดภาวะแพ้ยารุนแรง SJS/TEN ในคนไทย

ข้อมูลจากฐานศูนย์เฝ้าระวังความปลอดภัยด้านผลิตภัณฑ์สุขภาพ สำนักงานคณะกรรมการอาหารและยา ตั้งแต่ปี พ.ศ. 2527-2553 พบรายงานอาการไม่พึงประสงค์จากการใช้ยาชนิดผื่นแพ้ยารุนแรง Steven-Johnson syndrome (SJS) และ toxic necrolysis syndrome (TEN) จำนวน 8,962 ราย ซึ่งรายการยาที่สงสัย (suspected drug) ที่ได้รับรายงานมากลำดับต้นๆ หลายรายการพบรายงานการศึกษาว่ามีความสัมพันธ์กับสารพันธุกรรมที่พบมากในคนไทย

รายงานภาวะผื่นแพ้ยารุนแรงชนิด SJS/TEN จำนวน 8,962 ราย เป็นรายงานประเภทร้ายแรง จำนวน 6,965 รายงาน โดยทำให้เกิดความพิการและเสียชีวิตจำนวน 15 และ 260 ราย ตามลำดับ **รายการยาที่สงสัยที่มีการรายงานมาก 10 อันดับแรก** ได้แก่ co-trimoxazole, allopurinol,carbamazepine, Nevirapine containing products, phenytoin, amoxicillin, phenobarbital, ibuprofen, raifampicin และ isoniazid ซึ่งรายการยาดังกล่าวนี้ มีหลายรายการที่มีรายงานการศึกษาวิจัยที่ระบุว่าการเกิดผื่นแพ้ยามีความสัมพันธ์กับลักษณะทางพันธุกรรมของผู้ป่วย เช่น

1. ยา carbamazepine กับสารพันธุกรรมชนิด HLA-B*1502
2. ยา allopurinol กับสารพันธุกรรมชนิด HLA-B*5801
3. ยา phenytoin กับสารพันธุกรรมชนิด HLA-B*1502
4. ยาที่มีส่วนประกอบ nevirapine กับสารพันธุกรรมชนิด HLA-B*3505
5. ยา sulfonamide กับสารพันธุกรรมชนิด HLA- A29, B12 และ DR7

eScience 記事

3. NIH、DARPA、FDA 共同で薬安全性評価チップを開発 Genome Web Daily News

9 月 16 日 オバマ大統領が、より優れた技術を求めて薬の有効性・安全性を評価できるチップを開発する予定であると発表した。First-in-human test を行う前に、薬の毒性実験に使用とされる。

セミナー・新製品情報

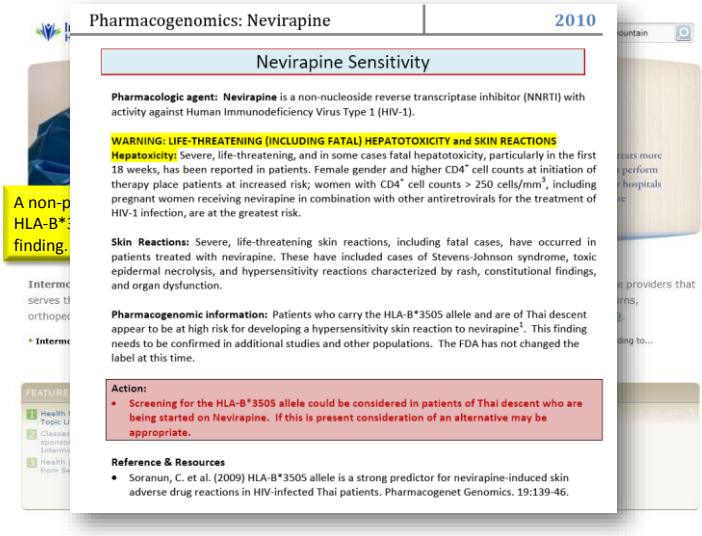
【開催】HIV-ADR all in one kit:タイ王国にて社会貢献イノベーション賞

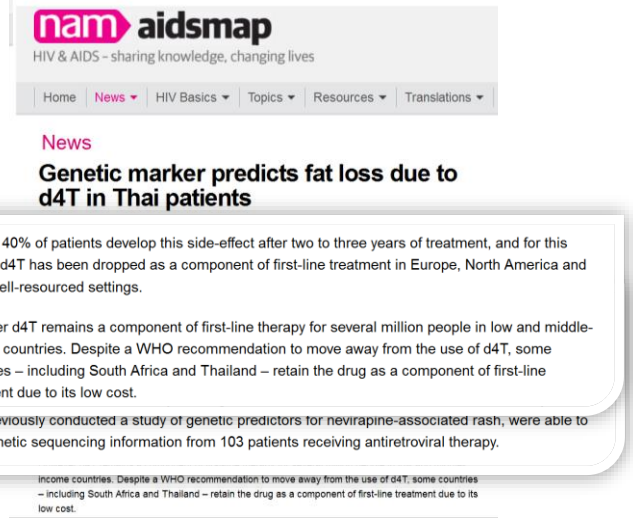
10 月上旬、タイ Mahidol 大学 Pharmaceutical Genetics laboratory の Dr. Warun 助教授(左下図)は、小型遺伝子解析システム(凸版印刷、理研ジェネシス、理研、Mahidol 大学の共同開発)を使用したタイ人向け HIV-ADR all in one kit の開発成果を認められ、タイ王国イノベーション賞を受賞した(賞金:20 万バーツ)。

HIV 治療薬 Nevirapine による薬疹感受性は、タイ人の白血球タイプの違いに関連する遺伝子アレル(HLA-B*3505)に強い相関を示されており、この小型遺伝子型解析システムを用いることにより、遺伝子タイプの違いを簡便に判別し、薬の使い分けが可能となる。例様に、Carbamazebine(抗てんかん)や Abacavir(抗 HIV 薬の併用薬)などの感受性遺伝子検査についても行われており、今後、実用化されれば、多くの国で役立つことになる。また、適切な薬の投与により無駄な医薬費が削減されるため、経済的な負担減も見込める。

【セミナー】:PGx バイオマーカーが変える医薬品開発』11 月 28 日
PGx・バイオマーカーが変える医薬品開発。日経バイオテク主催、JPDSC 協賛。詳細

【シンポジウム】「患者が支えるバイオバンクとその未来」11 月 13 日
主催者 :文部科学省「オーダーメイド医療実現化プロジェクト」。参事前申込み。詳細


Pharmacogenomics: Nevirapine
2010
Nevirapine Sensitivity
Pharmacologic agent: Nevirapine is a non-nucleoside reverse transcriptase inhibitor (NNRTI) with activity against Human Immunodeficiency Virus Type 1 (HIV-1).
WARNING: LIFE-THREATENING (INCLUDING FATAL) HEPATOTOXICITY and SKIN REACTIONS
Hepatoxicity: Severe, life-threatening, and in some cases fatal hepatotoxicity, particularly in the first 18 weeks, has been reported in patients. Female gender and higher CD4+ cell counts at initiation of therapy place patients at increased risk; women with CD4+ cell counts > 250 cells/mm3, including pregnant women receiving nevirapine in combination with other antiretrovirals for the treatment of HIV-1 infection, are at the greatest risk.
Skin Reactions: Severe, life-threatening skin reactions, including fatal cases, have occurred in patients treated with nevirapine. These have included cases of Stevens-Johnson syndrome, toxic epidermal necrolysis, and hypersensitivity reactions characterized by rash, constitutional findings, and organ dysfunction.
Pharmacogenomic information: Patients who carry the HLA-B*3505 allele and are of Thai descent appear to be at high risk for developing a hypersensitivity skin reaction to nevirapine[1]. This finding needs to be confirmed in additional studies and other populations. The FDA has not changed the label at this time.
Action:
Screening for the HLA-B*3505 allele could be considered in patients of Thai descent who are being started on Nevirapine. If this is present consideration of an alternative may be appropriate.
Reference & Resources
Soranun, C. et al. (2009) HLA-B*3505 allele is a strong predictor for nevirapine-induced skin adverse drug reactions in HIV-infected Thai patients. Pharmacogenet Genomics. 19:139-46.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Genetic marker predicts fat loss due to d4T in Thai patients
Around 40% of patients develop this side-effect after two to three years of treatment, and for this reason d4T has been dropped as a component of first-line treatment in Europe, North America and other well-resourced settings.
However d4T remains a component of first-line therapy for several million people in low and middle-income countries. Despite a WHO recommendation to move away from the use of d4T, some countries – including South Africa and Thailand – retain the drug as a component of first-line treatment due to its low cost.
had previously conducted a study of genetic predictors for nevirapine-associated rash, were able to use genetic sequencing information from 103 patients receiving antiretroviral therapy.

สปสช.
สำนักงานหลักประกันสุขภาพแห่งชาติ

โครงการนำร่อง
"การป้องกันผื่นแพ้ยารุนแรงชนิด Steven-Johnson syndrome (SJS) และ Toxic epidermal necrosis syndrome (TENS) จากยา Carbamazepine/Oxcarbamazepine ด้วยการประเมินความเสี่ยงทางพันธุกรรมชนิด *HLA-B*15:02* allele"

หลักการและเหตุผล

กลุ่มอาการสตีเวนจอห์นสัน (Steven-Johnson syndrome, SJS) และกลุ่มอาการ Toxic epidermal necrosis syndrome (TENS) คืออาการแพ้ยาหรืออาการอันไม่พึงประสงค์จากการใช้ยา (adverse drug reaction, ADR) ที่รุนแรงและ ทำให้ผู้ป่วย มีโอกาสพิการและเสียชีวิตมากถึงร้อยละ 30 [1] ผู้ที่แพ้ยาลักษณะดังกล่าวจะมีผื่นเกิดขึ้นที่ผิวหนังและเยื่อบุทั่วร่างกาย มีการอักเสบที่รุนแรงทำให้ผิวหนังตายและหลุดลอก ผู้ป่วยส่วนใหญ่จะต้องเข้ารับการรักษาในโรงพยาบาลเป็นระยะเวลานาน ทำให้การรักษาภาวะแพ้ยา SJS/TENS มีค่าใช้จ่ายสูงเฉลี่ย 46,680 บาทต่อราย นอกจากนี้ผู้ป่วยยังต้องพักรักษาตัวหลังออกจากโรงพยาบาลอีกเป็นเวลาหลายเดือน จากข้อมูลของศูนย์เฝ้าระวังความปลอดภัยด้านผลิตภัณฑ์สุขภาพ สำนักงานคณะกรรมการอาหารและยาพบว่า ระยะเวลา 10 ปีที่ผ่านมา ในประเทศไทยมีผู้ป่วยแพ้ยาแบบ SJS/TENS ประมาณ 5,000 ราย โดยรายการยาที่สงสัยว่าเป็นสาเหตุและได้รับรายงานมากเป็นลำดับต้นๆ ได้แก่ ยา sulfamethoxazone+trimethoprim (co-trimoxazole), carbamazepine, allopurinol, nevirapine และ phenytoin [2]

MAHIDOL UNIVERSITY
Wisdom of the Land

อธิการบดีพบประชาคมมหิดล
6 มกราคม 2555

วิสัยทัศน์ มหาวิทยาลัยมหิดลมุ่งมั่นที่จะเป็นมหาวิทยาลัยระดับโลก

พันธกิจ สร้างความเป็นเลิศทางด้านสุขภาพ ศาสตร์ ศิลป์ และนวัตกรรมบนพื้นฐานของคุณธรรม เพื่อสังคมไทย และประโยชน์สุขแก่มวลมนุษยชาติ

MAHIDOL UNIVERSITY
Wisdom of the Land

10 แนวทางในการพัฒนามหาวิทยาลัยมหิดล

1. มีส่วนร่วมในการกำหนด/ผลักดันนโยบายสาธารณะ
2. ยกระดับมาตรฐานการวิจัยสู่ระดับโลกและเพิ่มคุณค่าแก่สังคม
3. การพัฒนาการศึกษาเพื่อให้บัณฑิตมีคุณลักษณะที่พึงประสงค์
4. มุ่งสู่ความเป็นสากล
5. ใช้โอกาสของการเป็นมหาวิทยาลัยในกำกับรัฐบาลให้เกิดประโยชน์สูงสุด

10 แนวทางในการพัฒนามหาวิทยาลัยมหิดล

6. การสร้างเครือข่าย
7. การพัฒนาด้ายกายภาพ
8. การขับเคลื่อนให้มหาวิทยาลัยมหิดลเป็นปัญญาของแผ่นดิน
9. การดึงพลังจากศิษย์เก่า
10. การระดมทุนเพื่อสนับสนุนพันธกิจ