

In recent years, the sequencing tools have transformed from huge equipment into palm-size



Illumina Genome Analyzer (First Solexa Sequencer) launched in 2006



Oxford Nanopore Sequencing in 2016

ONT, portable sequencer for on-site pathogen detection

OPEN

Serotyping dengue virus with isothermal amplification and a portable sequencer

Junya Yamagishi^{1,2}, Lucky R. Runtuwene³, Kyoko Hayashida^{1,4}, Arthur E. Mongan⁵, Lan Anh Nguyen Thi⁶, Linh Nguyen Thuy⁶, Cam Nguyen Nhat⁷, Kriengsak Limkittikul⁸, Chukiat Sirivichayakul⁸, Nuankanya Sathirapongsasuti⁹, Martin Frith¹⁰, Wojciech Makalowski¹¹, Yuki Eshita¹², Sumio Sugano³ & Yutaka Suzuki³

Received: 31 January 2017

Accepted: 3 May 2017

Published online: 14 June 2017

LAMP amplification

Serum (1 µl)



Mix with reagent mix



Isothermal amplification
63°C, 90 mins



Purification (magnetic beads)



MinION sequencing

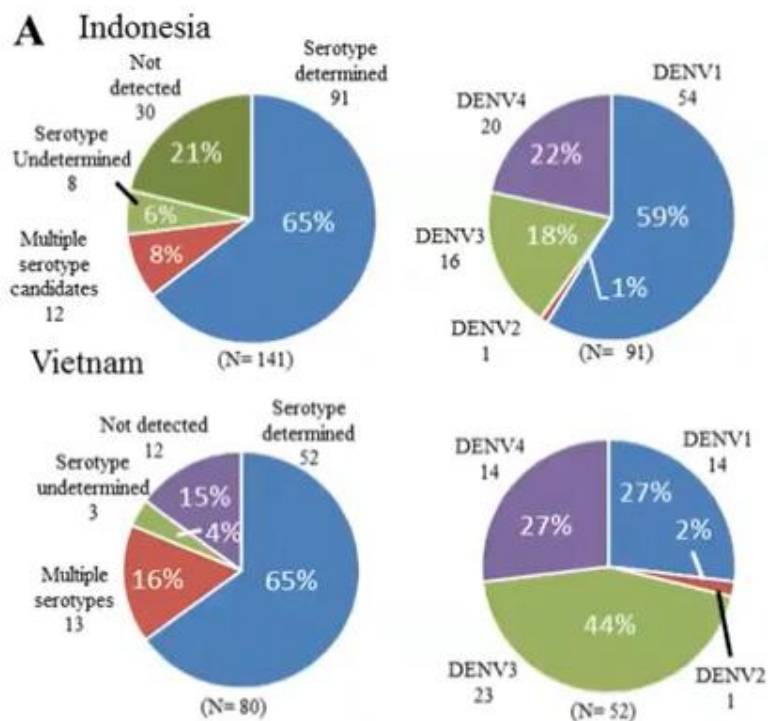
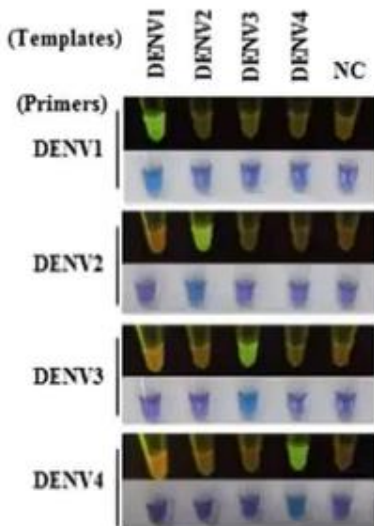
MinION template preparation



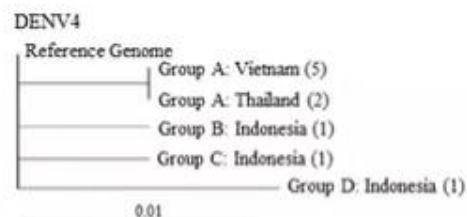
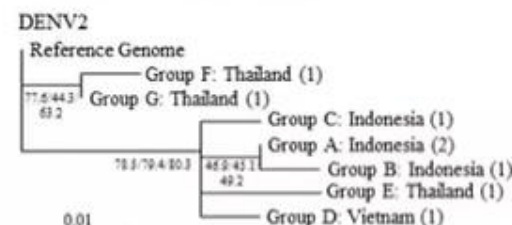
Purification (magnetic beads)



MinION sequencing



	DENV1	DENV2	DENV3	DENV4
Indonesia	1 (11)	5 (20)	5 (23)	4 (4)
Vietnam	2 (4)	4 (4)	1 (13)	1 (5)
Thailand	2 (2)	6 (7)	1 (1)	1 (2)



RESEARCH NOTE

Open Access



Global research alliance in infectious disease: a collaborative effort to combat infectious diseases through dissemination of portable sequencing

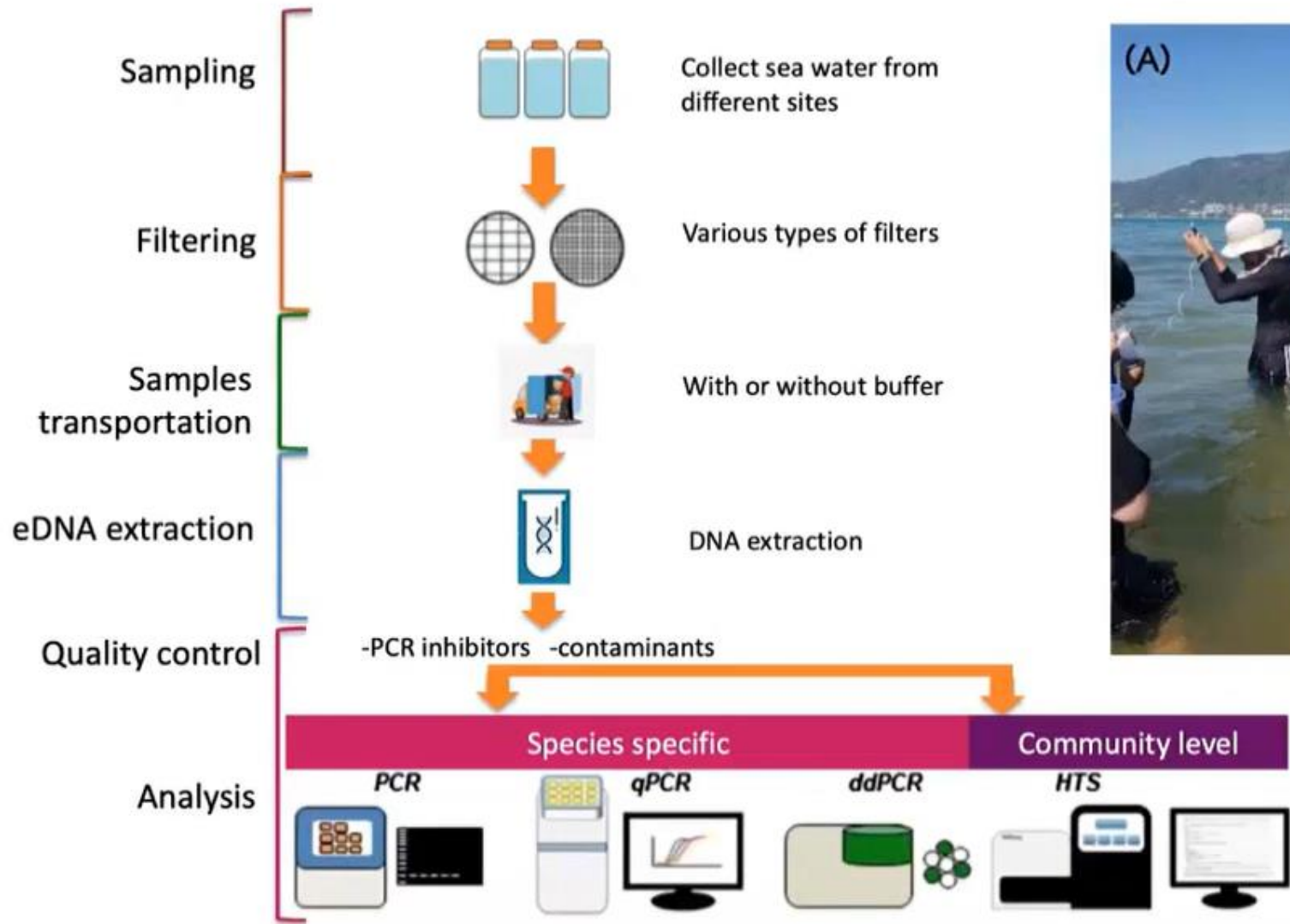
Lucky R. Runtuwene^{1,2*}, Nuankanya Sathirapongsasuti³, Raweewan Srisawat⁴, Narumon Komalamisra⁴, Josef S. B. Tuda⁵, Arthur E. Mongan⁵, Gabriel O. Aboge⁶, Victoria Shabardina⁷, Wojciech Makalowski⁸, Dela Ria Nesti⁹, Wayan T. Artama¹⁰, Lan Anh Nguyen-Thi¹¹, Kiew-Lian Wan¹², Byoung-Kuk Na¹³, William Hall¹⁴, Arnab Pain^{15,16}, Yuki Eshita¹⁶, Ryuichiro Maeda¹⁷, Junya Yamagishi¹⁶ and Yutaka Suzuki²

To disseminate the portable sequencer MinION in developing countries for the main purpose of battling infectious diseases, we found a consortium called Global Research Alliance in Infectious Diseases (GRAID). By holding and inviting researchers both from developed and developing countries, we aim to train the participants with MinION's operations and foster a collaboration in infectious diseases researches.



MinION Workshop (A) Kashiwa, Japan 2016, (B) Bangkok, Thailand 2017, (C) Manado, Indonesia 2018, (D) Nairobi, Kenya 2018, (E) Hokkaido, Japan 2019, and (F) Yogyakarta, Indonesia 2019

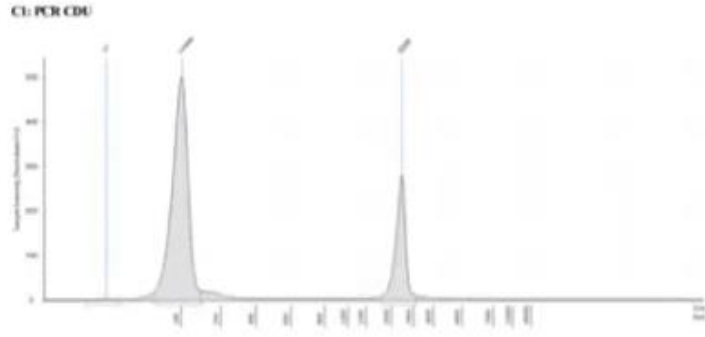
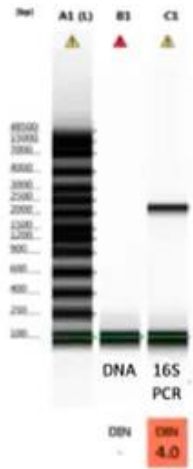
Environmental DNA (eDNA) for biomonitoring



Project: Optimizing environmental DNA (eDNA) sampling and methods for biomonitoring (PSU Fundamental Fund 2565)
วิจัยร่วมกับ รศ.ดร.มัสลิน ไชยสถานันต์กุล

CDU-16S

Sample from MOPH(from CMU)



ONT, portable sequencer



Taxa at Rank:

Filter...

Taxon	Cumulative Reads
Comamonas denitrificans	5,132
Delftia lacustris	2,669
Stenotrophomonas maltophilia	2,036
Acinetobacter baumannii	1,956
Diaphorobacter nitroreducens	1,800
Comamonas jiangduensis	1,076
Achromobacter denitrificans	1,000
Bacillus thermoamylovorans	773
Cutibacterium acnes	676
Mycobacterium chlorophenicum	653
Deinococcus geothermalis	616
Staphylococcus saccharolyticus	537

