For immediate release

Hong Kong Sanatorium & Hospital
State-of-the-Art Molecular Pathology Laboratory
Introduces First-in-Hong Kong Next Generation Sequencing for
Clinical Diagnostic Service

(8 November 2011, Hong Kong) Hong Kong Sanatorium & Hospital proudly announces the introduction of Next Generation Sequencing (NGS), making it the first private hospital in Hong Kong to provide genomics-enabled clinical diagnostic service supported by advanced genomic technology and extensive research findings. This innovative technology enables faster, more precise and extensive molecular diagnosis in three major areas, namely infectious diseases, genetic disorders, cancer diagnosis and prognosis.

The Molecular Pathology Division was established in 2005, and in the same year HKSH became the first private hospital in Hong Kong to develop and provide a panel of PCR assays for rapid diagnosis of H5N1 Influenza A virus infection. Fluroescence *in-situ* hybridization (FISH) has also been introduced to conduct rapid aneuploidy screening for high-risk pregnancy. In collaboration with The Stanford University and The University of Hong Kong, the Division participated in the first high-risk breast cancer screening project in Hong Kong in 2007, offering familial breast cancer screening services at the new Cancer Genetics Centre. In view of the swine flu epidemic in 2009, HKSH was the only private hospital providing molecular assays to support rapid swine flu screening at that time. It has actively participated in molecular pathological studies with the publication of about 20 academic papers so far.

The expanded Molecular Pathology Laboratory of HKSH is on a par with a university research laboratory in terms of scale. The new NGS marks a major step towards the ultimate goal of Personal Medical Genomic Profiling Services, extending our genomic capacity to the provision of tailored treatments, precise diagnosis and accurate disease risk stratification to our patients.

Dr. Walton Li, Medical Superintendent of HKSH said, “HKSH has always been at the forefront of advanced medical technology. With the introduction of the new NGS and our dedication to medical research, we endeavour to make our contribution to the medical industry and our patients with sophisticated genomic technology.”

Cancer Treatment：From Single-Gene Sequencing to Multi-Gene Sequencing

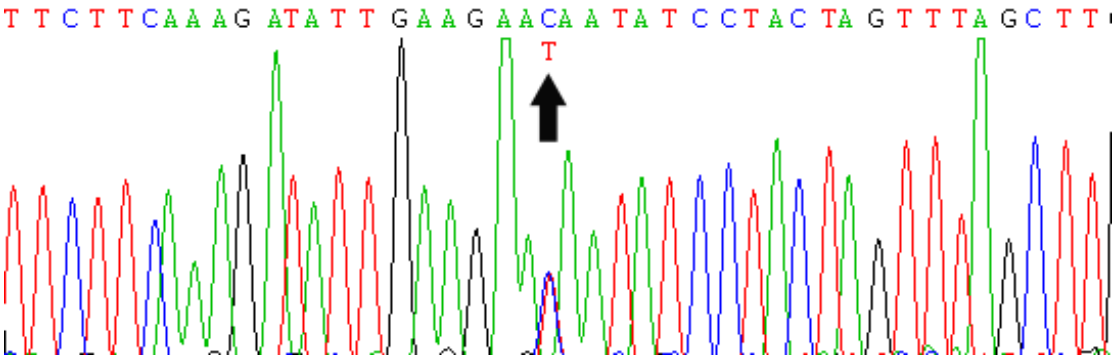
HKSH had its first sequencing platform, i.e. Sanger Sequencing, for gene sequencing and mutation detection in 2005. In the area of genetic biomarkers, just in 2010 gene sequencing was performed for over 1,000 cases as a means of mutation detection for purposes of prediction, prognosis and staging. Most cases were concerned with colorectal cancer, lung cancer, breast cancer and leukaemia:

- Mutations in Colorectal and Lung Cancer: EGFR, KRAS, BRAF
- Mutation in Breast Cancer: BRCA1, BRCA2
- Mutation in Acute Myeloid Leukaemia (A Type of Leukaemia): NPM1, FLT3, CEBPA, etc.

Throughput is limited in the conventional automatic gene analyzing systems, leading to time-and manpower-consuming procedures for the more complex multi-gene analysis. With NGS, massively parallel gene sequencing can now be performed to detect all mutations or abnormal sequences in one go within the same period of time. Apart from being cost-effective and efficient, NGS provides detailed information to doctors to formulate individual treatment plan, thereby reducing waiting time for treatment and relieving mental distress in cancer patients. Take breast cancer genetic screening as an example:

	Single-Gene Sequencing	NGS
Throughput	1 sample	48 Samples
No. of Genes	2 (BRCA1, BRCA2)	3 (BRCA1, BRCA2, p53)
Turn Around Time (including analysis)	4 Months	Approx. 1.5 month

The first founder mutation found in Hong Kong Southern Chinese by Hong Kong Sanatorium & Hospital[1]:



Genetic Disorders：Identifying Gene Mutation Carriers

HKSH has been performing Fluorescence in-situ Hybridization (FISH) studies for preimplantation aneuploidy screening in IVF cases since 2005. In-depth analyses can now be conducted in cases of muscular dystrophy, congenital heart disease and congenital eye disorders with NGS, as massively parallel gene sequencing allows the detection of all inherited gene mutations or abnormal sequences in one go. This helps couples to decide on pregnancy and weigh against the possible outcomes if either one is confirmed as the carrier of a specific mutated gene.

[1] Kwong A, L. P. Wong, C. H. N. Wong, F. B. F. Law, E. K. O. Ng, E. Tang, E. S. K. Ma, J. M. Ford. 2009. A BRCA2 founder mutation and 7 novel deleterious BRCA mutations in Southern Chinese women with breast and ovarian cancer. Breast Cancer Res Treat. 117:683-86.

Infectious Diseases：Tracking New Virus, Bacteria and Mutations

While Sanger sequencing is used to handle sequencing and mutation detection work, which is applicable to viral genotyping, tuberculosis drug resistance investigation, bacterial culture identification and HBV mutant detection, due to limitation in capacity, this conventional system fails to detect such new viruses and bacteria as flesh-eating bacteria and Escherichia coli, thereby affecting diagnosis and treatment. Not only can NGS detect all known viral types but it can also track down new viruses, bacteria and abnormal mutations. Moreover, NGS supports in-depth drug-resistance studies for AIDS patients undergoing cocktail therapy to effect a more meticulous formulation of treatment plan.

Dr. Edmond Ma, Director of Clinical Pathology and Molecular Pathology of HKSH said, “As the latest trend in medicine, genomic medicine is making huge breakthrough in research of cancers, genetic disorders and infectious diseases, broadening our understanding of wide-ranging mutations and introducing new cancer biomarkers. To a certain extent the new biomarkers allow better cancer prediction, prognosis and staging. In the benefit of patients, the Hospital looks forward to developing routine gene panel testing and expanding clinical applications of genomic medicine in diagnosis and treatment with NGS.”

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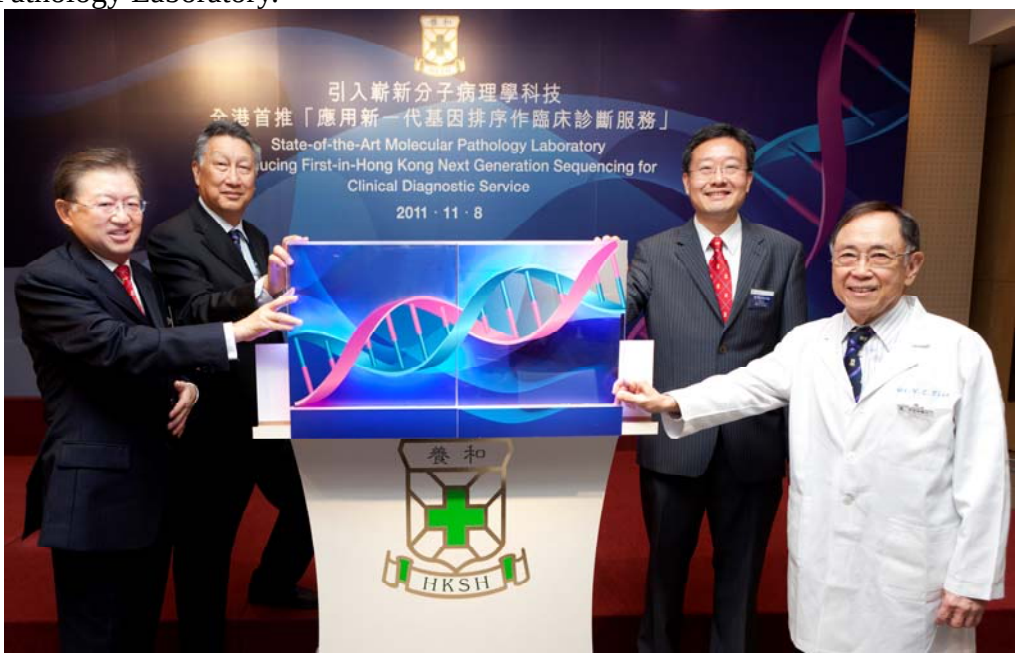
About Hong Kong Sanatorium & Hospital

Hong Kong Sanatorium & Hospital is one of the leading private hospitals in Hong Kong. With the motto “Quality in Service Excellence in Care”, the Hospital is committed to serving the public as well as promoting medical education and research.

Photos:

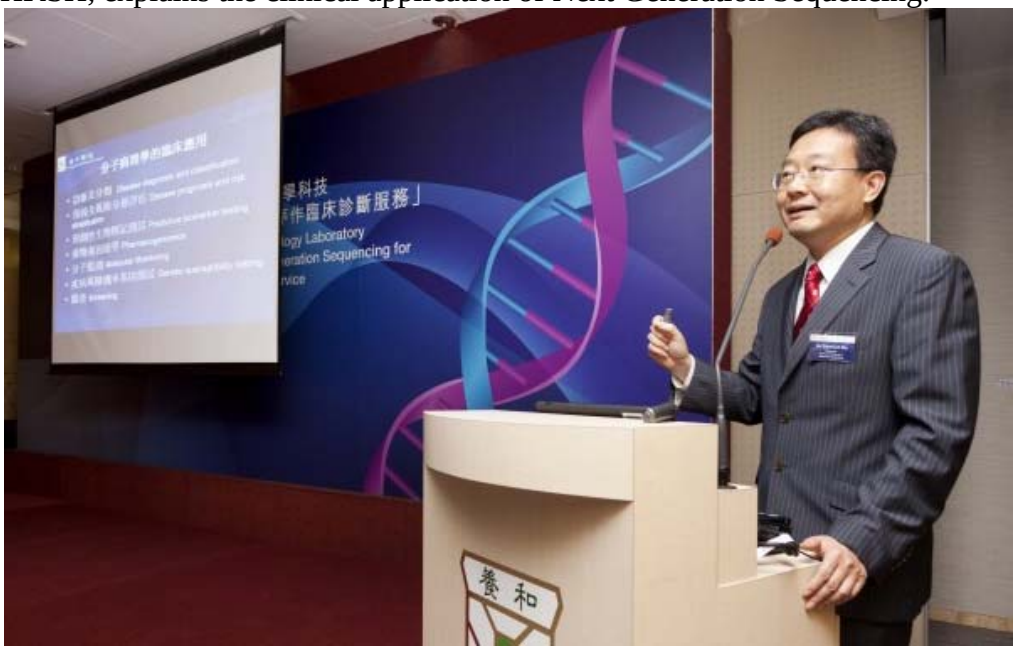
1. Dr. Walton Li, Medical Superintendent of HKSH, delivers welcome speech.

2. (From left) Dr. Walton Li, Medical Superintendent of HKSH, Mr. Wyman Li, Manager (Administration) of HKSH, Dr. Edmond Ma, Director of Clinical Pathology and Molecular Pathology of HKSH and Dr. Tsao Yen Chow, Deputy Medical Superintendent of HKSH and Director (Administrative Head) of the Department of Pathology officiate the opening of the expanded Molecular Pathology Laboratory.

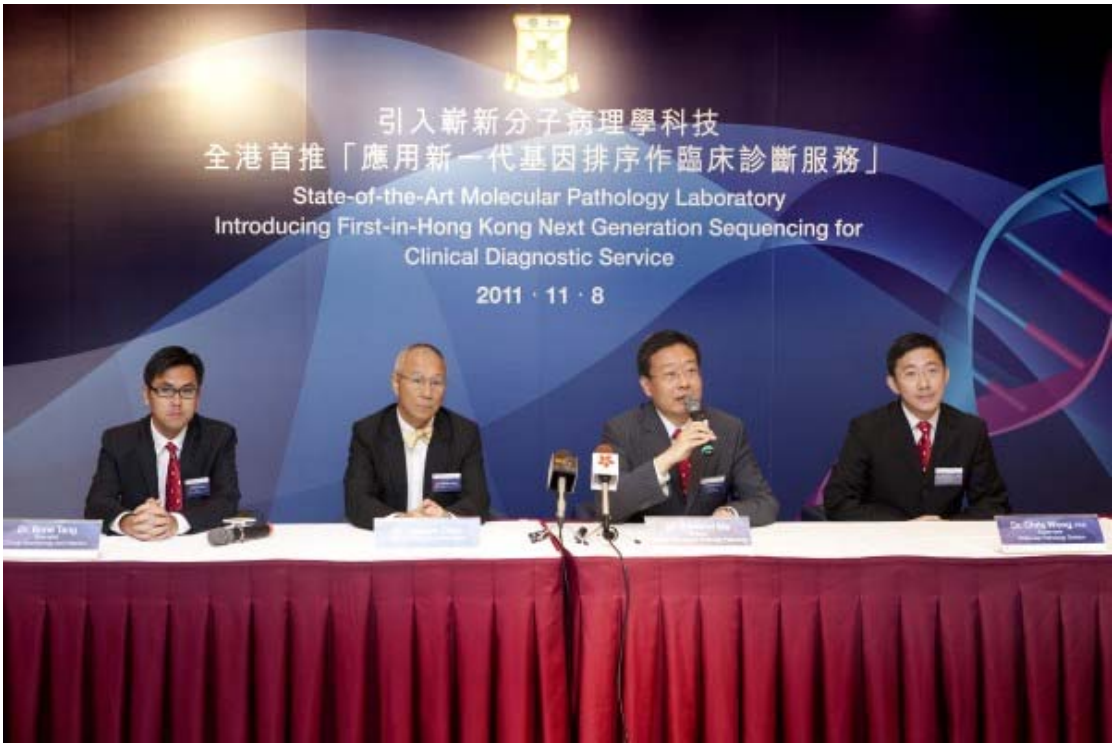


3. The Management of HKSH with Dr. Hanlee Ji (back row seventh from left) and Dr. Madhuri Hegde (front row second from left), both experts of genomic research from the United States.

4. Dr. Edmond Ma, Director of Clinical Pathology and Molecular Pathology of HKSH, explains the clinical application of Next Generation Sequencing.



5. (From left) Dr. Bone Tang, Specialist in Clinical Microbiology and Infection of HKSH, Dr. Joseph Chan, Deputy Medical Superintendent of HKSH, Dr. Edmond Ma, Director of Clinical Pathology and Molecular Pathology of HKSH and Dr. Chris Wong, Supervisor, Molecular Pathology Division at the Question and Answer session.



6. The two new Next Generation Sequencing systems at HKSH.

For media enquiry, please contact:
Carol Kwok
Department of Corporate Affairs, Hong Kong Sanatorium & Hospital
Tel：2835 7082 / 9262 4455 Email：carolkwok@hksh.com

Linda Poon
Department of Corporate Affairs, Hong Kong Sanatorium & Hospital
Tel：2835 7092 / 6339 9488 Email：lindapoon@hksh.com