

National Cancer Centre Singapore
Annual Report 2012

STRENGTH THROUGH COLLABORATION





National Cancer Centre Singapore

"I received excellent advice from breast and plastic surgeons and the anaesthesiologist, who gave well informed options on treatment and reassured with their wonderfully warm bedside manner. Nursing staff were equally cheerful, upbeat and worked round the clock to assure my well-being."

Ms Brenda Lim, 39 years old, a breast cancer survivor who underwent a skin sparing mastectomy with immediate reconstruction. She continues to live life to the fullest and has become a strong patient advocate in the fight against this condition.

With Asst Prof Ong Kong Wee, Senior Consultant,
Department of Surgical Oncology



National Cancer Centre Singapore (NCCS) believes in strength through clinical service, research, and education in the consistent pursuit for knowledge and capabilities. FY 2012 was the year of research advancements in NCCS.

Three of our clinician-scientists have won the prestigious merit awards at the American Society of Clinical Oncology Annual Meeting this year. This is a first for NCCS where three of our staff won the awards at the same scientific meeting. Their achievements corroborate the high standards that we set for our research work.

Three of our senior clinicians also won Clinician Scientist Individual Research Grants (CS-IRG), another two were awarded the Clinician Scientist Investigator Award, and a Principal Investigator won two Cooperative Basic Research Grants (CBRG). These multi-million dollar grants testify to the strong research culture and milieu in NCCS, of the tight integration between clinical practice and basic research, made possible only through the co-location of clinicians, researchers, and laboratories within the NCCS building.

The NCCS also stepped up translational research collaborations across institutions, of which two notable ones were the newly established Integrated Translational Oncology Network set up with Bayer Healthcare and five other research institutions for the development towards novel therapies for Asian prevalent cancers; and a master research collaboration agreement signed between SingHealth and Sirtex Medical Ltd which will see researchers from NCCS and Singapore General Hospital (SGH) explore the use of Carbon Cage Nanoparticles to target specific cancers such as ovarian and gastro-intestinal carcinomas.

On the clinical front, we re-organised our Specialist Oncology Clinics to introduce a new system which will benefit patients by cutting back on their waiting time to see the doctor. To better utilise our strength in doctors sub-specialising on various cancer types, our specialists were assigned to clinics according to their sub-specialty by tumour types. This means the oncologists need not shuttle from one clinic to another to see their patients, reducing wait time for patients. The new process will also see better utilisation of our nursing support staff.

We also crossed a significant milestone in NCCS' development when we announced that NCCS would be setting up a Proton Therapy Centre within its new building in the SGH Campus in 2018. This will make NCCS and Singapore the first to offer proton therapy in Southeast Asia.

In preparation for the expansion of NCCS in 2018, more clinical and research staff will be coming on board and we will be looking forward to train and raise their competency towards quality cancer care for our patients.

Prof Soo Khee Chee
Director, National Cancer Centre Singapore
Deputy Group CEO, Research & Education, SingHealth

A Leading Regional Centre for Cancer

National Cancer Centre Singapore (NCCS) has grown over the years to become home to the largest number of researchers, surgeons and oncologists attending to a rising number of cancer patients in the region. NCCS has made rapid advances in the research and treatment of cancer over the past year to improve patients' lives.

Patient Care

ADVANCED TREATMENT FOR CANCER

NCCS will be the first in Southeast Asia to offer proton therapy, an advanced treatment for cancer. It will be available at NCCS' new building which is slated to be ready in 2018. This mode of treatment reduces unwanted side effects on patients, especially in children, and produces better treatment outcomes for some cancer types.

NCCS Director, Prof Soo Khee Chee said: "This is a major milestone for Singapore as proton beam therapy is the cutting edge of radiation treatment. It can be used to treat

recurrent cancers that standard x-ray radiation therapy may not be able to."

In addition, the risk of secondary cancers from childhood radiotherapy is 3 to 5 per cent, but it is estimated that this risk will be reduced significantly with proton therapy.

As a national referral centre, NCCS is exploring collaborations with other cancer institutions in Singapore to promote the use of proton treatment. Besides benefiting patients in the local community, the availability of such cutting-edge treatment will give Singapore an edge as a regional medical hub.

POSITIVE RADIATION

NCCS introduced Intra-Operative Radiotherapy (IORT), a new technique used during breast conserving surgery (BCS) that helps to reduce the side effects and length of treatment for early-stage breast cancer patients.

Asst Prof Ong Kong Wee, Senior Consultant, Department of Surgical Oncology, and Dr Wong Fuh Yong, Consultant, Department of Radiation Oncology, performed the first case in June 2012. Seventeen patients have been treated successfully since then.

Although not all patients may be suitable for the procedure and eligibility will depend on several factors, such as how aggressive the cancer is, studies conducted in this area will pave a new way for cancer patients to be treated more efficiently. NCCS is continuing clinical trials with the aim of expanding the use of IORT on more breast cancer patients.



Proton therapy machine will be available at the NCCS new building, which is slated to open in 2018.

Image source: www.oncolink.org

LISTENING TO PATIENTS' NEEDS

Patients typically receive care from nurses and doctors when they are in their wards. With the introduction of the 'Quality of Life' (QOL) team, comprising allied health professionals such as speech therapists, dietitians, physiotherapists, clinical psychologists, wound care nurses and medical social workers, patients will receive much more holistic care for a smoother recovery.

First initiated by the Head and Neck Service for inpatients in Singapore General Hospital (SGH),

the QOL team at NCCS joins doctors and nurses on their ward rounds to listen to the needs of patients and offers input and expertise where appropriate.

"We believe that integrating auxiliary care teams into regular clinical rounds will ensure best treatment outcomes for our patients," said Asst Prof Tan Hiang Khoo, Senior Consultant, Department of Surgical Oncology.

Mrs Tan Yee Pin, Manager, Department of Psychosocial Oncology,

who is a member of the QOL team, said: "Information sharing from other disciplines helps us better understand the various aspects of the patient's condition so we can provide more targeted treatments. This can bring about positive impact on the patient's well-being."



Education

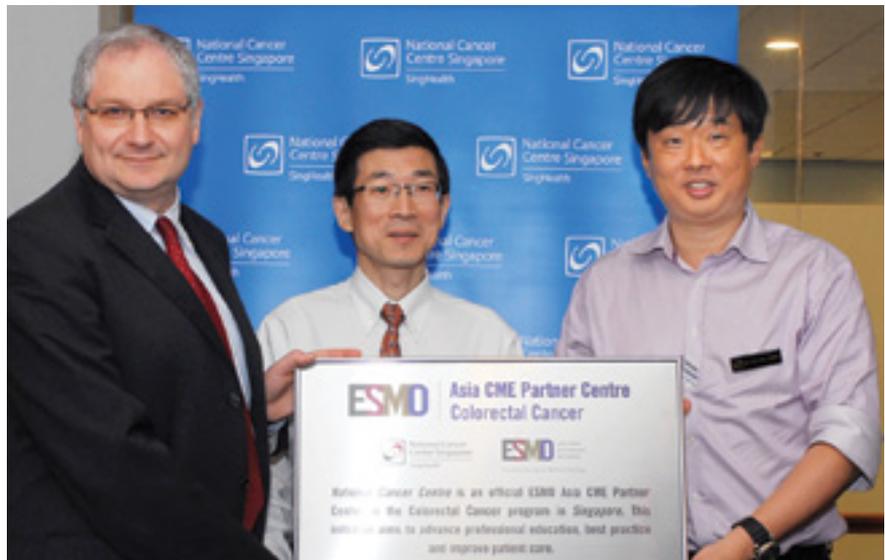
EXCELLENCE IN COLORECTAL CANCER EDUCATION

NCCS has been accorded the status of a 'Centre of Excellence in Colorectal Cancer' by the European Society for Medical Oncology (ESMO), a leading professional organisation committed to advancing the specialty of medical oncology and promoting a multidisciplinary approach to cancer treatment and care.

This allows greater sharing of knowledge by NCCS and ESMO with other partner cancer institutions to enhance the development of oncology practitioners and ultimately achieve more effective treatments and multidisciplinary care for cancer patients.

Assoc Prof Toh Han Chong, Head and Senior Consultant, Department of Medical Oncology, is NCCS' representative for the programme. He will sit on the Asia Scientific Committee which is responsible for imparting expertise on planning and implementing the programme.

Dr Iain Tan, Associate Consultant, Department of Medical Oncology, who was appointed to take charge of planning the scientific programme for the partnership, said: "Regardless of our individual sub-specialty,



From right: Assoc Prof Toh Han Chong and Assoc Prof Koo Wen Hsin, Deputy Director and Senior Consultant, Department of Medical Oncology, with Prof Fortunato Ciardiello, President, ESMO.

an optimal patient-centred cancer management is our common goal. At NCCS, our disciplines thrive and work together for the best outcomes for our patients."

IN PURSUIT OF KNOWLEDGE AND PROGRESS

More than 40 speakers and participants from restructured hospitals and the private healthcare sector attended the Liver Cancer Awareness Month (LiCAM) Scientific Forum on management of hepatocellular carcinoma (HCC),

followed by a post-graduate course in HCC.

The forum, which touched on pertinent issues and insights on liver cancer, were highly interactive and generated amiable debates. Assoc Prof Thng Choon Hua, Deputy Head, Department of Oncologic Imaging, said: "This is an important forum for surgical trainees to learn relevant knowledge outside of surgery. It shows them the value that other disciplines bring to the total care of the patient, ultimately to the patient's benefit."

A TIMELY BOOST FOR SURGICAL ONCOLOGY

NCCS continues to augment its status as a leading regional centre for the training of medical and surgical oncology. With the support of BNP Paribas and the BNP Paribas Foundation, BNP Paribas fellowships were offered to doctors from Vietnam for post-graduate training in the various fields of oncology at NCCS.

Four doctors from Vietnam have undergone this training since 2009. To further reach out to doctors in the region, BNP Paribas and NCCS jointly organised the first NCCS Surgical Oncology Conference in May 2012. About 100 surgical oncologists, experts and allied health professionals from Singapore and regional cancer institutions and hospitals attended the conference. The event focused on the evolving role of surgery in the rapidly changing modalities of treatment, particularly for cancers common in the region.

Asst Prof Tan Hiang Khoon, the conference organising chairman, hopes that such meetings can be



The NCCS Surgical Oncology Conference held at NCCS saw a turnout of about 100 surgical oncologists, experts and allied health professionals.

held on a regular basis. He said: "The objective of the Conference stems from our desire to alleviate the sufferings of patients who are afflicted with cancer. The best way to do this is to train as many doctors as possible so that they can go back and treat their

local community. It is even better if they can train their colleagues because the multiplier effect on the community will be even greater."



Research

PARTNERSHIPS IN RESEARCH

In January 2013, the Integrated Translational Oncology Network was introduced. Supported by the Economic Development Board (EDB), this research partnership between Bayer HealthCare and five research institutions aims to facilitate the fight against the growth of cancer in the Asia Pacific.

Partners will develop and evaluate novel treatment options for prevalent cancers in collaborative projects and trials. In addition, they will organise joint activities, such as annual meetings, workshops and lectures for regional centres' participation.

As representatives, Prof Huynh The Hung, Principal Investigator,



Laboratory of Molecular Endocrinology, and Dr Daniel Tan, Consultant, Department of Medical Oncology, will aid in the development of this Network.

One of the projects underway at NCCS is the development of in vivo models to identify key markers and pathways that can lead to more targeted treatments for patients.

The Integrated Translational Oncology Network is a partnership between Bayer HealthCare and five research institutions.



Dr Iain Tan

Where Goals and Inspiration Meet

A double winner of awards from the American Society of Clinical Oncology (ASCO), Dr Iain Tan has built a strong reputation in the area of research for stomach cancer, the second leading cause of cancer deaths worldwide.

A leading colorectal cancer and gastrointestinal stromal cancer research scientist, Dr Iain Tan, Associate Consultant, Department of Medical Oncology, has contributed much to the advancement of cancer care in Singapore. His research on personalised medicine for the treatment of stomach cancer won him ASCO's Young Investigator Award in 2010 and a Merit Award in 2011.

In addition to his primary appointment at NCCS, Dr Tan is also

a clinician scientist at the Genome Institute of Singapore, A*STAR. With the opportunity to work with researchers from some of the world's most reputable institutions, Dr Tan believes multidisciplinary and cross-institutional collaborations hold the key to uncover even more discoveries that will lead to dramatic improvements in patient outcomes.

"Because cross-talk seeds ideas and engenders new ways of approaching questions, it removes previous perceived barriers. As a result, creativity blossoms and paradigm shifts in thinking are cultivated, and that can lead to major advances," said Dr Tan. Ultimately, he hopes his research efforts will enable doctors to select the most

appropriate and beneficial drugs for individual patients.

Looking to the future, Dr Tan and his team will conduct in-depth research on developing better non-invasive methods for early detection of recurrent cancers as well as tracking and monitoring disease burdens in cancer patients. The research will focus on the two main hurdles in preventing the cure of cancer – the spread of cancer (metastasis) and its escape from treatment (drug resistance) as well as immune surveillance by our immune system and the repair of DNA damage by our DNA repair system – the two key reasons why most people do not have cancer.

TARGETING HARD-TO-TREAT CANCERS

Following a new research collaboration master agreement signed between SingHealth and Sirtex Medical Ltd, researchers from NCCS and SGH will explore the use of Carbon Cage Nanoparticles, bringing new hope for treating hard-to-treat cancers.

Developed by the Australian National University, Carbon Cage Nanoparticles can safely deliver radioactive substances to specific cancer sites located deep within the

body and may even evade detection by patients' immune systems, helping them to target specific cancers. Under this collaboration, researchers will study how cancers like ovarian and gastro-intestinal cancers will benefit from this treatment approach.

"Collaborations with industry partners, such as Sirtex, provide new, cutting-edge technologies that allow us to offer our patients faster and better treatment options," said Prof Soo Khee Chee.



From left: Mr Kevin Lai, Director, Biomedical Sciences, EDB, Prof Ross Stephens, Research School of Physics & Engineering, Australian National University, Ms Enny Kiesworo, Director, Office of Research, SingHealth, Prof Soo Khee Chee, Mr Gilman Wong, CEO, Sirtex, Dr Steve Jones, Global Head of Research & Development, Sirtex.

A CLOSER LOOK AT THE DOMINANT-NEGATIVE EFFECT

A five-year-long research study by NCCS researchers led to the discovery that the dominant-negative (DN) effect of mutant p53 gene in cancers affects the outcome of cancer treatment modalities.

There are currently no drugs or compounds that can alleviate DN effects of mutant p53. The research finding is significant as it offers hope to improve cancer treatment outcomes by selectively inhibiting mutant p53's DN effect.

The team of researchers, led by Prof Kanaga Sabapathy, Principal Investigator, Laboratory of Carcinogenesis, and Head, Division of Cellular & Molecular Research, is conducting further in-depth analysis to determine the possibility of targeting mutant p53 without affecting wild-type p53 in human cells, laying the first stone for clinical trials in the future to test its efficacy on cancer therapeutic response.



Our People

MAKING NCCS PROUD

For the first time, NCCS won three awards at the prestigious 2013 American Society of Cancer Oncology (ASCO) meeting. Dr Joanne Ngeow, Consultant, Department of Medical Oncology, Dr Tira Tan, Registrar, Department of Medical Oncology, and Dr Melvin Chua, Registrar, Department of Radiation Oncology, each received a Merit Award for their research projects.

Additionally, Dr Joanne Ngeow was also awarded a National Medical Research Council Fellowship to pursue subspecialty training in cancer genetics at the Genomic Medicine Institute (GMI) at the Cleveland Clinic, Ohio, USA.

PUBLISHING QUALITY RESEARCH

The annual SingHealth Publish! Award lauds the achievements of researchers who have published good research articles in internationally-acclaimed and peer-reviewed scientific or medical journals.

One of these outstanding researchers is Dr Iain Tan, whose article on 'Intrinsic subtypes of gastric cancer, based on gene expression pattern, predict survival and respond differently to chemotherapy' was published in *Gastroenterology*. Another award recipient, Dr Ang Mei Kim, Consultant, Department of Medical Oncology, had her article 'High XRCC1 protein expression is associated with poorer survival in

patients with head and neck squamous cell carcinoma' published in *Clinical Cancer Research*.

Asst Prof Narayanan Gopalakrishna Iyer, Senior Consultant, Department of Surgical Oncology, was recognised for his article 'Incidence and significance of Delphian node metastasis in papillary thyroid cancer', which was published in *Annals of Surgery*.



Community Engagement

BE CANCERWISE

To raise cancer awareness and empower the public with the knowledge and skills to help themselves and their loved ones cope with the disease, NCCS conducted a total of eight public forums, eight Cancerwise workshops and nine health talks. These public education channels are part of NCCS' efforts to provide holistic care to patients.

WALK THE TALK

The organising committee for the 5th LiCAM made a move away from the usual public forums and exhibitions to give the campaign a fresh spin. A walkathon was launched to reinforce the message of healthy living and prevention of liver cancer.

Themed 'Healthy Living for a Healthy Liver', the walkathon held in August 2012 attracted more than 300 participants, including cancer survivors and supporters. The event was sponsored by Bayer Healthcare and supported by the Singapore Sports Council.

The global trend of 'fatty liver', which is becoming an increasingly attributive cause of liver cancer, was one of the key focuses of the campaign. Two medical seminars were among the activities organised to create greater awareness of the disease.

300

The number of participants, including cancer survivors and supporters, that participated in the 'Healthy Living for a Healthy Liver' walkathon.



The LiCAM walkathon attracted more than 300 participants, including cancer survivors and supporters.



RUN FOR HOPE

This year's Run for Hope raised more than S\$440,000, and saw the largest turnout ever with 10,000 participants. The annual charity run aims to strengthen local research capabilities and accelerate the speed of research, all for the benefit of patients. In the last five years, more than S\$20 million have gone to fund more than 60 cancer research projects at NCCS.

Graced by Minister for Health Gan Kim Yong, who also took part in the 3.5 km run, the event saw over 300 student volunteers from Temasek and Republic Polytechnics helping out in various aspects of the race.



Run for Hope 2012 raised more than

S\$440,000

Top left and Bottom left: The event, graced by Minister Gan Kim Yong, saw more than 10 senior management executives from SingHealth and established corporations stepping up to Run for Hope's new Executive Challenge.

PAINTING THE SKY PINK

The Breast Cancer Awareness Month (BCAM) drew to a close with an outdoor kite cum picnic event at Marina Barrage in November 2012. Drawing inspiration from the kite as a symbol of freedom and emancipation, the event was themed 'Let's Go Fly Kite!'

Further elaborating on the theme, Assoc Prof Ho Gay Hui, Senior Consultant, Department of Surgical Oncology, said: "Kite flying is a symbolic gesture for the cancer survivors to show that they are free from cancer and the sky is the limit so long as they are determined to fight the disease. For the others taking part, they will be showing solidarity with their loved ones, united as one, just like the single string that holds the kite aloft."



Participants of 'Let's Go Fly Kite!' had their share of fun at Marina Barrage.

Key Figures

National Cancer Centre Singapore

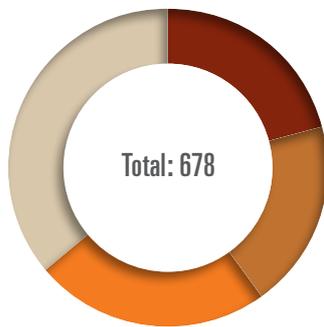
Year ended 31 Mar 2013

Year ended 31 Mar 2012

Workload per annum

Day Surgeries	9,938	10,208
Specialist Outpatient Clinic Attendances	135,076	131,408

Staffing (as at 31 Mar 2013)



	Year ended 31 Mar 2013	Year ended 31 Mar 2012
Total	678	634
● Doctors	143	135
● Nurses	130	130
● Allied Health Professionals	161	149
● Others	245	220

Note: Staffing figures refer to Filled Posts, in terms of Full-Time Equivalent, and may not add up to total due to rounding.

Awards & Accolades

PATIENT CARE

National Day Award 2012 Efficiency Medal

- Connie Ong

GCEO Excellence Awards 2013

Outstanding Clinician

- Dr Joseph Wee

Outstanding Nurse

- Connie Ong

Outstanding Allied Health Professional

- Chang Yok Ying

Outstanding Ancillary Professional

- Jennifer Chin

Outstanding Administrative Staff

- Lorraine Yip

NCCS C.A.R.E. Excellence Award 2012

- Ricky Ang Seng Kok
- Simon Chen Chern Jian
- Lim Lay Hong
- Rosnani Bte Abdullah
- Sin Sze Yarn
- Dr Terence Tan Wee Kiat
- Wilson Tan Wee Seng

Tan Chin Tuan Nursing Award

Certificate of Merit

- Vimalavathy d/o D.N.

Singapore Health Quality Service Award 2013

Star Award

- Wilson Tan Wee Seng
- Salamah Bte Ahmad

Gold Award

- Jane Guo Lifeng
- Jocelyn Bibit Ortencio
- Ling Bee Chuan
- Nerissa Ramirez Lontoc
- Xiao Yu Lian

Silver Award

- Bennelyn Jhen Algarja Alomia
- Ivy Chan Yin Ling
- Simon Chen Chern Jian
- Chew Yung Hwui
- Hong Yanqi
- Imelda Peralta Lopez
- Sarah Khong Hui Lin
- Suzanne Koh Poh Geok
- Brenda Lee Ann Jee
- Sharon Lek Seow Kia
- Andy Lin Yufeng
- Joshua Loh Mingquan
- Marnelli Ycoy Dunton
- Gloria Ong May May
- Pan Chai Pan
- Sheetha Sinnathamby
- Sin Sze Yarn
- Kym Sor Chai Kam
- Krystle Tang Huey Weng
- Richard Tay Lee Keat
- Teo Lay Cheng
- Teo Lay Choo
- Wong Zhixiong
- Pauline Wong Kwai Ying

RESEARCH

SingHealth Excellence Award Distinguished Researcher Award

- Prof Kanaga Sabapathy

SingHealth *Publish!* Award Outstanding Award

- Dr Iain Tan Bee Huat

Medical Research Award

- Dr Ang Mei Kim
- Asst Prof Narayanan Gopalakrishna Iyer

NMRC Clinician Scientist Award 2012

- Dr Darren Lim
- Asst Prof Narayanan Gopalakrishna Iyer

2012 Illumina Asia Pacific Scientific Summit Poster Presentation – 2nd prize

- Dr Ong Choon Kiat

GEC-ESTRO Congress of Brachytherapy Travel Grant

- Dr Jeffery Tuan

Travel Fellowship by PTCOG51, South Korea

- Dr Jeffery Tuan

12th Annual Congress of the European Society for Photodynamic Therapy, Best Poster Award – 3rd prize

- Dr Patricia S. P. Thong

Society for Experimental Biology and Medicine 2012 International Prize (Asia)

- Dr Maurice Chan

Singapore Science and Engineering Fair 2012 – Silver Award

- Geraldine Chia Wan Ni
- Ng Gee Ling
- Victoria Tay Kai Lin

International Society for Cell and Gene Therapy – Poster Award Prize

- Dr Ivy Ho



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