

**9 BREAKTHROUGHS**

**Cancer Survivorship Programme**  
Cancer Patients Can Now Visit  
Primary Care Doctors for  
Follow-up Care

**11 DISCOVERIES**

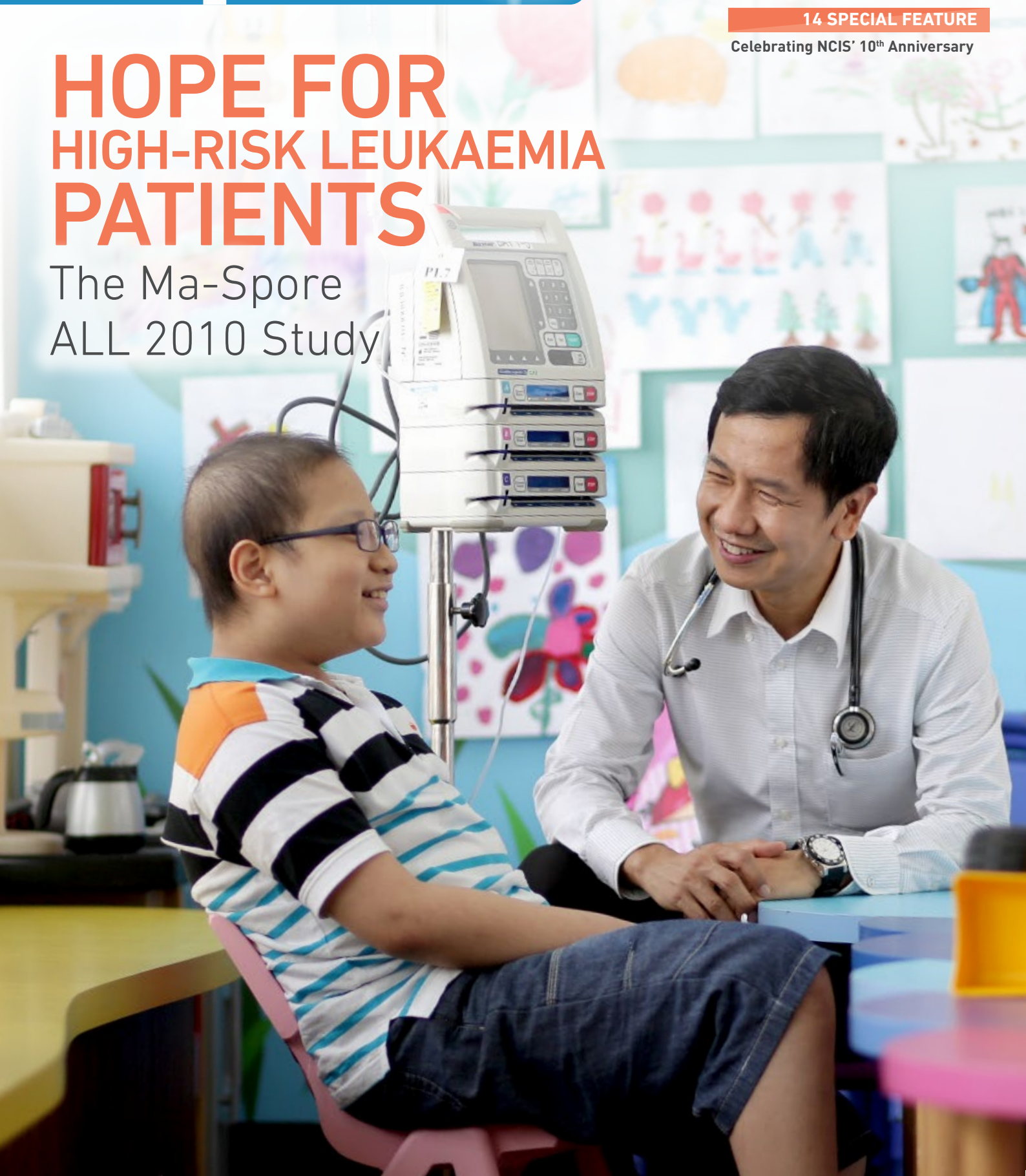
**Revolutionising Cancer Care With  
Precision Medicine**

**14 SPECIAL FEATURE**

**Celebrating NCIS' 10<sup>th</sup> Anniversary**

# HOPE FOR HIGH-RISK LEUKAEMIA PATIENTS

The Ma-Spore  
ALL 2010 Study



**SPARK by NCIS** is published biannually by the National University Cancer Institute, Singapore (NCIS).  
5 Lower Kent Ridge Road,  
Singapore 119074


Please address comments to  
[ncis\\_comms@nuhs.edu.sg](mailto:ncis_comms@nuhs.edu.sg)

Chief Medical Advisor  
**Professor Chng Wee Joo**

Chief Medical Editor  
**Dr Chee Cheng Ean**


Editorial Team  
**Dr David Tan**  
**Dr Glenn Bonney**  
**Dr Tan Chuan Chien**  
**Dr Yong Woon Chai**  
**SSN Lim Hui Li**  
**NCIS Corporate Communications**  
• Sylvia Fong  
• Mabel Tang

Publishing Agency  
**Artnexus Design Pte Ltd**

 (65) 6773 7888

 [CancerApptLine@nuhs.edu.sg](mailto:CancerApptLine@nuhs.edu.sg)

 [www.ncis.com.sg](http://www.ncis.com.sg)

 [www.facebook.com/  
NationalUniversityCancer  
InstituteSingapore](https://www.facebook.com/NationalUniversityCancerInstituteSingapore)

 [www.youtube.com/NCISNUHS](https://www.youtube.com/NCISNUHS)

Copyright © is held by the publishers. All rights reserved. Reproduction in whole or in parts without permission is strictly not allowed.

MCI (P) 093/04/2018

Opinions expressed in SPARK by NCIS are solely those of the writers and are not necessarily endorsed by the NUH, NUHS and their related companies. They are not responsible or liable in any way for the contents of the advertisements, articles, photographs or illustrations contained in this publication. Contents are not to be reproduced without the written permission of the NCIS.

## IN THIS ISSUE

### EDITOR'S NOTE

**3** Happy New Year!

### FEATURE STORY

**4** Hope for High-Risk  
Leukaemia Patients



### BREAKTHROUGHS

**6** Improving Prostate Cancer Care  
With Biomarkers, MRI, PET and  
Robots

**9** Cancer Survivorship  
Programme



### DISCOVERIES

**11** Revolutionising Cancer Care  
With Precision Medicine

### SPECIAL FEATURE

**14** Celebrating NCIS'  
10<sup>th</sup> Anniversary

### CSI SHOWCASE

**17** Lung Cancer Research  
Lipid Metabolic Pathway

### EDUCATION

**18** The Developmental  
Therapeutics Unit  
Yong Siew Yoon Fellowship  
Programme @ NCIS

### PERSONALITY FEATURE

**19** A Day in the Life of a Clinical  
Research Coordinator



### SPOTLIGHT

**20** NCIS Highlights  
(Aug - Dec 2018)



### SUPPLEMENTS

**21** Awards

**22** Doctors' Promotions

**23** Specialist and Tumour  
Group Listing

### PUBLICATIONS

**25** Research Publications by the  
NCIS (Aug - Nov 2018)

### UPCOMING EVENTS

**31** NCIS Events & Programmes  
(Jan - Jun 2019)



***“I am sure that 2019 will be busier than ever for all of us here at NCIS as we continue to push the boundaries in patient care, research and education. Here’s to good health to all of you and your families! “***

**H**appy New Year and welcome to the 6<sup>th</sup> issue of SPARK! 2018 was a busy year for the National University Cancer Institute, Singapore (NCIS) as we celebrated our 10<sup>th</sup> anniversary. Read more about our achievements and celebratory events in the Special Feature section of this issue (pages 14 to 16).

To kick off 2019, we feature the outstanding achievement of our paediatric oncology colleagues with the publication of their practice-changing clinical trial, the Ma-Spore ALL 2010 study. The study showed that by intensifying chemotherapy in children with acute lymphoblastic leukemia (ALL), cure rates in high-risk cases are improved. In the Discoveries section, we highlight our various efforts in precision medicine using platforms from tumour genomic profiling to artificial intelligence, to find the right drug for the right cancer patient. We also hear from our surgical oncology colleagues on the new technologies used in prostate cancer care at NCIS and updates from our colleagues at the Cancer Science Institute of Singapore (CSI) in lung cancer research.

At NCIS, clinical trials remain at the forefront of research and with the Yong Siew Yoon (YSY) Fellowship Programme @ NCIS, we are able to train young oncologists in developmental therapeutics (see Education section). Apart from

our trainees, a key member of the clinical trials team is the clinical trial coordinator. Our Personality Feature section goes behind the scenes for a day in the life of a clinical trial coordinator and have a glimpse of how critical their role is in ensuring smooth operation of our trials at NCIS, and their tireless efforts in guiding the patient through their journey.

Lastly in this issue, we look at cancer survivorship, an emerging area in oncology in Singapore. By definition, cancer survivorship starts from the time a person is diagnosed with cancer until the end of life. With this in mind, NCIS launched a new cancer survivorship programme in July 2018 where selected breast and colorectal cancer patients can now choose to have their follow-up care with a primary care doctor closer to home. More information about this exciting programme can be obtained in the Breakthroughs section (pages 9 to 10).

I am sure that 2019 will be busier than ever for all of us here at NCIS as we continue to push the boundaries in patient care, research and education. Here’s to good health to all of you and your families!

**Dr Chee Cheng Ean**

Consultant  
Chief Medical Editor



# HOPE FOR HIGH-RISK LEUKAEMIA PATIENTS

The Ma-Spore ALL 2010 Study

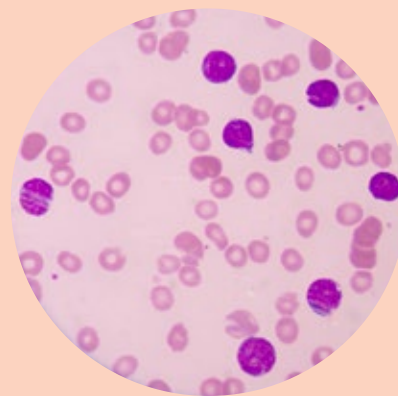
*With intensified chemotherapy treatment, children with high-risk leukaemia have a higher cure rate and a lower relapse rate.*

**A**cute lymphoblastic leukemia (ALL) is the most common form of childhood cancer and in Singapore it affects three out of every 10 children who are diagnosed annually. It is a type of blood cancer which occurs when an abnormal bone marrow cell continues to grow and produce uncontrollably. In Singapore, the current cure rates for children with ALL stands at 88 per cent, while the worldwide figure ranges from 50 to 85 per cent.

## ALL and the Ikaros gene

The Ikaros gene allows normal cells to mature into functional cells. About 20 per cent of children with ALL lose the Ikaros gene in their leukaemia cells, which do not mature. This development is called the Ikaros deletion and results in leukaemia cells that are stuck in an immature and constantly growing state.

The Ikaros deletion confers a significantly worse outcome for ALL patients. Specifically, children with Ikaros deletion had a 30 per cent chance of relapse compared to 13 per cent for those who did not have Ikaros deletion.



## New treatment protocol with latest findings

In a joint eight-year study involving 346 patients across four hospitals, a team of researchers from Singapore and Malaysia has managed to raise cure rates for a subgroup of ALL patients with Ikaros deletion from 70 per cent to more than 91 per cent and reduced relapse rates from 30 per cent to 13 per cent.

Three leading doctors in the team, Associate Professor Allen Yeoh of the Department of Paediatrics at the National University of Singapore Yong Loo Lin School of Medicine, Associate Professor Tan Ah Moy of the KK Women's and Children's Hospital and Professor Hany Ariffin, head of the Paediatric Haematology-Oncology and Bone Marrow Transplantation Unit of the University of Malaya, studied the peculiarities of these children's leukaemia and developed a successful new treatment protocol. The study is the first in the world to show that intensifying therapy for Ikaros gene-deleted children with ALL reduces relapse and improves treatment outcome. It also explored critical treatment issues in cost-effective therapy important in Singapore and Malaysia, including that of Asian sensitivity to chemotherapy drugs. Their findings contribute important knowledge to the field and have made a significant impact on how doctors treat ALL in children.

The study, named the Malaysia-Singapore (Ma-Spore) ALL 2010 is a collaboration between four hospitals in Singapore and Malaysia – the National University Hospital, KK Women's and Children's Hospital, University of Malaya Medical Centre and Sime Darby Medical Centre in Subang Jaya. It was actually built on an earlier study in 2003 which revealed that reducing chemotherapy for paediatric ALL patients led to better outcomes. However, the team felt that better solutions were still needed for children with high-risk disease and this resulted in the findings of the current study.

"Ma-Spore success is possible because of our unique collaboration, bringing together the many leaders in childhood ALL therapy in Singapore and Malaysia to

focus on unique gaps, funded both by government and charity," said Associate Professor Yeoh who is also Head and Senior Consultant at the Division of Paediatric Haematology-Oncology at NCIS and the National University Hospital (NUH).

## Beyond Ma-Spore ALL 2010

With the success of Ma-Spore ALL 2010, the team has embarked on the design of a new study, Ma-Spore ALL 2020. To optimise treatment outcomes, it will explore further treatment tailoring for children who are predicted to have poorer outcomes and use immunotherapy upfront as they are already at the limits of chemotherapy.

"The ultimate aim is a cure. With better tools to study leukaemia cells and better ways to treat high risk cases, we will be able to identify those who will relapse early, so that we can intervene and cure them." said Associate Professor Yeoh.

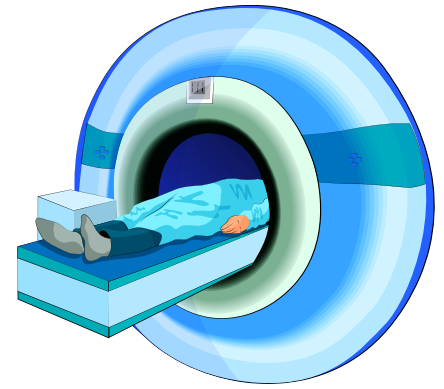


### Associate Professor Allen Yeoh

Head & Senior Consultant  
Division of Paediatric  
Haematology-Oncology, NCIS

Associate Professor Allen Yeoh is the Head and Senior Consultant in the Division of Paediatric Haematology-Oncology of NCIS and NUH, as well as VIVA-Goh Foundation Associate Professor in Paediatric Oncology in the Yong Loo Lin School of Medicine, NUS. He was trained in NUS and NUH and was in the St Jude Children's Research Hospital as a Clinical Fellow from 1999 to 2001. His interest lies in childhood leukaemia and he is the first Singaporean doctor to receive the American Society of Haematology Merit Award for his pioneering work in gene expression profiling in leukaemia. Much of this work was funded by the VIVA, Goh, Lee and Children's Cancer Foundations, Tote Board and the National Medical Research Council. It was one of the highest cited article in this field in 2003.

# IMPROVING PROSTATE CANCER CARE WITH BIOMARKERS, MRI, PET AND ROBOTS



Using New Technologies To Give Optimal Prostate Cancer Care

**Advanced Diagnostics**

- p2PSA/PHI
- Multiparametric MRI
- Robotic Assisted MRI Guided Prostate Biopsy
- PMSA PET CT Scan

**Therapeutics**

- Robotic Assisted Radical Prostatectomy

There has been an explosion of new knowledge and technology in the field of prostate cancer diagnostics and therapy. Here we highlight the advances in the field that we have adopted at NCIS.

**Challenges of the traditional approach to prostate cancer detection**

The current approach to prostate cancer (PCa) detection is based on transrectal ultrasound guided biopsy (TRUSB) after a suspicious prostate examination or raised prostate specific antigen (PSA) levels. This approach unfortunately is fraught with diagnostic uncertainty.

PSA is not prostate cancer specific. It has a poor specificity for detecting PCa as there are other reasons for a high PSA reading. For most men with a high PSA level, a biopsy will detect prostate cancer 25 per cent of the time, for the rest, the biopsy will be negative. This results in unnecessary biopsies in up to 75 per cent of men, with the attendant unnecessary cost, anxiety and possible morbidity. Prostate tumours do not appear on ultrasound. Thus, TRUSB is essentially a “blind” systematic sampling of the prostate, resulting in false negative biopsies (up to 30 per cent) from undersampling or misrepresentation of small low grade lesions as significant cancers. This compounds the problem of the poor specificity of PSA.

These two issues result in a significant rate of overdiagnosis and consequently overtreatment of indolent cancers, yet frustratingly, on the other hand, the risk of underdiagnosis and undertreatment of clinically significant cancers still persists.

At NCIS, we use advanced PCa diagnostics to minimise these problems of overdetection and overtreatment of insignificant PCa.

**Advances in prostate cancer biomarkers – the p2PSA/PHI test**

The [-2]proPSA (p2PSA) is the most cancer-specific molecular isoform of free PSA (fPSA). The Prostate Health Index (PHI) is a mathematical formula of three biomarkers – PSA, fPSA and p2PSA. The PHI is used to distinguish PCa from benign prostatic conditions in men aged 50 years and older with a total PSA b2-10 ng/ml, and non-suspicious prostate palpation.

A multi-centre prospective trial with the National University Hospital (NUH) and the Tan Tock Seng Hospital (TTSH) validated the PHI in Singaporean men undergoing their first TRUSB for PSA 4-10ng/ml. At a sensitivity of 90 per cent, the specificity of PHI was 58.3 per cent, more than triple the specificity of total PSA at 15.8 per cent, potentially sparing half the cohort from unnecessary biopsies.

**INTERPRETATION OF PHI**

PHI Range	Probability of Cancer	Confidence Interval
<23	8.7%	2.0 - 17.0%
23-45	20.6%	17.1 - 24.1%
>45	43.8%	35.8 - 52.2%

The PHI allows us to risk-stratify men with a raised PSA level, to better select men who are more likely to have a positive biopsy, reducing unnecessary biopsies. More importantly, a low PHI allows us to reassure men who have had prior negative biopsies but with persistently high PSA, that they are at low risk of harbouring significant prostate cancer.

Another key finding of this study was that the free:total PSA ratio (which is commonly used to determine if men with PSA in the range of 4-10ng/ml should go for a biopsy) had a poor predictive value, and was in reality no better than PSA itself.

**Advances in prostate cancer imaging**

Previously with 1.5T MRI and T2 weighted imaging, only extracapsular extension of prostate cancer could be detected.

Multiparametric MRI (mpMRI) combines multiple functional MRI parameters to the anatomical T2 weighted sequences, and provides the greatest sensitivity and specificity for cancer detection. Combined with an increase in MRI field strength (3T), we are increasingly able to detect anterior and deep central prostate tumours that were previously missed.

The PRECISION trial showed that the use of mpMRI as a triage tool for men with high PSA resulted in more clinically significant prostate cancer found, with less overdiagnosis of indolent cancers. This signals a potential paradigm change in the selection of men for prostate biopsies, and can potentially spare a large proportion of men with high PSAs from prostate biopsies. However, it is important to note that 15 per cent of clinically significant prostate cancers are invisible on MRI, and thus MRI should be considered an adjunct to diagnosis, and not a screening modality.

**Advances in prostate biopsy - Robotic assisted transperineal MRI fusion ultrasound guided biopsy**

With better imaging, we now have the option of a targeted approach to biopsy prostate lesions. NUH and NCIS have leveraged off this new approach, using the Mona Lisa® robotic prostate biopsy platform since September 2015.

The prostate MRI performed beforehand is stored in the device, and fused with real-time ultrasound using a digital overlay, allowing the suspicious target lesion(s), previously delineated by a radiologist, to be brought into the aiming mechanism of the ultrasound machine. The fusion results in the creation of a three-dimensional reconstruction of the prostate, allows for the aiming and tracking of biopsy sites, refer to Figures 1 to 3. This is akin to using a GPS to reach your destination instead of driving without directions.

MRI guided biopsies allow us to confidently biopsy suspicious lesions, and reduce unnecessary biopsies. For men with low risk prostate cancer on active surveillance, better sampling with the robotic platform allows urologists to more confidently risk-stratify them into those who can avoid treatment, or those who need immediate treatment. For men with previous negative TRUSB but persistent suspicion for cancer, the thorough nature of saturation biopsy with this platform allows us to confidently reassure our patients that they do not have significant cancer.

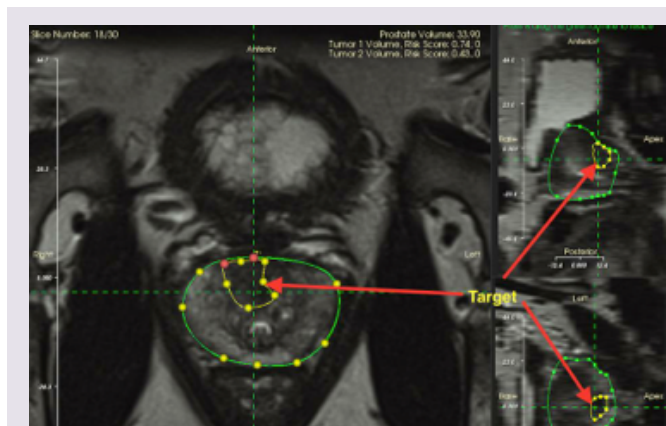


Fig. 1 - T2 MRI with suspicious lesion marked as target (Image courtesy of Biobot Surgical Pte Ltd)

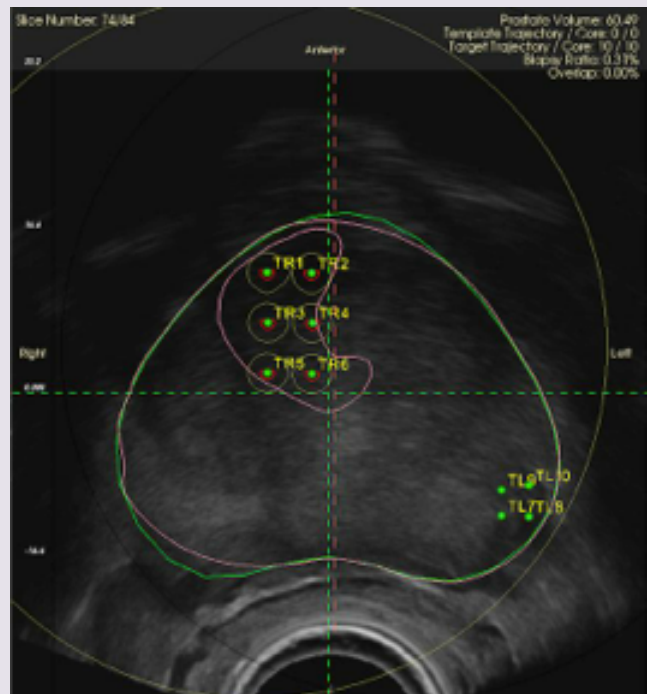


Fig. 2 - MRI targeted lesions for biopsy fused onto real time transrectal ultrasound image (Image courtesy of Biobot Surgical Pte Ltd)

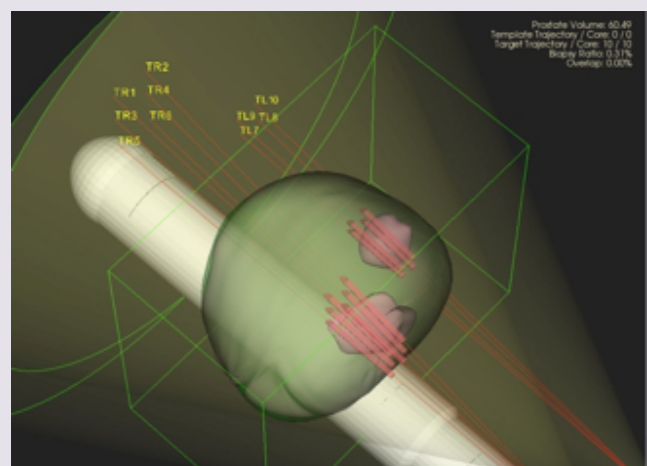


Fig. 3 - 3D model of MRI-ultrasound fusion, showing targets and biopsy trajectories (Image courtesy of Biobot Surgical Pte Ltd)

## BREAKTHROUGHS

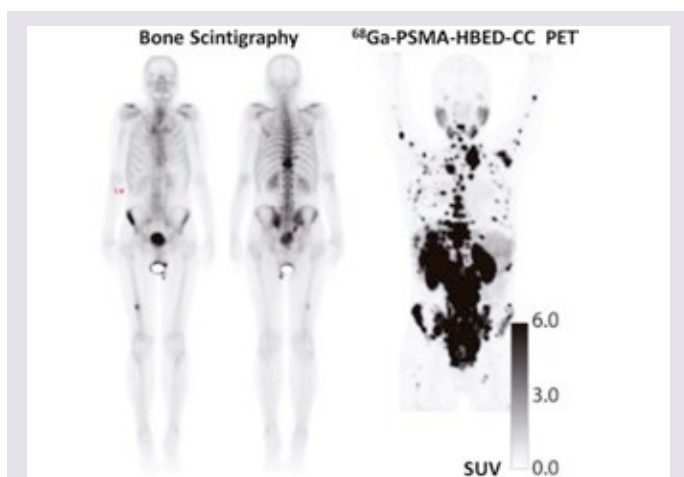


Fig. 4 - Example of improved sensitivity of  $^{68}\text{Ga}$ -PSMA PET vs Bone Scan with respect to affected bone regions. Bone scintigraphy shows only limited bone involvement of the lumbar spine, ribs, pelvis, and right femur, whereas PSMA PET shows extensive osseous metastases in spine, pelvis, shoulder girdle, ribs, and all extremities, as well as lymph node involvement.

### Advanced imaging

$^{68}\text{Ga}$ -PSMA ligand PET/CT for imaging prostate cancer is a novel imaging technique, which is rapidly gaining popularity. It is currently the most sensitive and specific imaging technique for staging newly diagnosed high risk prostate cancer, and restaging men with biochemical recurrence after primary treatment. The increased sensitivity as compared to conventional staging with bone scan is illustrated in Figure 4.

The increased sensitivity for small volume metastases (previously undetectable on conventional CT/MRI or bone scan), has opened up the possibility of metastasis directed therapy for men with small volume metastatic prostate cancer. These men previously would have only received palliative systemic therapy. This is an emerging field of study and has been offered to selected patients in NCIS.

### Robotic surgery

Minimally invasive radical prostatectomy with the Da Vinci robotic platform is not new, and has been available in NUH since 2008. However, we have further optimised the patient's experience with the introduction of two key improvements.

#### Enhanced Recovery After Surgery (ERAS) Protocol

The ERAS Protocol is a combination of elements of care for patients who have undergone elective surgery. It aims to:

- Optimise pre-operative preparation for surgery
- Avoid iatrogenic problems such as postoperative ileus
- Minimise the stress response to surgery
- Speed up patient's recovery and return to normal function

A key element of the protocol is allowing patients to have carbohydrate drinks up to two hours before the surgery.

Reducing the duration patients are required to fast, not only improves patient comfort, it also helps to reduce surgical stress and earlier return of bowel function. Since implementation, most of our patients are ambulating and taking solid diets on the first postoperative day, with many of them returning home the next day.

#### Prostate Cancer Specialist Nurse (PCSN)

With support from the Singapore Cancer Society, we now have a dedicated specialist nurse for prostate cancer, providing personalised care thus supporting our model of holistic care for our prostate cancer patients.

The PCSN is a key member of the ERAS team and performs the following roles:

- Preoperative counselling on what to expect after surgery
- Preoperative pelvic floor exercise training
- Preoperative diet and exercise counselling

Our PCSN is trained to look into the social impact that prostate cancer has on our patients, and help them navigate the resources available to them in their cancer journey.

Men undergoing radical prostatectomy in NUH are able to contact the PCSN directly. This ease of access gives our patients peace of mind, and has prevented unnecessary visits to the Emergency Department for minor post-operative issues.

### Conclusion

These advancements in prostate cancer diagnostics are now available in NCIS, and hold great promise in maximising diagnosis of significant PCa, while reducing overdiagnosis and overtreatment of incidental cancers.

Whilst the Da Vinci robot is the epitome of surgical technological advances, it is our holistic approach to perioperative care for our patients, that truly optimises their cancer care.



**Dr Lincoln Tan**  
Consultant  
Division of Surgical Oncology  
(Urology), NCIS

Dr Lincoln Tan is a consultant at the Division of Surgical Oncology (Urology), NCIS. His clinical expertise lies in the minimally invasive treatment of urologic cancers. His research interests lie in prostate cancer biomarkers and image guided biopsy techniques. In 2007, he was a key member of the workgroup appointed by the Ministry of Health to develop the national clinical practice guidelines for prostate cancer screening.



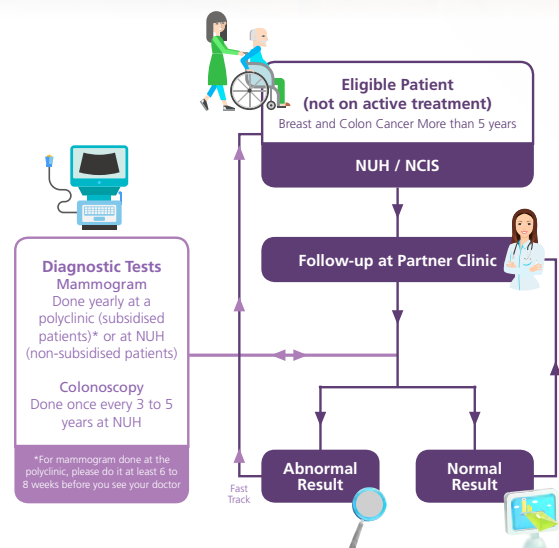
# CANCER SURVIVORSHIP PROGRAMME

Cancer Patients Can Now Visit Primary Care Doctors for Follow-up Care

There is a common misconception that cancer survivors are patients who are free of cancer (this is untrue). Technically, a cancer survivor is defined as a cancer patient from the time of diagnosis till death. Once they have completed their treatment, “cancer-free” patients continue to undergo regular follow-ups with their cancer doctors to monitor their condition for any abnormalities that may signal a return of the cancer.

Cancer survival in both men and women are on the upward trend due to increased cancer screening efforts and better cancer treatments. Local studies have found that the five-year cancer survival rate for men has jumped more than three-fold from 13.2 per cent in 1993 to 1997, to 48.5 per cent in 2008 to 2012. The five-year cancer survival rates for women also saw similar improvements, from 28 per cent to 57.1 per cent during the same time frame. According to the Singapore Cancer Registry Annual Registry Report 2015<sup>1</sup>, for breast and colorectal cancer patients in particular, there have been increases in their survival as shown in the table below. Therefore, there will be more cancer survivors out there.

“With the rising number of cancer survivors, cancer is moving towards being treated like a chronic disease. In



the future, it may well be treated like a chronic condition once the acute phase of treatment is over. Therefore, the engagement of primary care physicians for the future care of cancer patients is important.” said Dr Chan Ching Wan, Senior Consultant, Division of Surgical Oncology (Breast Surgery), NCIS.

Type of Cancer	2006-2010 (%)		2011-2015 (%)	
	5-Year ASOS <sup>2</sup> (95% CI)	5-Year ASRS <sup>3</sup> (95% CI)	5-Year ASOS (95% CI)	5-Year ASRS (95% CI)
Breast	68.66	78.09	70.84	79.73
Colon (Males)	46.70	56.58	50.98	60.56
Colon (Females)	52.06	59.82	52.76	59.73

Source: Singapore Cancer Registry Annual Registry Report 2015 – Note: Calculation of survival above follows methodology in ‘Cancer Survival in Singapore, 1968 – 2007’, except the life table used to general expected survival for 2006 – 2014 was obtained from Department of Statistics (DOS).

## BREAKTHROUGHS



With the launch of NCIS' Cancer Survivorship Programme, cancer survivors can now choose to have their follow-up care done at a primary care clinic near their home. In the pilot phase of this initiative, selected breast and colorectal cancer survivors will now be able to visit designated general practitioners (GPs) in the National University Health System's primary care network, Keat Hong and Frontier Family Medicine Clinics, as well as six polyclinics under the National University Polyclinics for routine cancer care. Cancer survivors will enjoy reduced travelling and waiting times during their regular follow-up checks. As they no longer need to see a specialist, they will also save on medical costs.

"Beyond active treatment, the routine care provided at a cancer centre is no different from a primary care physician's clinic. For routine health screening and wellness issues, the primary care physician is more equipped to do this as it is done on a routine basis for all patients. This provides added benefit to the patient in addition to saving their time and money." said Dr Chee Cheng Ean, Consultant, Department of Haematology-Oncology, NCIS.

To ensure that the GPs are well equipped to manage cancer survivors, NCIS will train and accredit them to provide follow-up care for cancer survivors. A fast-track referral system back to the hospital will also be established, so that cancer survivors will have swift access to their oncologists if there are concerns for cancer recurrence.

The Cancer Survivorship Programme is currently available for selected Breast and Colorectal patients who are no longer on active treatment. Moving forward, there are plans to expand this service to other cancer types.

### References:

1. Singapore Cancer Registry Annual Registry Report 2015.
2. ASOS – Age-Standardised Observed Survival (%): Percentage of patients who are still alive after a specified period of time following diagnosis.
3. ASRS – Age-Standardised Relative Survival (%): Obtained by dividing the observed survival of cancer patients by the survival of a presumably cancer-free population, matched by gender and age. This provides an estimate of survival if the risks of death other than the cancer are removed.



Article by  
**Dr Chan Ching Wan**  
Senior Consultant  
Division of Surgical Oncology  
(Breast Surgery), NCIS

Dr Chan Ching Wan is the leader and senior consultant breast surgeon in the Division of Surgical Oncology (Breast Surgery), NCIS and Division of General Surgery (Breast Surgery), University Surgical Cluster, NUH. She obtained her medical degree from the University of Edinburgh, and then returned to Singapore to pursue a surgical career. After becoming a Fellow of both the Royal College of Surgeons of Edinburgh, and the Royal College of Physicians and Surgeons of Glasgow, she took some time out to complete a PhD at the University of Bristol. This stimulated her interest in breast cancer as a disease, and after completing her surgical training, she decided to specialise in breast surgery. Her main interest is in breast conservation surgery.



**Dr Chee Cheng Ean**  
Consultant  
Department of  
Haematology-Oncology,  
NCIS

Dr Chee is an Assistant Professor of Medicine at the Yong Loo Lin School of Medicine, NUS. She obtained her medical degree from the University College London (UK) and completed the Internal Medicine Residency and Hematology-Oncology Fellowship at Mayo Clinic (USA). Dr Chee is a clinician-investigator and medical oncologist in gastrointestinal and hepatobiliary cancers at NCIS. She is also involved in phase I drug development and is the principal investigator of several phase I and gastrointestinal cancer trials at her institution. As the Programme Director for the NUHS Medical Oncology Senior Residency (Fellowship) Programme, she is actively involved in the education of the Medical Oncology trainees and she also chairs the Colorectal Cancer Committee of the Singapore Cancer Society.

REVOLUTIONISING CANCER CARE WITH

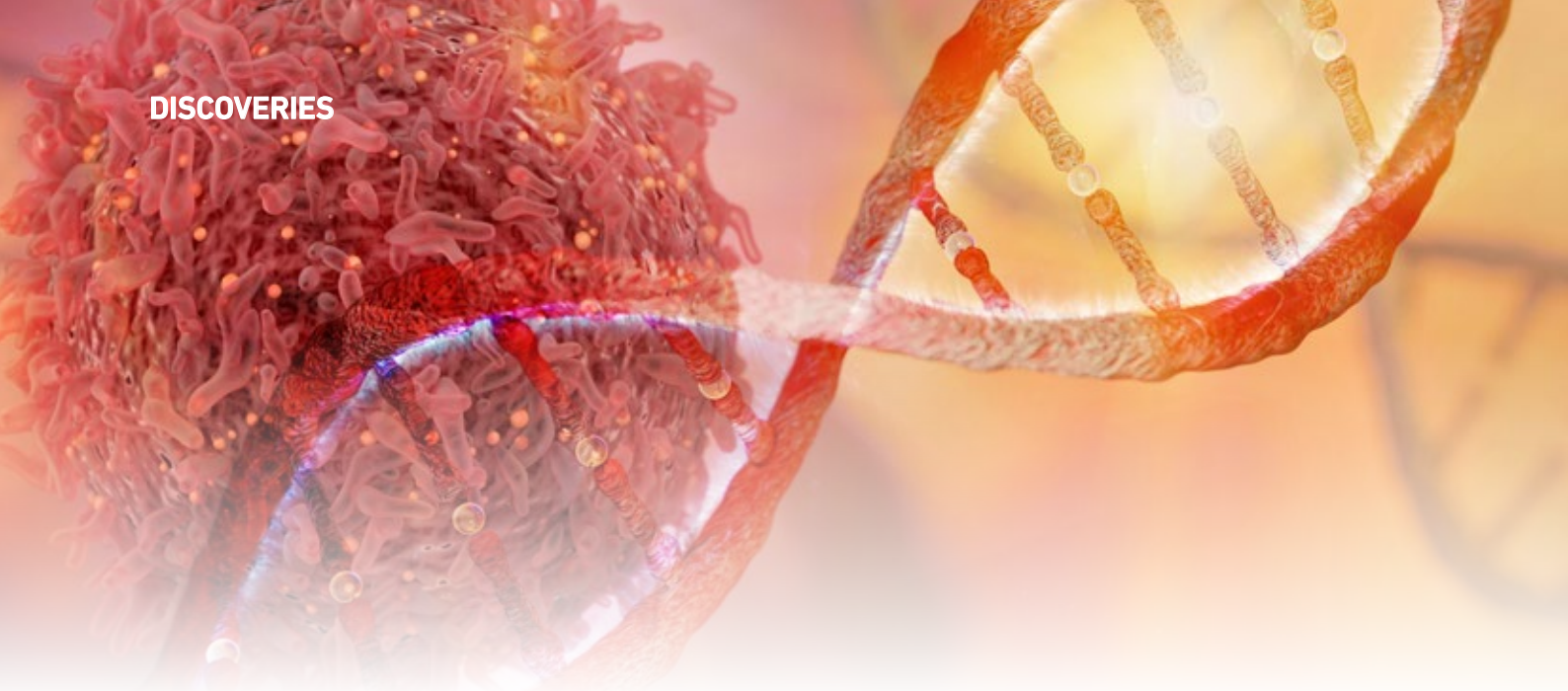
# PRECISION MEDICINE

Conventionally, doctors treat cancer by administering the same kind of treatment to patients with the same type and stage of cancer. However, different people respond differently to the treatment and a drug that has proven successful with one patient may not work as well with another. Increasingly, doctors find that this one-size-fits-all approach may no longer be the best way to treat cancer.

Enter Precision Medicine – a revolutionary approach at the molecular level that is changing the landscape

of cancer treatment. Decades of research have revealed that genetic changes to a patient's tumour affect the way it responds to treatment. With precision medicine, doctors hope to determine the most effective treatment for a patient based on a genetic understanding of a patient's tumour.

At NCIS, precision medicine represents hope for patients who have exhausted all conventional means of treatment. With precision medicine, our ultimate goal is to ensure that the right cancer patients receive the right treatment at the right time – all the time.



### Matching genetic cancer profiles with early phase clinical drugs

One of the biggest challenges that oncologists currently face is the ability to identify the multiple types of abnormal molecular changes in cancer cells and match patients in a timely fashion to the best available conventional treatments.

A two-year pilot study by NCIS is helping to match cancer patients with certain genetic profiles to early-phase clinical trials of new drugs. More than 200 patients comprising Singapore residents and foreigners have been genetically tested under the expanded Integrated Molecular Analysis of Cancer (IMAC) Programme. The IMAC programme was one of the first molecular screening programmes initiated in Asia, and was conducted to assess the feasibility of performing molecular screening of tumours from Asian patients with advanced cancers before matching them to targeted treatments.

Molecular screening is carried out by a single test that can reveal alterations in DNA that drive cancer growth. Hence, this serves as a “therapeutic match-maker” by helping to identify specific tumour molecular profiles in patients who can then be matched and enrolled into early-phase clinical trials of new drugs that can best target and counteract the molecular abnormalities in tumour cells.

The pilot study which involved 396 patients took place from April 2014 to September 2016. It screened tumour abnormalities in 50 cancer-related genes of each patient. 23 of these patients were matched to a clinical trial and of these, three of them saw their tumours shrink by more than a third, while another six had their cancers stabilised for more than two months.

“The programme gives patients access to drugs which are not yet on the market, and provides them with targeted treatment,” said Dr David Tan,

a consultant at NCIS’ Department of Haematology-Oncology. He attributes the low proportion of matches to two factors – what doctors can identify in the tumour and what clinical trials are available. For this study, only around 8 per cent of patients were matched to clinical trials but this number is likely to rise as the number of identifiable aberrations in tumours and availability of clinical trials increases.

### Designing new drug combinations for Multiple Myeloma with the help of artificial intelligence

Conventional treatment for Multiple Myeloma relies on bortezomib-based drug combinations that patients typically develop resistance to over time. This has resulted in a need to develop more effective drug combinations more efficiently. To achieve that, doctors typically test random combinations of common drugs or incorporate new targeted therapies into established drug combinations.

Researchers at the National University of Singapore (NUS) have now found a way to swiftly pinpoint the most suitable drugs for a patient’s personalised treatment. The Quadratic Phenotypic Optimisation Platform (QPOP) is an artificial intelligence-based platform that has helped the team design new drug combinations that have proven effective against bortezomib-resistant multiple myeloma.

“Currently, while many of the newer agents have been shown to be also effective in some patients who are resistant to bortezomib, these are by no means universal. The ability to identify combinations that are effective against different resistance models will be useful in the clinic to further individualised treatment and overcome the issue of heterogeneity,” said co-author Professor Chng Wee Joo, Director of NCIS.

QPOP is able to produce results rapidly, by mapping the quantitative phenotypic effects that a set of drug combinations has on a specific patient sample or

disease model. Based on these results, it then identifies the best drug combinations for that patient sample or disease model.

“QPOP is part of an emerging area of artificial intelligence that looks to maximise small data sets to achieve desired results as efficiently as possible,” said Dr Edward Kai-Hua Chow, corresponding author and a Principal Investigator at the Cancer Science Institute of Singapore, NUS.

“This approach is a paradigm shift in how drug combinations are designed and how patients will be treated with drug combinations, as it solely relies on how a specific patient’s own cells respond to drug combinations and not on complex genetic analysis or how the overall patient population responds,” said co-author Professor Dean Ho, Provost Chair Professor in the Departments of Biomedical Engineering and Pharmacology and Director of the Singapore Institute for Neurotechnology (SINAPSE) at NUS. Prof Ho is also a Principal Investigator at the NUS Bioengineering Institute for Global Health Research and Technology (BIGHEART).

### Using genetic profiling to tailor gastric cancer treatment

Gastric cancer patients may soon enjoy the benefits of a personalised cancer treatment plan. A recent research study led by NCIS, in collaboration with several local and overseas healthcare institutions revealed that genetic profiling could be used as a clinical tool to develop more targeted treatment plans.

Genetic profiling usually takes two to three weeks or even longer. However, as part of the research study, the genetic profiling for 111 patients with advanced gastric cancer was completed within a week. The researchers were then able to group similar genetic profiles together and match them to drugs that are commonly used to combat gastric cancer. For the group that was predicted to be more responsive to oxaliplatin, a response rate of 45 per cent was observed. In contrast, a response rate of 8.3 per cent was observed after a group with a similar genetic profile was given cisplatin.

The study is the first to use genetic profiling for disease stratification and treatment assignment in advanced gastric cancer and the results demonstrate the potential of using genetic profiling to personalise individual treatment plans so that more effective outcomes can be achieved.



Article by  
**Professor Chng Wee Joo**  
Director & Senior Consultant,  
NCIS

Prof Chng obtained his medical degree from the University of Leeds, and did his internal medicine residency in the United Kingdom. His fellowship training in haematology was completed in Singapore before he obtained an A\*STAR international fellowship in 2004 for a research fellowship at the Mayo Clinic, in multiple myeloma genetics. His current research is very translational and involves the use of high-resolution global genomic techniques to understand biology, identify drug targets, understand drug resistance and improve disease prognosis in haematological malignancies, with the ultimate aim of improving patient outcomes and personalising treatment.



**Dr David Tan**  
Consultant  
Department of Haematology-  
Oncology, NCIS

Dr David Tan is a consultant medical oncologist and clinician scientist at NCIS. He is also an Assistant Professor at the Yong Loo Lin School of Medicine, NUS. Dr Tan graduated with an intercalated BSc in Experimental Pathology and MBBS with Distinction from Guy’s, King’s and St Thomas’ School of Medicine, University of London. He undertook training in internal medicine at Hammersmith, Guy’s and St Thomas’ Hospitals in London, and obtained his MRCP (UK) in 2005. He was a Cancer Research UK Clinical Research Fellow at the Institute of Cancer Research, London, where he obtained his PhD, and trained in Medical Oncology at the Royal Marsden Hospital, London. He also completed a fellowship in drug development and gynaecological oncology at the Princess Margaret Cancer Centre, University of Toronto, before returning to Singapore.



**Dr Yong Wei Peng**  
Associate Director (Research)  
and Senior Consultant  
Department of Haematology-  
Oncology, NCIS

Dr Yong Wei Peng obtained his medical degree and postgraduate training in the University of Aberdeen, Scotland. After completing an oncology fellowship at NUH, he was awarded the A\*Star international clinical pharmacology fellowship at the University of Chicago. Upon his return to Singapore, he was awarded a three-year Investigatorship Award under the Clinician Scientist Award to further his research into personalised therapy. Dr Yong leads the therapeutic arm (NUH module) of the Singapore Gastric Cancer Consortium. The consortium received the prestigious five-year Translational Clinical Research grant in 2007. He is also the Chairman of the National Healthcare Group Domain-Specific Ethics Review Board. His clinical interest is in gastrointestinal cancers and his research interests are pharmacogenetics and epigenetics in cancer.

# CELEBRATING NCIS' 10<sup>TH</sup> ANNIVERSARY

## JANUARY



Our 10<sup>th</sup> anniversary activities kicked off with the NCIS10 Townhall & Staff Celebrations, where staff were presented with a commemorative gift by the Centre Director and Senior Leaders.

In the same month, the NCIS10 Roving Exhibition made its first appearance at the NUHS Tower Block before travelling around the western part of Singapore for the rest of the year. The exhibition showcased informative cancer prevention, detection and screening tips, a trip down memory lane reminiscing our early formative years, inspirational stories from our NCIS cancer warriors who are currently into their 10<sup>th</sup> year of survivorship and more, as well as heartfelt stories of our staff who have been with NCIS for 10 years and beyond.

## APRIL



NCIS Dream Makers, a new initiative was launched to help our patients with advanced cancers reach their dreams. For their very first cancer warrior, Dream Makers collaborated with Moving Visuals to help fulfil Joseph's wish of travelling to Hokkaido in honour of his late grandmother. The experience was filmed and broadcast on local television. Catch it on Toggle if you've missed it, or visit our website for more information on Dream Makers!



SCAN HERE TO  
WATCH VIDEO

In 2008, The Cancer Institute (TCI) was formally renamed the National University Cancer Institute, Singapore (NCIS) by the Ministry of Health and assumed the key responsibilities of a national specialist centre for cancer. Prior to that, NCIS had already accumulated 20 years of oncology experience, treating cancer patients since our very first clinic in 1988.

Today, NCIS is a national specialist centre under the National University Health System (NUHS) and the only public cancer centre in Singapore that treats both paediatric and adult cancers in one facility. In celebration of this special milestone, 2018 was an amazing year filled with exciting activities and events. Here is a look back at some of the major events that had happened!

## MARCH



NCIS Ribbon Challenge, our first major celebratory event took place at the Canopy@JLink on 24 March 2018. It was a memorable and meaningful day as we set out to raise awareness of the importance of cancer screening and early detection to the public. This day also marked a new achievement for NCIS as we entered the Singapore Book of Records with 10,125 cancer awareness ribbons collected! These ribbons signify support for those lost to cancer, survived cancer and currently battling with cancer.

In addition, 707 members of the public pledged to screen for cancer, bringing us one step closer to winning against cancer. Highlights of the event included an on-site mammobus for mammogram screening, distribution of FIT kits for colorectal cancer screening and a special performance by the OneHeart Support Group, as well as our doctors who "sacrificed" themselves to get dunked all in the name of a good cause.

## JUNE

A special 50-page bumper edition of SPARK was published. It showcased 30 years' worth of exciting highlights through NCIS' past, present and future. SPARK is the official bi-annual publication of NCIS.



## SEPTEMBER



We organised the 9<sup>th</sup> edition of the annual 'Winning Against Cancer' public symposium on 15 September 2018 and saw almost 400 participants in attendance. The symposium focused on an in-depth understanding of liver and prostate cancers, management of both conditions and the latest treatments available.

## DECEMBER



Themed 'Shine Like A Star', NCIS Celebrates Life 2018 saw over 200 cancer survivors and patients turn up dressed to the nines like a shining star of hope and courage. Apart from the talent show and fashion runway segments, we invited three "stars" to share their experiences with cancer to help inspire and motivate their fellow cancer warriors.

## NOVEMBER



Over \$700,000 was raised at our 10<sup>th</sup> Anniversary Fundraising Gala Dinner, where President Halimah Yacob was the guest-of-honour. The proceeds went towards the NCIS Cancer Fund which provides financial assistance to more than 100 needy patients, who require critical cancer treatment but unfortunately fall through the cracks of society's existing safety nets. The fund also supports cancer research, education and training of healthcare professionals.

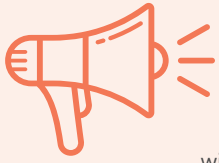
Guests at the event also had a glimpse of our brand new mobile application which will be made available to 200 breast and colorectal cancer patients later this year. With this app, patients can do more than just track their medical appointments. Acting like a 'buddy' and powered by artificial intelligence, the app can provide customised advice in real-time, answer cancer-related questions via a chatbot and monitor the patient's condition.



At NCIS, every person matters and our goal is to provide comprehensive yet personalised care for each and every patient incorporating the full spectrum of care from cancer awareness, prevention and diagnosis to treatment, rehabilitation and palliative care. This is our commitment to you and we will continue to deliver it in many years to come.

SPECIAL FEATURE

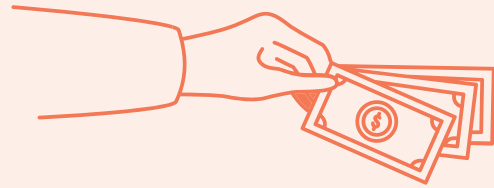
JAN



Raising Cancer Awareness at 7 Locations

with the NCIS10 Roving Exhibition

NOV



Over \$700,000

raised at our

10<sup>TH</sup> Anniversary Gala Dinner

for needy patients, research and education.

MAR

Team NCIS

walked

125.6KM for Charity

at Relay for Life 2018



10,125 Cancer Awareness Ribbons

collected and we entered the

Singapore Book of Records

707

members of the public

Pledged

to screen for cancer



DEC

10 Support Groups and Counting

providing

Invaluable Peer Support

to our cancer patients



...AND MORE!

6 New Initiatives

launched to provide

Holistic Care, Ultimate Comfort and Convenience

for our patients



APR

More than 30 Volunteers joined

NCIS Dream Makers

to help turn dreams into reality



SEP



Shared important cancer knowledge with

400

Participants

at our 9<sup>th</sup>

'Winning Against Cancer' Symposium

- Acute Cancer Care Clinic
- APN-led Urgent Care Clinic
- Cancer Survivorship in the Community Programme
- Geriatric Oncology Clinic
- Outpatient Stem Cell Transplant with Home Monitoring
- Short Stay Ward SSW@NCIS



# LUNG CANCER RESEARCH

## Lipid Metabolic Pathway

### A New Direction in Lung Cancer Therapy

Lung cancer remains the deadliest cancer among men and women worldwide, accounting for one in four cancer deaths. Non-small cell lung cancer (NSCLC) accounts for up to 85 per cent of lung cancer diagnoses. More than two-thirds of NSCLC patients are diagnosed at an advanced stage where tumours are detected in more than one site of the body. The overall five-year survival rate of advanced stage NSCLC patients stands at a low 15 per cent. The development of tyrosine kinase inhibitors (TKIs), which targets the epidermal growth factor receptor (EGFR) and the sequential detection of activating EGFR mutations as a molecular marker for tumour sensitivity to these drugs, has greatly impacted lung cancer management in the past decade. Mutations in the EGFR gene are more prevalent in Asian populations, as compared to their Western counterparts (45-55 per cent versus 10-20 per cent). The conventional treatment for EGFR-mutated NSCLC patients is with anti-EGFR tyrosine kinase inhibitors (TKIs) chemotherapeutic agents, which binds specifically to mutated EGFR and inhibits its activity. However, the success of TKI-based treatment has been limited by the development of acquired resistance and the tumours can no longer respond to TKI-treatment.

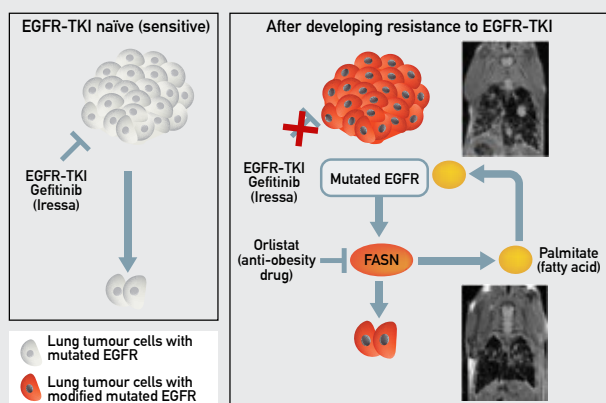
The focus of my research is to identify new targetable targets for therapeutic intervention in NSCLC, where the

lack of treatment options following acquired resistance to EGFR-TKIs indicates that investigation is warranted. Metabolic reprogramming is widely known as a hallmark of cancer cells which allows an adaptation of cells to sustain survival signals. In the past decade, altered lipid metabolism has been recognised to be a property of malignant cells. However, the contributions of altered lipid metabolism signaling to cell transformation, tumour development and progression, as well as their potential roles in metastasis and resistance to treatment have yet to be fully understood.

My research team has recently identified a link between lipid metabolic pathway and TKI-resistance in EGFR mutated NSCLC. We found that mutated-EGFR forms a positive feedback loop with Fatty Acid Synthase (FASN), an enzyme that synthesises fatty acid, to sustain NSCLC tumour survival signals. This positive feedback cycle can be interrupted, by inhibiting FASN with the anti-lipid drug, Orlistat, that attenuates tumour growth.

Through joint collaborations with Professor Daniel Tenen, Director of the Cancer Science Institute of Singapore, and Adjunct Professor Goh Boon Cher, Deputy Director of Research at NCIS, we are uncovering other potential targetable lipid metabolic targets with anti-lipid drugs that offer a promising paradigm on the manipulation of metabolic pathways as a new direction in cancer therapy.

#### Schematic diagram of the proposed model depicting the functional relationship between EGFR and FASN in TKI resistance within EGFR mutated NSCLC cells



In TKI-naïve EGFR mutant cells, the EGFR-TKI drug, Gefitinib, effectively inhibits growth of lung tumour cells (left panel). However, after developing resistance to Gefitinib, an EGFR-TKI, the drug can no longer impede growth of tumour cells. Resistance to Gefitinib is attributed to the modification of EGFR facilitated by fatty acid synthase (FASN). Palmitoylation is a process where a 16-carbon fatty acid palmitate, synthesized by FASN, is covalently attached to proteins. In this study, EGFR is modified with the addition of palmitate, and this renders it untargetable by Gefitinib, therefore promoting tumour cell growth. In cell culture systems and vivo models, pharmacological inhibition of FASN by Orlistat prevents EGFR palmitoylation and restricts lung tumour survival.

#### References

- Hanahan D, Weinberg RA (2011) Hallmarks of cancer: the next generation. *Cell* 144: 646-74.
- Ward PS, Thompson CB (2012) Metabolic reprogramming: a cancer hallmark even Warburg did not anticipate. *Cancer Cell* 21: 297-308.
- Ali, A., Levantini, E., et al. (2018) Fatty acid synthase mediates EGFR palmitoylation in EGFR mutated non-small cell lung cancer. *EMBO Mol Med.* e8313.



**Dr Azhar Ali**  
Principal Investigator and  
Senior Research Scientist  
Cancer Science Institute  
of Singapore

Dr Azhar Ali is a Senior Research Scientist at the Cancer Science Institute of Singapore (CSI Singapore), NUS. His research group focuses on finding novel approaches in lung cancer treatment, particularly, the roles of the lipid metabolism pathway in cancer development and the acquisition of resistance to chemotherapeutic drugs.

The Developmental Therapeutics Unit

# YONG SIEW YOON FELLOWSHIP PROGRAMME @ NCIS

New drug development at the Haematology-Oncology Research Group in NCIS involves a multi-disciplinary group of scientists and clinical staff committed to the preclinical and clinical development of new anti-cancer drugs. Early phase clinical trials in cancer therapeutics are conducted at the Developmental Therapeutics Unit (DTU) at NCIS. Importantly, the establishment of the NCIS DTU has already helped attract interest from drug companies seeking academic partners who have the appropriate infrastructure in place to support early phase trials in Asia. This has in turn benefited our patients by giving them access to cutting-edge anti-cancer drugs.

The Yong Siew Yoon (YSY) NCIS Developmental Therapeutics Fellowship was set up in 2015 to provide fellows with the opportunity to participate in a clinical research fellowship in drug development at NCIS. The fellowship involves active participation in the planning, coordination and implementation of selected trial protocols. Work includes the writing of protocols and letters of intent; analysing trial data; presenting results at local, national and international meetings; and preparing final peer-reviewed manuscripts for publication. In addition, the fellow will have the opportunity to run Phase I clinics - about two half day sessions per week - where they will see patients participating in early phase clinical trials. Work with patients may include such tasks as routine physical examinations and attending to urgent clinical issues. Fellows will also share responsibility for inpatient care of trial patients. Additionally, fellows are also encouraged to actively participate in clinical patient care and research projects in a tumour-specific specialty of their choice.

Our current fellow is Dr Valerie Heong who trained in medical oncology and worked in Melbourne, Australia before deciding to take up the YSY fellowship in drug development at the NCIS in 2015. Her other main subspecialty interest was in gynaecologic medical oncology and she was involved in several research projects with the NCIS gynaecologic cancer group. Dr Heong has done very well during her time with us having presented her work with the DTU and NCIS gynaecologic oncology team at local conferences like the NCIS Annual Research Meeting (NCAM), and the ASCO and ESMO conferences.

During her time with us, she also completed her PhD and published several papers, including the pilot data from our precision therapy programme in the DTU (the Integrated Molecular Analysis of Cancer), and work done in collaboration with Dr Ruby Huang from the Cancer Science Institute and the NCIS gynaecologic oncology team.

We have indeed been very fortunate to have Dr Valerie Heong with us and hope that future fellows will also benefit from the experience of working in the DTU and NCIS.



*Dr Valerie Heong (right) receiving the Runner Up award for best oral presentation at the 2<sup>nd</sup> NCIS Annual Research Meeting in 2015 from Dr Lee Soo Chin (left)*



Article by  
**Dr David Tan**  
Consultant  
Department of Haematology-  
Oncology, NCIS

Dr David Tan is a consultant medical oncologist and clinician scientist at NCIS. He is also an Assistant Professor at the Yong Loo Lin School of Medicine, NUS. Dr Tan graduated with an intercalated BSc in Experimental Pathology and MBBS with Distinction from Guy's, King's and St Thomas' School of Medicine, University of London. He undertook training in internal medicine at Hammersmith, Guy's and St Thomas' Hospitals in London, and obtained his MRCP (UK) in 2005. He was a Cancer Research UK Clinical Research Fellow at the Institute of Cancer Research, London, where he obtained his PhD, and trained in Medical Oncology at the Royal Marsden Hospital, London. He also completed a fellowship in drug development and gynaecologic oncology at the Princess Margaret Cancer Centre, University of Toronto, before returning to Singapore.



# A Day in the Life of a **CLINICAL RESEARCH COORDINATOR**

## Can you describe a typical day at work?

One of the main roles of a coordinator is to assist the investigator in managing and monitoring patients who are recruited for a research study. So, a typical day always begins just before the patient's scheduled visit. I will ensure that the blood tests required are ordered, prepare the necessary documents and laboratory kits and schedule the courier service in advance to avoid delay.



After registration, I will interview the patient to understand his/her condition after the last visit and also to ensure compliance of oral drug dosing if any. All information obtained from this session will be shared with the investigator during consultation.

Once the patient is deemed fit for the next treatment, a pharmacist will be notified via the Interactive Web Response System (IWRS) to prepare the drugs. However, if the patient presents with an adverse event

(AE), the investigator and I will then refer to the study's recommended AE management guidelines. This will help to determine the next treatment for the patient.

As a coordinator, I also assume the key responsibility to explain the logistical aspects of the study, such as the schedule and assessments to the patient and his/her family when the investigator identifies a potential patient.

## What strategies did you use to overcome multiple tasks and responsibilities?

1. Use of a personal organiser – to help me prioritise tasks and complicated cases, so as to eliminate any risk of mistakes that will jeopardise the patient's safety.
2. Create a checklist and schedule for each study based on the protocols - so that all appointments can be scheduled without delay and that the patients are informed promptly.
3. Use trackers to keep tabs on the different versions of the documents - ensure a smooth study that is conducted with less or no deviation, such as non-compliance.

## How do you feel dealing with different kinds of clinical trial cancer patients?

We meet patients of various conditions who might be suitable for the different trial phases. While some patients have little knowledge or a wrong perception about participating in clinical trials or research, I am always happy to provide them with more information.

I remembered a phase I trial patient who had to give up his job due to his condition, leaving his wife to be the sole breadwinner for the family. As all his savings were spent and there was no more standard treatment available for him, he felt very helpless and depressed. If not for the new trial treatment which enabled him to continue fighting cancer, he would have already given up. The trial gave him new hope and he was immensely grateful for it. As his coordinator, I feel proud that I was able to assist him and journey with him.

This work may be very challenging, but there is a great sense of achievement and satisfaction. Most importantly, I get a chance to help patients from all walks of life.

## What are some personal goals and dreams that you hope to achieve?

It has been a fabulous 10 years working in NCIS! Having good health is of utmost importance in order to pursue one's dream. So, I wish to be always in the pink of health to continue providing good service and care to the people around me. I hope my experience as a clinical research coordinator will inspire the younger generation.

**Ms Pang Mei Yan**  
Senior Clinical Research Coordinator  
Haematology-Oncology Research Group (HORG)

## MULTIPLE MYELOMA TRAINING FOR PHYSICIANS 2018

Organised by NCIS, the five-day intensive workshop hosted 15 overseas delegates from, to share about the techniques for assessing multiple myeloma, as well as comprehensive insights on the implications, diagnosis, stratification and treatment plans.



3-7 Sep 2018



15 Sep 2018

## LIVING WITH LYMPHOMA 2<sup>ND</sup> WORLD LYMPHOMA AWARENESS DAY

Jointly organised by the Singapore General Hospital, National Cancer Centre Singapore and NCIS, the symposium was led by a multidisciplinary panel of speakers who covered a wide range of topics including lifestyle, diet, financial and emotional support.

## BREAST CANCER AWARENESS MONTH 2018 PINK RIBBON WALK, WORKOUT AND LINE DANCE

October is Breast Cancer Awareness Month (BCAM) and it began with the annual Pink Ribbon Walk which was flagged off from the Singapore Sports Hub by the Guest-of-Honour Ms Indranee Rajah, Minister in Prime Minister's Office, Second Minister for Finance and Second Minister for Education, alongside Dr Samuel Ow, Dr Lim Siew Eng and Team NCIS. Over 4,000 members of the public walked together dressed in pink to raise awareness for breast cancer.

At NCIS' Pink Ribbon Workout and Line Dance events, over 50 women learned about breast self-examination while working out!



6 Oct 2018

## WORKSHOP & SYMPOSIUM ON PERITONEAL CANCERS 2<sup>ND</sup> ASIA-PACIFIC PRESSURISED INTRAPERITONEAL AEROSOL CHEMOTHERAPY (PIPAC)



12 & 13 Oct 2018

Jointly organised by the National University Hospital (NUH), the National University of Singapore (NUS) and NCIS, the second PIPAC workshop saw pioneers and international experts discussing the latest management of peritoneal metastasis for gastrointestinal and gynaecological cancers.

38 participants of the two-day workshop also benefitted from the dry lab simulated session as well as the live demonstration of the procedure in an operating theatre.

# AWARDS

**Congratulations to all our award winners!**

Thank you for lifting the standards of healthcare and going above and beyond our patients at NCIS!



**Dr Keith Lim**

Senior Consultant,  
Department of Radiation Oncology  
**National Clinical Excellence  
Team Award**



**Ms Goh Li Li**

Senior Principal Radiation  
Therapist, Department  
of Radiation Oncology  
**2018 National Day Award  
– The Commendation Medal**  
**Singapore Society of  
Radiographers Silver Medal**



**Dr Michelle Tseng**

Registrar, Department of  
Radiation Oncology  
**Royal Australian and  
New Zealand College of  
Radiologists (RANZCR)  
Faculty of Radiation Oncology  
Bourne and Langlands  
Research Prize**



**Ms Mary Chong**

Nurse Clinician  
**2018 National Day Award  
– The Efficiency Medal**



**Dr Lee Yee Mei**

Head, Division of Oncology  
Nursing  
**MOH Appreciation and  
Awards 2018  
– Minister for Health Award**



**Ms Chua Chue Teng**

Nurse Clinician  
**2018 Ministry of Health  
– Nurses' Merit Award**

# DOCTORS' PROMOTIONS

Congratulations to our newly promoted doctors!



**1 DR LEE SHIR YING**  
Senior Consultant  
Department of Haematology-  
Oncology



**2 ASST PROF NGIAM KEE YUAN**  
Senior Consultant  
Division of Surgical Oncology  
(Thyroid and Endocrine Surgery)



**4 DR SOUMEN DAS DE**  
Consultant  
Division of Surgical Oncology  
(Hand & Reconstructive  
Microsurgery)



**3 DR ANAND D JEYASEKHARAN**  
Consultant  
Department of Haematology-  
Oncology



**7 DR KIM GUOWEI**  
Consultant  
Division of Surgical Oncology  
(Upper Gastrointestinal Surgery)



**8 DR LEE HANJING**  
Consultant  
Division of Surgical Oncology  
(Plastic, Reconstructive &  
Aesthetic Surgery)



**5 DR LEONG YIAT HORNG**  
Consultant  
Department of Radiation Oncology



**6 DR OOI KIAT HUAT**  
Consultant  
Department of Radiation Oncology



**9 DR FIONA WU**  
Consultant  
Division of Surgical Oncology  
(Urology)

# SPECIALIST AND TUMOUR GROUP LISTING

## BLOOD CANCERS AND BLOOD DISORDERS

### Bone Marrow and Stem Cell Transplant Programme

#### Haematology-Oncology

A/Prof Koh Liang Piu (Lead)  
Dr Joanne Lee

Dr Michelle Poon  
Dr Tan Lip Kun

#### Diagnostic Imaging

Dr Loi Hoi Yin

#### Radiation Oncology

Asst Prof Bala Vellayappan

#### Coagulation

#### Haematology-Oncology

Dr Chee Yen Lin (Lead)

Asst Prof Liu Te Chih

Dr Lee Shir Ying

Dr Yap Eng Soo

#### General Haematology

#### Haematology-Oncology

Dr Lee Shir Ying (Lead)

Asst Prof Liu Te Chih

Dr Joanne Lee

Dr Ng Chin Hin

Dr Tan Lip Kun

Dr Tung Moon Ley

### Leukaemia, Myelodysplastic and Myeloproliferative Neoplasms (MDS/MPN)

#### Haematology-Oncology

Dr Ng Chin Hin (Lead)

A/Prof Koh Liang Piu

Dr Esther Chan

Dr Lui Pak Ling

Dr Melissa Ooi

Dr Tan Lip Kun

Dr Winnie Teo

Dr Tung Moon Ley

#### Diagnostic Imaging

Dr Loi Hoi Yin

#### Pathology

A/Prof Ng Siok Bian

A/Prof Tan Soo Yong

#### Radiation Oncology

Asst Prof Bala Vellayappan

#### Lymphoma

#### Haematology-Oncology

Dr Michelle Poon (Lead)

Dr Esther Chan

Dr Chee Yen Lin

Dr Sanjay De Mel

Dr Anand D Jeyasekharan

Dr Joanne Lee

Dr Tan Lip Kun

#### Radiation Oncology

Asst Prof Wong Lea Choung

Asst Prof Bala Vellayappan

Dr Peh Wee Ming

#### Diagnostic Imaging

Asst Prof Arvind Kumar Sinha

Dr Loi Hoi Yin

#### Pathology

A/Prof Tan Soo Yong

A/Prof Ng Siok Bian

Dr Susan Hue

Dr Wang Shi

#### Multiple Myeloma

#### Haematology-Oncology

Prof Chng Wee Joo (Lead)

Dr Sanjay De Mel

Dr Melissa Ooi

Dr Tan Lip Kun

#### Diagnostic Imaging

Asst Prof Arvind Kumar Sinha

Dr Loi Hoi Yin

#### Pathology

A/Prof Ng Siok Bian

A/Prof Tan Soo Yong

#### Radiation Oncology

Asst Prof Wong Lea Choung

Asst Prof Bala Vellayappan

## BRAIN CANCER

#### Neurosurgery

A/Prof Yeo Tseng Tsai (Lead)

A/Prof Chou Ning

Dr Sein Lwin

Dr Vincent Nga

Dr Teo Kejia

#### Diagnostic Imaging

Dr Andrew Makmur

Dr Justin Christopher Ng

Dr Tan Ai Peng

Dr Jocelyn Wong

Dr Clement Yong

#### Haematology-Oncology

Dr Chong Wan Qin

Dr Andrea Wong

#### Paediatric Oncology

Dr Miriam Kimpo

#### Pathology

Dr Tan Char Loo

#### Radiation Oncology

Asst Prof Koh Wee Yao

Asst Prof Bala Vellayappan

Dr David Chia

## BREAST CANCER

#### Surgical Oncology

Asst Prof Chan Ching Wan (Lead)

A/Prof Mikael Hartman

A/Prof Philip Iau

Dr Celene Ng

Dr Shaik Ahmad Bin Syed Buhari

Dr Tan Chuan Chien

Dr Tang Siau-Wei

#### Diagnostic Imaging

A/Prof Quek Swee Tian

Dr Eide Sterling Ellis

Dr Goh Yong Geng

Dr Pooja Jagmohan

Dr Jeevesh Kapur

Dr Premilla Gopinathan Pillay

Dr Felicity Pool

#### Haematology-Oncology

Prof John Eu-Li Wong

A/Prof Lee Soo Chin

Dr Joline Lim

Dr Lim Siew Eng

Dr Lim Yi Wan

Dr Samuel Ow

Dr Andrea Wong

#### Pathology

A/Prof Thomas Choudary Putti

#### Plastic, Reconstructive &

#### Aesthetic Surgery

Dr Lee Hanjing

Dr Jane Lim

Dr Yap Yan Lin

#### Radiation Oncology

Asst Prof Koh Wee Yao

Asst Prof Vicky Koh

Dr Leong Yiat Horng

## COLORECTAL CANCER

#### Surgical Oncology

Dr Cheong Wai Kit (Lead)

Asst Prof Chong Choon Seng

Asst Prof Tan Ker Kan

Dr Ridzuan Farouk

Dr Sharon Koh

Dr Lee Kuok Chung

Dr Bettina Lieske

Dr Frances Lim Sheau Huei

#### Diagnostic Imaging

Dr Bertrand Ang

Dr Lynette Teo

Dr Thian Yee Liang

#### Gastroenterology &

#### Hepatology

Prof Lawrence Ho

Dr Bhavesh Kishor Doshi

Dr Calvin Koh

Dr Mark Dhinesh Muthiah

#### Haematology-Oncology

Dr Chee Cheng Ean

Dr Ho Jingshan

Dr Angela Pang

Dr Raghav Sundar

Dr Tan Hon Lyn

Dr Yong Wei Peng

#### Pathology

Prof Teh Ming

Dr Brendan Pang

#### Radiation Oncology

Asst Prof Francis Ho

Asst Prof Leong Cheng Nang

Asst Prof Jeremy Tey

Asst Prof Bala Vellayappan

## GYNAECOLOGIC CANCER

#### Gynaecologic Oncology

A/Prof Jeffrey Low (Lead)

A/Prof Arunachalam Ilancheran

Dr Ida Ismail-Pratt

Dr Joseph Ng

Dr Pearl Tong

#### Diagnostic Imaging

Prof Joseph Lee

Dr Bertrand Ang

Dr Chua Wynne Yuru

Dr Thian Yee Liang

#### Haematology-Oncology

Dr Lim Siew Eng

Dr Lim Yi Wan

Dr David Tan Shao Peng

#### Pathology

A/Prof Raju Gangaraju Chngal

Dr Diana Lim Gkeok Stzuan

#### Radiation Oncology

Asst Prof Vicky Koh

Dr Leong Yiat Horng

## HEAD & NECK CANCER

#### Surgical Oncology

A/Prof Thomas Loh (Lead)

Dr Donovan Eu

Dr Goh Xueying

Dr Lim Chwee Ming

Dr Joshua Tay

#### Diagnostic Imaging

Prof Vincent Chong

Dr Tan Ai Peng

Dr Jocelyn Wong

Dr Clement Yong

#### Haematology-Oncology

Ajunct Prof Goh Boon Cher

Dr Chong Wan Qin

#### Plastic, Reconstructive &

#### Aesthetic Surgery

Dr Jane Lim

#### Radiation Oncology

A/Prof Ivan Tham

Asst Prof Francis Ho

Asst Prof Vicky Koh

Asst Prof Wong Lea Choung

Dr Timothy Cheo

Dr Leong Yiat Horng

#### Pathology

A/Prof Fredrik Petersson

## LIVER, PANCREATIC AND BILARY (HPB) CANCER

#### Surgical Oncology

A/Prof Iyer Shridhar

Ganpathi (Lead)

Prof Krishnakumar Madhavan

Dr Glenn Bonney

## SUPPLEMENTS

Dr Alfred Kow

### **Diagnostic Imaging**

Dr Stanley Loh

Dr Prapul Rajendran

Dr Mangat Kamarjit Singh

Dr Pavel Singh

### **Haematology-Oncology**

Dr Chee Cheng Ean

Dr Ho Jingshan

Dr Raghav Sundar

Dr Tan Hon Lyn

Dr Yong Wei Peng

### **Gastroenterology &**

### **Hepatology**

Prof Lawrence Ho

Prof Lim Seng Gee

A/Prof Dan Yock Young

Dr Bhavesh Doshi

Dr Kristie Fan

Dr Michelle Angela Gowans

Dr Daniel Huang

Dr Calvin Koh

Dr Lee Guan Huei

Dr Jonathan Lee

Dr Lee Keat Hong

Dr Lee Yin Mei

Dr Leo Hartono Juanda

Dr Loo Wai Mun

Dr Low How Cheng

Dr Mark Dhinesh Muthiah

Dr Alex Soh

Dr Tan Poh Seng

### **Pathology**

Prof Aileen Wee

Dr Pang Yin Huei

Dr Gwyneth Soon

Dr Benjamin Wong

### **Radiation Oncology**

Asst Prof Francis Ho

Asst Prof Leong Cheng Nang

Asst Prof Jeremy Tey

Asst Prof Bala Vellayappan

Dr Leong Yiat Horng

## LUNG/THORACIC CANCER

### **Haematology Oncology**

Dr Ross Soo (Lead)

Adjunct Prof Goh Boon Cher

Dr Huang Yiqing

### **Cardiac, Thoracic &**

### **Vascular Surgery**

A/Prof John Tam

Dr Harish Mithiran Muthiah

### **Diagnostic Imaging**

Dr Anil Gopinathan

Dr Stanley Loh

Dr Loi Hoi Yin

Dr Sheldon Ng

Dr Arvind Kumar Sinha

Dr Lynette Teo

Dr Bernard Wee

### **Pathology**

Dr Seet Ju Ee

### **Radiation Oncology**

A/Prof Ivan Tham

Asst Prof Leong Cheng Nang

Asst Prof Koh Wee Yao

Dr Leong Yiat Horng

### **Respiratory and Critical**

### **Care Medicine**

Prof Lim Tow Keang

A/Prof Lee Pyng

Dr Adrian Kee

Dr Khoo Kay Leong

Dr See Kay Choong

## MUSCULOSKELETAL CANCER/SARCOMA

### **Hand & Reconstructive**

### **Microsurgery**

Dr Mark Puhaindran (Lead)

E/Prof Robert Pho

### **Orthopaedic Surgery**

Asst Prof Gurpal Singh

### **Diagnostic Imaging**

A/Prof Quek Swee Tian

Asst Prof Arvind Kumar Sinha

Dr Sachin Agrawal

Dr Louise Gartner

Dr James Hallinan

Dr David Sia

Dr Salil Singbal

### **Pathology**

A/Prof Victor Lee

Dr Susan Hue

### **Haematology-Oncology**

Dr Angela Pang

### **Radiation Oncology**

Asst Prof Timothy Cheo

Asst Prof Wong Lea Choung

Dr Ooi Kiat Huat

### **Paediatric Haematology-**

### **Oncology**

A/Prof Quah Thuan Chong

Dr Miriam Kimpoh

Dr Bernice Oh

## PAEDIATRIC HAEMATOLOGICAL MALIGNANCIES

### **Paediatric Haematology - Oncology**

A/Prof Allen Yeoh (Lead)

Prof Dario Campana

A/Prof Quah Thuan Chong

A/Prof Tan Poh Lin

Dr Elaine Coustan-Smith

Dr Krista Francisco

Dr Miriam Kimpoh

Dr Koh Pei Lin

Dr Shawn Lee

Dr Bernice Oh

Dr Mariflor S Villegas

Dr Frances Yeap

### **Diagnostic Imaging**

Dr Jeevesh Kapur

### **Pathology**

A/Prof Tan Soo Yong

A/Prof Ng Siok Bian

### **Radiation Oncology**

Asst Prof Vicky Koh

Dr Leong Yiat Horng

## PROSTATE/ UROLOGY CANCER

### **Surgical Oncology**

A/Prof Edmund Chiong (Lead)

Prof Kesavan Esuvaranathan

A/Prof Tiong Ho Yee

Dr Chua Wei Jin

Dr David T Consigliere

Dr Joe Lee

Dr Lincoln Tan

Dr Fiona Wu

Dr Wu Qinghui

### **Diagnostic Imaging**

Dr Bertrand Ang

Dr Wynne Chua

Dr Stanley Loh

Dr Edwin Siew

### **Hematology Oncology**

Prof John Eu-Li Wong

Dr Alvin Seng

### **Pathology**

Dr Thomas Paulraj

Thamboo

### **Radiation Oncology**

A/Prof Keith Lim

Asst Prof Jeremy Tey

## SKIN CANCER

### **Dermatology**

Dr Sue-Ann Ho (Lead)

Dr Nisha Suyien Chandran

### **Haematology-Oncology**

Dr Chong Wan Qin

### **Hand & Reconstructive**

### **Microsurgery**

Dr Soumen Das De

Dr Mark Puhaindran

### **Pathology**

A/Prof Tan Kong Bing

Dr Huang Jingxiang

### **Plastic, Reconstructive &**

### **Aesthetic Surgery**

Dr Lee Hanjing

Dr Yap Yan Lin

### **Radiation Oncology**

Dr Timothy Cheo

Dr Leong Yiat Horng

### **Surgical Oncology**

A/Prof Thomas Loh

Dr Ng Li Shia

## THYROID CANCER

### **Surgical Oncology**

A/Prof Thomas Loh (Lead)

Asst Prof Ngiam Kee Yuan

Dr Donovan Eu

Dr Lim Chwee Ming

Dr Rajeev Parameswaran

Dr Tan Wee Boon

### **Diagnostic Imaging**

Dr Loi Hoi Yin

Dr Peh Wee Ming

Dr Arvind Sinha

### **Endocrinology**

Dr Chionh Siok Bee

Dr Samantha Yang

Dr Kathleen Sek

### **Haematology Oncology**

Adjunct Prof Goh Boon Cher

### **Pathology**

A/Prof Nga Min En

A/Prof Fredrik Petersson

## UPPER GASTROINTESTINAL CANCER

### **Surgical Oncology**

Prof Jimmy So (Lead)

E/Prof Ti Thio Wong

Dr Kim Guo Wei

Dr Asim Shabbir

### **Diagnostic Imaging**

Dr Sheldon Ng

Dr Prapul Rajendran

Dr Pavel Singh

Dr Yang Cuntli

### **Gastroenterology &**

### **Hepatology**

Prof Lawrence Ho

A/Prof Yeoh Khay Guan

Dr Bhavesh Kishor Doshi

Dr Calvin Koh

Dr Jonathan Lee Wei Jie

Dr Lim Li Lin

Dr Low How Cheng

Dr Mark Dhinesh Muthiah

### **Haematology Oncology**

Dr Chee Cheng Ean

Dr Ho Jingshan

Dr Angela Pang

Dr Raghav Sundar

Dr Tan Hon Lyn

Dr Yong Wei Peng

### **Pathology**

A/Prof Nga Min En

Dr Jeffrey Lum

Dr Teh Ming

Dr Benjamin Wong

### **Radiation Oncology**

Asst Prof Bala Vellayappan

Asst Prof Leong Cheng Nang

Asst Prof Jeremy Tey

Asst Prof Francis Ho

Dr Leong Yiat Horng



# RESEARCH PUBLICATIONS BY THE NCIS (AUG - NOV 2018)

The names of authors from the NCIS are underlined. Please visit <http://bit.ly/ncisresearchpublication> for more information.

AUGUST	
01	A non-canonical tumor suppressive role for the long non-coding RNA MALAT1 in colon and breast cancers. <i>Int J Cancer</i> . 2018 Aug 1. 143(3):668-678. Kwok ZH, Roche V, Chew XH, Fadieieva A, <u>Tay Y</u> .
02	An anti-ASCT2 monoclonal antibody suppresses gastric cancer growth by inducing oxidative stress and antibody dependent cellular toxicity in preclinical models. <i>Am J Cancer Res</i> . 2018 Aug 1. 8(8):1499-1513. Osanai-Sasakawa A, ... <u>Kono K</u> , ... Nakai R et al.
03	Anticancer activities of a benzimidazole compound through sirtuin inhibition in colorectal cancer. <i>Future Med Chem</i> . 2018 Aug 1. Tan YJ, Lee YT, Yeong KY, Petersen SH, <u>Kono K</u> , Tan SC, Oon CE.
04	Serologic markers of viral infection and risk of non-Hodgkin lymphoma: A pooled study of three prospective cohorts in China and Singapore. <i>Int J Cancer</i> . 2018 Aug 1. 143(3):570-579. Bassig BA, Willhauck-Fleckenstein M, Shu XO, <u>Koh WP</u> , Gao YT, et al.
05	Tricho-rhino-phalangeal syndrome 1 protein functions as a scaffold required for ubiquitin-specific protease 4-directed histone deacetylase 2 de-ubiquitination and tumor growth. <i>Breast Cancer Res</i> . 2018 Aug 2. 20(1):83. Wang Y, Zhang J, Wu L, Liu W, Wei G, Gong X, Liu Y, Ma Z, Ma F, <u>Thiery JP</u> , Chen L.
06	Unusual masquerader of an adenomatous colorectal polyp. <i>Clin Gastroenterol Hepatol</i> . 2018 Aug 2. Gan TRX, <u>Ho LK</u> , <u>Chong CS</u> .
07	Cyclin-dependent kinase 9 as a potential specific molecular target in NK cell leukemia/lymphoma. <i>Haematologica</i> . 2018 Aug 3. Kinoshita S, Ishida T, Ito A, Narita T, Masaki A, Suzuki S, Yoshida T, Ri M, Kusumoto S, Komatsu H, Shimizu N, Inagaki H, Kuroda T, Scholz A, Ueda R, <u>Sanda T</u> , Iida S.
08	Styryl quinazolinones as potential inducers of myeloid differentiation via upregulation of C/EBP $\beta$ . <i>Molecules</i> . 2018 Aug 3. 23(8). Sridhar R, Takei H, Syed R, Kobayashi IS, Hui LB, Kamal A, <u>Tenen DG</u> , Kobayashi SS.
09	Does persistent anti-HBc positivity influence the prognosis of HBsAg-negative hepatocellular carcinoma? Comparative outcomes of anti-Hbc positive versus anti-Hbc negative non-B non-C HCC. <i>HPB (Oxford)</i> . 2018 Aug 4. Law JH, Tan JKH, Wong KYM, Ng WQ, Tan PS, <u>Bonney GK</u> , <u>Iyer SG</u> , <u>Krishnakumar M</u> , <u>Kow WCA</u> .
10	Amplification of Hsa-miR-191/425 Locus Promotes Breast Cancer Proliferation and Metastasis by Targeting DICER1. <i>Carcinogenesis</i> . 2018 Aug 6. Zhang X, Wu M, Chong QY, Zhang W, Qian P, Yan H, Qian W, Zhang M, <u>Lobie PE</u> , Zhu T.
11	LEE011 and ruxolitinib: a synergistic drug combination for natural killer/T-cell lymphoma (NKTCL). <i>Oncotarget</i> . 2018 Aug 7. 9(61):31832-31841. Hee YT, Yan J, Nizetic D, <u>Chng WJ</u> .
12	Optimizing drug combinations against multiple myeloma using a quadratic phenotypic optimization platform (QPOP). <i>Sci Transl Med</i> . 2018 Aug 8. 10(453). Rashid MBMA, Toh TB, Hooi L, Silva A, Zhang Y, Tan PF, Teh AL, Karnani N, <u>Jha S</u> , Ho CM, <u>Chng WJ</u> , Ho D, <u>Chow EK</u> .
13	ASXL2 regulates hematopoiesis in mice and its deficiency promotes myeloid expansion. <i>Haematologica</i> . 2018 Aug 9. Madan V, Han L, Hattori N, Teoh WW, Mayakonda A, Sun QY, Ding LW, Binte Mohd Nordin H, Lim SL, Shyamsunder P, Dakle P, Sundaresan J, Doan NB, Sanada M, Sato-Otsubo A, Meggendorfer M, Yang H, Said JW, Ogawa S, Haferlach T, Liang DC8, Shih LY, Nakamaki T, Wang QT, <u>Koeffler HP</u> .
14	Disseminated <i>Volvariella volvacea</i> infections in patients with haematological malignancies: a case series. <i>Clin Microbiol Infect</i> . 2018 Aug 9. Chew KL, Ng DHL, Teo JWP, <u>Tan KB</u> , <u>Poon LM</u> , Tambyah PA, Ong CWM.
15	Magnolol: A neolignan from the magnolia family for the prevention and treatment of cancer. <i>Int J Mol Sci</i> . 2018 Aug 10. 19(8). Ranaware AM, Banik K, Deshpande V, Padmavathi G, Roy NK, <u>Sethi G</u> , Fan L, <u>Kumar AP</u> , Kunnumakkara AB.
16	Comprehensive review of Hepatitis B Virus-associated hepatocellular carcinoma research through text mining and big data analytics. <i>Biol Rev Camb Philos Soc</i> . 2018 Aug 13. Lee WY, Bachtiar M, Choo CCS, <u>Lee CG</u> .
17	Identification of susceptibility pathways for the role of chromosome 15q25.1 in modifying lung cancer risk. <i>Nat Commun</i> . 2018 Aug 13. 9(1):3221. Ji X, Bossé Y Landi MT, ..., Butler LM, <u>Koh WP</u> , Gao YT, ... Amos CI, et al.
18	A clinical and molecular phase II trial of oral ENMD-2076 in ovarian clear cell carcinoma (OCCC): A study of the Princess Margaret phase II consortium. <i>Clin Cancer Res</i> . 2018 Aug 14. Lheureux S, Tinker A, Clarke B, Ghatage P, Welch S, Weberpals JI, Dhani NC, Butler MO, Tonkin K, Tan Q, <u>Tan DSP</u> , Brooks K, Ramsahai J, Wang L, Pham NA, Shaw PA, Tsao MS, Garg S, Stockley T, Oza AM.
19	Anti-tumor efficacy of Selinexor (KPT-330) in gastric cancer is dependent on nuclear accumulation of p53 tumor suppressor. <i>Sci Rep</i> . 2018 Aug 16. 8(1):12248. Subhash VV, Yeo MS, Wang L, <u>Tan SH</u> , Wong FY, Thuya WL, Tan WL, Peethala PC, Soe MY, <u>Tan DSP</u> , Padmanabhan N, Baloglu E, Shacham S, <u>Tan P</u> , <u>Koeffler HP</u> , <u>Yong WP</u> .
20	Multispectral optoacoustic tomography in assessment of breast tumor margins during breast-conserving surgery: A first-in-human case study. <i>Clin Breast Cancer</i> . 2018 Aug 16. Goh Y, Balasundaram G, Moothanchery M, Attia A, Li X, Lim HQ, Burton N, Qiu Y, Putti TC, <u>Chan CW</u> , <u>Iau P</u> , Tang SW, Ng CWQ, <u>Pool FJ</u> , <u>Pillay P</u> , Chua W, <u>Sterling E</u> , <u>Quek ST</u> , Olivo M.

## PUBLICATIONS

- 21 Survival outcomes following primary tumour resection for patients with incurable metastatic colorectal carcinoma. Experience from a single institution. *J Dig Dis*. 2018 Aug 17. [Lau JW](#), [Chang HS](#), [Lee KY](#), Gwee YX, Lee WQ, [Chong CS](#).
- 22 Annexin A1 in inflammation and breast cancer: a new axis in the tumor microenvironment. *Cell Adh Migr*. 2018 Aug 19. 1-7. [Moraes LA](#), [Ampomah PB](#), [Lim LHK](#).
- 23 Dependency on the TYK2/STAT1/MCL1 axis in anaplastic large cell lymphoma. *Leukemia*. 2018 Aug 21. [Prutsch N](#), ... [Inghirami GG](#), [Sanda T](#), [Look AT](#), [Turner SD](#), [Kenner L](#), [Merkel O](#).
- 24 Oncogenic transcriptional program driven by TAL1 in T-cell acute lymphoblastic leukemia. *Int J Hematol*. 2018 Aug 25. [Tan TK](#), [Zhang C](#), [Sanda T](#).
- 25 Enhancing the immune stimulatory effects of cetuximab therapy through TLR3 signalling in Epstein-Barr virus (EBV) positive nasopharyngeal carcinoma. *Oncoimmunology*. 2018 Aug 27. 7(11):e1500109. [Tan LSY](#), [Wong B](#), [Gangodu NR](#), [Lee AZE](#), [Kian Fong Liou A](#), [Loh KS](#), [Li H](#), [Yann Lim M](#), [Salazar AM](#), [Lim CM](#).
- 26 DNA methylation profiling of breast cancer cell lines along the epithelial mesenchymal spectrum-implications for the choice of circulating tumour DNA methylation markers. *Int J Mol Sci*. 2018 Aug 28. 19(9). [Le AV](#), [Szaumkessel M](#), [Tan TZ](#), [Thiery JP](#), [Thompson EW](#), [Dobrovic A](#).
- 27 Immunotherapy for esophageal squamous cell carcinoma: a review. *Fukushima J Med Sci*. 2018 Aug 29. 64(2):46-53. [Mimura K](#), [Yamada L](#), [Ujiie D](#), [Hayase S](#), [Tada T](#), [Hanayama H](#), [Thar Min AK](#), [Shibata M](#), [Momma T](#), [Saze Z](#), [Ohki S](#), [Kono K](#).
- 28 Prognostic impact of preoperative lymphocyte-to-monocyte ratio in patients with colorectal cancer with special reference to myeloid-derived suppressor cells. *Fukushima J Med Sci*. 2018 Aug 29. 64(2):64-72. [Shimura T](#), [Shibata M](#), [Gonda K](#), [Hayase S](#), [Sakamoto W](#), [Okayama H](#), [Fujita S](#), [Saito M](#), [Momma T](#), [Ohki S](#), [Kono K](#).
- 29 A genome-wide association study identifies three novel genetic markers for response to tamoxifen: A prospective multicenter study. *PLoS One*. 2018 Aug 30. 13(8):e0201606. [Onishi H](#), ... [Hartman M](#), [Chan CW](#), [Lee SC](#), ... [Zembutsu H](#) et al.
- 30 Associations between workability and patient-reported physical, psychological and social outcomes in breast cancer survivors: a cross-sectional study. *Support Care Cancer*. 2018 Aug. 26(8):2815-2824. [Ho PJ](#), [Hartman M](#), [Gernaat SAM](#), [Cook AR](#), [Lee SC](#), [Hupkens L](#), [Verkooyen HM](#).
- 31 Beyond the fear that lingers: The interaction between fear of cancer recurrence and rumination in relation to depression and anxiety symptoms. *J Psychosom Res*. 2018 Aug. 111:120-126. [Liu J](#), [Peh CX](#), [Simard S](#), [Griva K](#), [Mahendran R](#).
- 32 C/EBP $\beta$  is dispensable for steady-state and emergency granulopoiesis. *Haematologica*. 2018 Aug. 103(8):e331-e335. [Kardosova M](#), [Zjablovskaja P](#), [Danek P](#), [Angelisova P](#), [de Figueiredo-Pontes LL](#), [Welner RS](#), [Brdicka T](#), [Lee S](#), [Tenen DG](#), [Alberich-Jorda M](#).
- 33 CARD10, a CEBPE target involved in granulocytic differentiation. *Haematologica*. 2018 Aug. 103(8):1269-1277. [Shyamsunder P](#), [Sankar H](#), [Mayakonda A](#), [Han L](#), [Nordin HBM](#), [Woon TW](#), [Shanmugasundaram M](#), [Dakle P](#), [Madan V](#), [Koeffler HP](#).
- 34 Fatty acid activation in carcinogenesis and cancer development: Essential roles of long-chain acyl-CoA synthetases. *Oncol Lett*. 2018 Aug. 16(2):1390-1396. [Tang Y](#), [Zhou J](#), [Hooi SC](#), [Jiang YM](#), [Lu GD](#).
- 35 Identification of novel fusion transcripts in multiple myeloma. *J Clin Pathol*. 2018 Aug. 71(8):708-712. [Lin M](#), [Lee PL](#), [Chiu L](#), [Chua C](#), [Ban KHK](#), [Lin AHF](#), [Chan ZL](#), [Chung TH](#), [Yan B](#), [Chng WJ](#).
- 36 Melanotic neuroectodermal tumour of infancy: A case report and differential diagnosis. *Neuroradiol J*. 2018 Aug. 31(4):434-439. [Tan AP](#), [Jacques TS](#), [Mankad K](#), [James G](#), [Jeelani O](#), [Slater O](#), [D'Arco F](#).
- 37 NUDT21 negatively regulates PSMB2 and CXXC5 by alternative polyadenylation and contributes to hepatocellular carcinoma suppression. *Oncogene*. 2018 Aug. 37(35):4887-4900. [Tan S](#), [Li H](#), [Zhang W](#), [Shao Y](#), [Liu Y](#), [Guan H](#), [Wu J](#), [Kang Y](#), [Zhao J](#), [Yu Q](#), [Gu Y](#), [Ding K](#), [Zhang M](#), [Qian W](#), [Zhu Y](#), [Cai H](#), [Chen C](#), [Lobie PE](#), [Zhao X](#), [Sun J](#), [Zhu T](#).
- 38 Obstructive ileocolitis in patients with obstructed colorectal cancer - A matched case control study. *Ann Coloproctol*. 2018 Aug. 34(4):175-179. [Pang NQ](#), [Lim TZ](#), [Zhou Y](#), [Tan KK](#).
- 39 Quality of head and neck radiotherapy reporting in randomized controlled trials. *Head Neck*. 2018 Aug. 40(9):1854-1860. [Tseng M](#), [Tan TH](#), [Zheng H](#), [Soon YY](#), [Tey J](#).
- 40 Spontaneous regression of locally advanced nonsmall cell lung cancer: A case report. *Medicine (Baltimore)*. 2018 Aug. 97(31): e11291. [Ooi KH](#), [Cheo T](#), [Soon GST](#), [Leong CN](#).
- 41 The tumour suppressor OPCML promotes AXL inactivation by the phosphatase PTPRG in ovarian cancer. *EMBO Rep*. 2018 Aug. 19(8). [Antony J](#), [Zanini E](#), [Kelly Z](#), [Tan TZ](#), [Karali E](#), [Alomary M](#), [Jung Y](#), [Nixon K](#), [Cunnea P](#), [Fotopoulou C](#), [Paterson A](#), [Roy-Nawathe S](#), [Mills GB](#), [Huang RY](#), [Thiery JP](#), [Gabra H](#), [Recchi C](#).

### SEPTEMBER

- 42 Anticancer activities of a benzimidazole compound through sirtuin inhibition in colorectal cancer. *Future Med Chem*. 2018 Sep 1. 10(17):2039-2057. [Tan YJ](#), [Lee YT](#), [Yeong KY](#), [Petersen SH](#), [Kono K](#), [Tan SC](#), [Oon CE](#).
- 43 Formononetin-induced oxidative stress abrogates the activation of STAT3/5 signaling axis and suppresses the tumor growth in multiple myeloma preclinical model. *Cancer Lett*. 2018 Sep 1. 431:123-141. [Kim C](#), [Lee SG](#), [Yang WM](#), [Arfuso F](#), [Um JY](#), [Kumar AP](#), [Bian J](#), [Sethi G](#), [Ahn KS](#).
- 44 Intracerebral flexner-wintersteiner rosette-rich tumor with somatic RB1 mutation: A CNS embryonal tumor with retinoblastic differentiation. *J Neuropathol Exp Neurol*. 2018 Sep 1. 77(9):846-852. [Tan CL](#), [Kimpo MS](#), [Nga VDW](#), [Poon KS](#), [McLendon RE](#).
- 45 Loss of estrogen-regulated MIR135A1 at 3p21.1 promotes tamoxifen resistance in breast cancer. *Cancer Res*. 2018 Sep 1. 78(17):4915-4928. [Zhang W](#), [Wu M](#), [Chong QY](#), [Zhang M](#), [Zhang X](#), [Hu L](#), [Zhong Y](#), [Qian P](#), [Kong X](#), [Tan S](#), [Li G](#), [Ding K](#), [Lobie PE](#), [Zhu T](#).

- 46 Vistusertib (dual m-TORC1/2 inhibitor) in combination with paclitaxel in patients with high-grade serous ovarian and squamous non-small-cell lung cancer. *Ann Oncol*. 2018 Sep 1. 29(9):1918-1925. Basu B, Krebs MG, [Sundar R](#), Wilson RH, et al.
- 47 Phosphorylation of E-box binding USF-1 by PI3K/AKT enhances its transcriptional activation of the WBP2 oncogene in breast cancer cells. *FASEB J*. 2018 Sep 5. fj201801167RR. Ramos A, Miow QH, Liang X, Lin QS, [Putti TC](#), [Lim YP](#).
- 48 Ubiquitination and adaptive responses to BRAF inhibitors in Melanoma. *Mol Cell Oncol*. 2018 Sep 5. 5(5):e1497862. Saei A, [Eichhorn PJA](#).
- 49 Bidirectional regulation of adenosine-to-inosine (A-to-I) RNA editing by DEAH box helicase 9 (DHX9) in cancer. *Nucleic Acids Res*. 2018 Sep 6. 46(15):7953-7969. Hong H, An O, Chan THM, Ng VHE, Kwok HS, Lin JS, Qi L, Han J, Tay DJT, Tang SJ, Yang H, Song Y, Bellido Molias F, [Tenen DG](#), Chen L.
- 50 Co-activation of super-enhancer-driven CCAT1 by TP63 and SOX2 promotes squamous cancer progression. *Nat Commun*. 2018 Sep 6. 9(1):3619. Jiang Y, Jiang YY, Xie JJ, Mayakonda A, Hazawa M, Chen L, Xiao JF, Li CQ, Huang ML, Ding LW, Sun QY, Xu L, Kanojia D, Jeitany M, Deng JW, Liao LD, Soukiasian HJ8, Bertram BP, Hao JJ, Xu LY, Li EM, Wang MR, Bi XG, Lin DC, [Koeffler HP](#).
- 51 A novel SOCS5/miR-18/miR-25 axis promotes tumorigenesis in liver cancer. *Int J Cancer*. 2018 Sep 7. Sanchez-Mejias A, Kwon J, Chew XH, Siemens A, Sohn HS, Jing G, Zhang B, Yang H, [Tay Y](#).
- 52 Inhibition of interleukin-1 receptor-associated kinase 1 (IRAK1) as a therapeutic strategy. *Oncotarget*. 2018 Sep 7. 9(70):33416-33439. Singer JW, Fleischman A, Al-Fayoumi S, Mascarenhas JO, [Yu Q](#), Agarwal A.
- 53 Intensifying treatment of childhood b-lymphoblastic leukemia with IKZF1 deletion reduces relapse and improves overall survival: Results of Malaysia-Singapore ALL 2010 study. *J Clin Oncol*. 2018 Sep 10. 36(26):2726-2735. [Yeoh AEJ](#), Lu Y, Chin WHN, Chiew EKH, Lim EH, Li Z, Kham SKY, Chan YH, Abdullah WA, Lin HP, Chan LL, Lam JCM, [Tan PL](#), [Quah TC](#), [Tan AM](#), Ariffin H.
- 54 Molecular Subtypes of Urothelial Bladder Cancer: Results from a Meta-cohort Analysis of 2411 Tumors. *Eur Urol*. 2018 Sep 10. Tan TZ, Rouanne M, Tan KT, [Huang RY](#), [Thiery JP](#).
- 55 Oncogenic activation of the STAT3 pathway drives PD-L1 expression in natural killer/T-cell lymphoma. *Blood*. 2018 Sep 13. 132(11):1146-1158. Song TL, Nairismägi ML, Laurensia Y, Lim JQ, Tan J, Li ZM, ... [Ng SB](#), [Chng WJ](#), Teh BT, [Tan SY](#), Verma NK, Fan H, Lim ST, Ong CK.
- 56 The role of liver-directed therapy in metastatic colorectal cancer. *Curr Colorectal Cancer Rep*. 2018 Sep 13. 14(5): 129-137. [Tan HL](#), [Lee M](#), [Vellayappan BA](#), [Neo WT](#), [Yong WP](#).
- 57 The role of signal transducer and activator of transcription 3 (STAT3) and its targeted inhibition in hematological malignancies. *Cancers (Basel)*. 2018 Sep 13. 10(9). Arora L, [Kumar AP](#), Arfuso F, [Chng WJ](#), [Sethi G](#).
- 58 Resistance to FLT3 inhibitors in acute myeloid leukemia: Molecular mechanisms and resensitizing strategies. *World J Clin Oncol*. 2018 Sep 14. 9(5):90-97. Zhou J, [Chng WJ](#).
- 59 Glycosyltransferase gene expression identifies a poor prognostic colorectal cancer subtype associated with mismatch repair deficiency and incomplete glycan synthesis. *Clin Cancer Res*. 2018 Sep 15. 24(18):4468-4481. Noda M, Okayama H, Tachibana K, Sakamoto W, Saito K, Thar Min AK, Ashizawa M, Nakajima T, Aoto K, Momma T, Katakura K, Ohki S, [Kono K](#).
- 60 SAHA and cisplatin sensitize gastric cancer cells to doxorubicin by induction of DNA damage, apoptosis and perturbation of AMPK-mTOR signalling. *Exp Cell Res*. 2018 Sep 15. 370(2):283-291. Seah KS, Loh JY, Nguyen TTT, Tan HL, Hutchinson PE, Lim KK, Dymock BW, Long YC, Lee EJD, [Shen HM](#), Chen ES.
- 61 Women's preferences, willingness-to-pay, and predicted uptake for single-nucleotide polymorphism gene testing to guide personalized breast cancer screening strategies: a discrete choice experiment. *Patient Prefer Adherence*. 2018 Sep 18. 12:1837-1852. Wong XY, Groothuis-Oudshoorn CG, Tan CS, van Til JA, [Hartman M](#), Chong KJ, IJzerman MJ, Wee HL.
- 62 A novel Δ integrase-mediated seamless vector transgenesis platform for therapeutic protein expression. *Nucleic Acids Res*. 2018 Sep 19. 46(16):e99. Makhija H, Roy S, Hoon S, Ghadessy FJ, Wong D, Jaiswal R, [Campana D](#), Dröge P.
- 63 Aberrant hyperediting of the myeloma transcriptome by ADAR1 confers oncogenicity and is a marker of poor prognosis. *Blood*. 2018 Sep 20. 132(12):1304-1317. Teoh PJ, An O, Chung TH, Chooi JY, Toh SHM, Fan S, Wang W, Koh BTH, Fullwood MJ, [Qoi MG](#), [de Mel S](#), Soekoyo CY, Chen L, [Ng SB](#), Yang H, [Chng WJ](#).
- 64 Association between inflammatory potential of diet and risk of lung cancer among smokers in a prospective study in Singapore. *Eur J Nutr*. 2018 Sep 25. Shivappa N, Wang R, Hébert JR, Jin A, [Koh WP](#), Yuan JM.
- 65 Mitochondrial uncoupling reveals a novel therapeutic opportunity for p53-defective cancers. *Nat Commun*. 2018 Sep 26. 9(1):3931. Kumar R, Coronel L, Somalanka B, Raju A, Aning OA, An O, Ho YS, Chen S, Mak SY, Hor PY, Yang H, Lakshmanan M, Itoh H, [Tan SY](#), Lim YK, Wong APC, Chew SH, Huynh TH, Goh BC, Lim CY, Tergaonkar V, Cheok CF.
- 66 Morel-Lavallee lesion of the right thigh mimicking sarcoma. *Am J Phys Med Rehabil*. 2018 Sep 26. Teng VSY, Sia SY, Zhang J, Gartner LE, Unnikrishnan K, [Puhaindran ME](#), Hallinan JTPD.
- 67 Molecular profiling reveals immunogenic cues in anaplastic large cell lymphomas with DUSP22 rearrangements. *Blood*. 2018 Sep 27. 132(13):1386-1398. Luchtel RA, Dasari S, ...[Chng WJ](#), Huang G, Link BK, Facchetti F, Cerhan JR, d'Amore F, Ansell SM, Feldman AL.
- 68 Oleuropein induces apoptosis via abrogating NF-KB activation cascade in estrogen receptor-negative breast cancer cells. *J Cell Biochem*. 2018 Sep 27. Liu L, Ahn KS, Shanmugam MK, Wang H, Shen H, Arfuso F, Chinnathambi A, Alharbi SA, Chang Y, [Sethi G](#), Tang FR.
- 69 Diagnosis and management of radiation necrosis in patients with brain metastases. *Front Oncol*. 2018 Sep 28. 8:395.  
[Vellayappan B](#), Tan CL, Yong C, [Khor LK](#), [Koh WY](#), [Yeo TT](#), Detsky J, Lo S, Sahgal A.

## PUBLICATIONS

- 70 Novel tumor necrosis factor- $\beta$  induced protein eight (TNFAIP8/TIPE) family: Functions and downstream targets involved in cancer progression. *Cancer Lett.* 2018 Sep 28. 432:260-271. Padmavathi G, Banik K, Monisha J, Bordoloi D, Shabnam B, Arfuso F, [Sethi G](#), Fan L, Kunnumakkara AB.
- 71 A roundtable on responsible innovation with autologous stem cells in Australia, Japan and Singapore. *Cytotherapy.* 2018 Sep. 20(9):1103-1109. Lysaght T, Munsie M, Castricum A, Hui JHP, Okada K, Sato Y, Sawa Y, Stewart C, [Tan LK](#), Tan LHY, Sugii S.
- 72 Cancer supportive and survivorship care in Singapore: Current challenges and future outlook. *J Glob Oncol.* 2018 Sep. (4):1-8. Loh KW, Ng T, Choo SP, Saw HM, [Mahendran R](#), Tan C, Chang GCY, Ong YJ, Yee ACP, Chan A, Soo KC.
- 73 Cellular-based immunotherapy in Epstein-Barr virus induced nasopharyngeal cancer. *Oral Oncol.* 2018 Sep. 84:61-70. Lee AZE, Tan LSY, [Lim CM](#).
- 74 Clinical outcomes of adolescents and young adults with advanced solid tumours participating in phase I trials. *Eur J Cancer.* 2018 Sep. 101:55-61. [Sundar R](#), McVeigh T, Dolling D, Petrukevitch A, Diamantis N, Ang JE, Chenard-Poirier M, Collins D, [Lim J](#), Ameratunga M, Khan K, Kaye SB, Banerji U, Lopez J, George AJ, de Bono JS, van der Graaf WT.
- 75 Enhanced Liver Fibrosis Score as a Predictor of Hepatocellular Carcinoma. *Clin Chem.* 2018 Sep. 64(9):1404-1405. Loo WM, Goh GB, Wang Y, Yuan JM, Ong L, [Dan YY](#), [Koh WP](#).
- 76 Implementation of temporal lobe contouring protocol in head and neck cancer radiotherapy planning: A quality improvement project. *Medicine (Baltimore).* 2018 Sep. 97(38):e12381. Ho F, [Tey J](#), [Chia D](#), [Soon YY](#), [Tan CW](#), [Bahiah S](#), Cheo T, Tham IWK.
- 77 KDM6B Counteracts EZH2-Mediated Suppression of IGFBP5 to Confer Resistance to PI3K/AKT Inhibitor Treatment in Breast Cancer. *Mol Cancer Ther.* 2018 Sep. 17(9):1973-1983. Wang W, Lim KG, Feng M, Bao Y, Lee PL, Cai Y, Chen Y, Zhang H, Marzese D, Hoon DSB, [Yu Q](#).
- 78 Post-intervention sustainability of a brief psycho-educational support group intervention for family caregivers of cancer patients. *Asia Pac Psychiatry.* 2018 Sep. 10(3):e12305. Tan JYS, Lam KFY, Lim HA, Chua SM, Kua EH, Griva K, [Mahendran R](#).
- 79 Survival outcomes following primary tumor resection for patients with incurable metastatic colorectal carcinoma: Experience from a single institution. *J Dig Dis.* 2018 Sep. 19(9):550-560. Lau JW, Chang HS, Lee KY, Gwee YX, Lee WQ, [Chong CS](#).
- 80 The c-MYC-BMI1 axis is essential for SETDB1-mediated breast tumorigenesis. *J Pathol.* 2018 Sep. 246(1):89-102. Xiao JF, Sun QY, Ding LW, Chien W, Liu XY, Mayakonda A, Jiang YY, Loh XY, Ran XB, Doan NB, Castor B, Chia D, Said JW, Tan KT, Yang H, [Fu XY](#), Lin DC, [Koeffler HP](#).
- 81 The evolution and rise of stereotactic body radiotherapy (SBRT) for spinal metastases. *Expert Rev Anticancer Ther.* 2018 Sep. 18(9):887-900. [Vellayappan BA](#), Chao ST, Foote M, Guckenberger M, Redmond KJ, Chang EL, Mayr NA, Sahgal A, Lo SS.
- 82 Three sequential lymphomatous tumors in a patient. *Indian J Dermatol.* 2018 Sep-Oct. 63(5):443-444. Choi E, Yang S, [Tan KB](#), Aw D, Chandran NS.
- 83 Transanal total mesorectal excision for locally advanced pT4b rectal cancers. *ANZ J Surg.* 2018 Sep. 88(9):928-929. Tan CHN, [Lee KC](#), [Cheong WK](#), [Chong CS](#).

### OCTOBER

- 84 Actin cytoskeleton remodeling drives breast cancer cell escape from natural killer-mediated cytotoxicity. *Cancer Res.* 2018 Oct 1. 78(19):5631-5643. Al Absi A, Wurzer H, Guerin C, Hoffmann C, Moreau F, Mao X, Brown-Clay J, Petrolli R, Casellas CP, Dieterle M, [Thiery JP](#), Chouaib S, Berchem G, Janji B, Thomas C.
- 85 Profiling the B/T cell receptor repertoire of lymphocyte derived cell lines. *BMC Cancer.* 2018 Oct 1. 18(1):940. Tan KT, Ding LW, Sun QY, Lao ZT, Chien W, Ren X, Xiao JF, Loh XY, Xu L, Lill M, Mayakonda A, Lin DC, Yang H, [Koeffler HP](#).
- 86 XIAP facilitates breast and colon carcinoma growth via promotion of p62 depletion through ubiquitination-dependent proteasomal degradation. *Oncogene.* 2018 Oct 1. Huang X, Wang XN, Yuan XD, Wu WY, [Lobie PE](#), Wu Z.
- 87 The influence of the middle hepatic vein and its impact on outcomes in right lobe living donor liver transplantation. *HPB (Oxford).* 2018 Oct 3. Tan CHN, Hwang S, [Bonney GK](#), [Ganpathi IS](#), [Madhavan K](#), [Kow WCA](#).
- 88 Design and synthesis of potent dual inhibitors of JAK2 and HDAC based on fusing the pharmacophores of XL019 and vorinostat. *Eur J Med Chem.* 2018 Oct 5. 158:593-619. Chu-Farseeva YY, Mustafa N, Poulsen A, Tan EC, Yen JJY, [Chng WJ](#), Dymock BW.
- 89 Molecular targets modulated by fangchinoline in tumor Cells and preclinical models. *Molecules.* 2018 Oct 5. 23(10). M rarchi M, [Sethi G](#), Fan L, Mishra S, Arfuso F, Ahn KS.
- 90 BRAF mutation in papillary thyroid cancer-prevalence and clinical correlation in a South-East Asian cohort. *Clin Otolaryngol.* 2018 Oct 8. Goh X, Lum J, [Yang SP](#), [Chionh SB](#), [Koay E](#), Chiu L, [Parameswaran R](#), [Ngiam KY](#), [Loh TKS](#), [Nga ME](#), [Lim CM](#).
- 91 Commentary: Stereotactic body radiotherapy for spinal metastases at the extreme ends of the spine: Imaging-based outcomes for cervical and sacral metastases. *Neurosurgery.* 2018 Oct 8. [Vellayappan B](#), Tan D, Foote M, Redmond KJ, Lo SS.
- 92 Combined hepatocellular carcinoma and high grade neuroendocrine carcinoma with EWSR1 gene rearrangement. *Pathology.* 2018 Oct 9. Chuah KL, [Pang B](#), [Lim D](#), Lee CK, Chau CY.
- 93 Non-canonical activation of  $\beta$ -catenin by PRL-3 phosphatase in acute myeloid leukemia. *Oncogene.* 2018 Oct 10. Chong PSY, Zhou J, Chooi JY, Chan ZL, Toh SHM, Tan TZ, Wee S, Gunaratne J, Zeng Q, [Chng WJ](#).
- 94 The arginase inhibitor N $\beta$ -hydroxy-nor-arginine (nor-NOHA) induces apoptosis in leukemic cells specifically under hypoxic conditions but CRISPR/Cas9 excludes arginase 2 (ARG2) as the functional target. *PLoS One.* 2018 Oct 11. 13(10):e0205254. Ng KP, Manjeri A, Lee LM, Chan ZE, Tan CY, Tan QD, Majeed A, [Lee KL](#), Chuah C, [Suda T](#), Ong ST.

- 95 Low-level expression of SAMHD1 in acute myeloid leukemia (AML) blasts correlates with improved outcome upon consolidation chemotherapy with high-dose cytarabine-based regimens. *Blood Cancer J.* 2018 Oct 19. 8(11):98. Rassidakis GZ, Herold N, Myrberg IH, Tsesmetzis N, Rudd SG, Henter JI, Schaller T, Ng SB, Chng WJ, Yan B, Ng CH, Ravandi F, et al.
- 96 Dosimetric evaluation and systematic review of radiation therapy techniques for early stage node-negative breast cancer treatment. *Cancer Manag Res.* 2018 Oct 23. 10:4853-4870. Chan TY, Tang JI, Tan PW, Roberts N.
- 97 Adenocarcinoma in a Meckel's diverticulum presenting as a phlegmon: a case report and a review of the literature. *ANZ J Surg.* 2018 Oct 24. Buan BJL, Chang HSY, Wang S, Chong CS.
- 98 A-kinase anchor protein 12 (AKAP12) inhibits cell migration in breast cancer. *Exp Mol Pathol.* 2018 Oct 30. 105(3):364-370. Soh RYZ, Lim JP, Samy RP, Chua PJ, Bay BH.
- 99 Decoding transcriptomic intra-tumour heterogeneity to guide personalised medicine in ovarian cancer. *J Pathol.* 2018 Oct 30. Tan TZ, Heong V, Ye J, Lim D, Low J, Choolani M, Scott C, Tan DSP, Huang RY.
- 100 Potential anti-inflammatory and anti-cancer properties of farnesol. *Molecules.* 2018 Oct 31. 23(11). Jung YY, Hwang ST, Sethi G, Fan L, Arfuso F, Ahn KS.
- 101 A case of rectal colon cancer with paraneoplastic cerebellar degeneration. *Gan To Kagaku Ryoho.* 2018 Oct. 45(10):1510-1512. Gonda K, Kikuchi T, Shibata M, Hatakeyama Y, Tachiya Y, Rokkaku Y, Endo H, Fujita S, Sakamoto W, Hayase S, Okayama H, Hanayama H, Tada T, Nirei A, Ujiie D, Yamada R, Saze Z, Momma T, Ohki S, Kono K.
- 102 A Case of Recurrent Colon Cancer with Peritoneal Dissemination Treated with Aflibercept Showing Partial Response for One Year. *Gan To Kagaku Ryoho.* 2018 Oct. 45(10):1539-1542. Gonda K, Fujita S, Shibata M, Hatakeyama Y, Tachiya Y, Rokkaku Y, Saze Z, Momma T, Ohki S, Saji S, Kono K.
- 103 Development of a new patient-derived xenograft humanised mouse model to study human-specific tumour microenvironment and immunotherapy. *Gut.* 2018 Oct. 67(10):1845-1854. Zhao Y, ..., Iyer SG, Bonney GK, ... Chen Q et al.
- 104 Endoscopic stenting should be advocated in patients with stage IV colorectal cancer presenting with acute obstruction. *J Gastrointest Oncol.* 2018 Oct. 9(5):785-790. Lim TZ, Chan DKH, Tan KK.
- 105 Factors influencing extended hospital stay in patients undergoing metastatic spine tumour surgery and its impact on survival. *J Clin Neurosci.* 2018 Oct. 56:114-120. Kumar N, Patel RS, Wang SSY, Tan JYH, Singla A, Chen Z, Ravikumar N, Tan A, Kumar N, Hey DHW, Prasad SV, Vellayappan B.
- 106 Identification of novel lncRNAs regulated by the TAL1 complex in T-cell acute lymphoblastic leukemia. *Leukemia.* 2018 Oct. 32(10):2138-2151. Ngoc PCT, Tan SH, Tan TK, Chan MM, Li Z, Yeoh AEJ, Tenen DG, Sanda T.
- 107 Induction chemotherapy for locally advanced nasopharyngeal carcinoma treated with concurrent chemoradiation: A systematic review and meta-analysis. *Radiother Oncol.* 2018 Oct. 129(1):10-17. Tan TH, Soon YY, Cheo T, Ho F, Wong LC, Tey J, Tham IWK.
- 108 Molecular profiling of different glioma specimens from an Ollier disease patient suggests a multifocal disease process in the setting of IDH mosaicism. *Brain Tumour Pathol.* 2018 Oct. 35(4):202-208. Tan CL, Vellayappan B, Wu B, Yeo TT, McLendon RE.
- 109 Recent advances in the management of multiple myeloma: clinical impact based on resource-stratification. Consensus statement of the Asian Myeloma Network at the 16th international myeloma workshop. *Leuk Lymphoma.* 2018 Oct. 59(10):2305-2317. Tan D, Lee JH, Chen W, Shimizu K, Hou J, Suzuki K, Nawarawong W, Huang SY, Sang Chim C, Kim K, Kumar L, Malhotra P, Chng WJ, Durie B; Asian Myeloma Network.
- 110 Successful treatment of refractory autoimmune hemolytic anemia after allogeneic hematopoietic stem cell transplantation with bortezomib. *Leuk Lymphoma.* 2018 Oct. 59(10):2500-2502. Cao L, Koh LP, Linn YC.
- 111 The genetic basis and cell of origin of mixed phenotype acute leukaemia. *Nature.* 2018 Oct. 562(7727):373-379. Alexander TB Gu Z, Iacobucci I, Dickerson K, Choi JK, Xu B, Payne-Turner D, Yoshihara H, Loh ML, Horan J, Buldini B, Basso G, Elitzur S, de Haas V, Zwaan CM, Yeoh A, Reinhardt D, et al.
- 112 The role of Vitamin D receptor polymorphisms in predicting the response to therapy for nonmuscle invasive bladder carcinoma. *J Urol.* 2018 Oct. 200(4):737-742. Wang Z, Lim YK, Lim HCC, Chan YH, Ngiam N, Raman Nee Mani L, Esuvaranathan K, Ng CF, Teoh J, Chan E, Mahendran R, Chiong E.

## NOVEMBER

- 113 Association of body mass index and age with subsequent breast cancer risk in premenopausal women. *JAMA Oncol.* 2018 Nov 1. 4(11):e181771. Premenopausal Breast Cancer Collaborative Group, Schoemaker MJ, ..., Kitahara CM, Koh WP, ..., Swerdlow AJ, et al.
- 114 Real-time tumor gene expression profiling to direct gastric cancer chemotherapy: Proof-of-concept "3G" trial. *Clin Cancer Res.* 2018 Nov 1. 24(21):5272-5281. Yong WP, Rha SY, Tan IB, Choo SP, Syn NL, Koh V, Tan SH, Asuncion BR, Sundar R, So JB, Shabbir A, Tan CS, Kim HS, Jung M, Chung HC, Ng MCH, Tai DW, Lee MH, Wu J, Yeoh KG, Tan P; Singapore Gastric Cancer Consortium (SGCC).
- 115 Stressing the (epi)genome: Dealing with reactive oxygen species in cancer. *Antioxid Redox Signal.* 2018 Nov 1. 29(13):1273-1292. Bhat AV, Hora S, Pal A, Jha S, Taneja R.
- 116 A multicentre evaluation of the role of the prostate health index (PHI) in regions with differing prevalence of prostate cancer: Adjustment of PHI reference ranges is needed for European and Asian settings. *Eur Urol.* 2018 Nov 2. Chiu PK, ... Tan LG, Chiong E, ... Roobol MJ et al.
- 117 Aberrant glycosylation in colorectal cancer with genomic and epigenomic alterations. *Oncotarget.* 2018 Nov 2. 9(86):35609-35610. Okayama H, Noda M, Kono K.
- 118 KDM4B-regulated unfolded protein response as a therapeutic vulnerability in PTEN-deficient breast cancer. *J Exp Med.* 2018 Nov 5. 215(11):2833-2849. Wang W, Oguz G, Lee PL, Bao Y, Wang P, Terp MG, Ditzel HJ, Yu Q.

## PUBLICATIONS

- 119 N-substituted pyrido-1,4-oxazin-3-ones induce apoptosis of hepatocellular carcinoma cells by targeting NF-KB signaling pathway. *Front Pharmacol*. 2018 Nov 5. 9:1125. Mohan CD, Bharathkumar H, Dukanya, Rangappa S, Shanmugam MK, Chinnathambi A, Alharbi SA, Alahmadi TA, Bhattacharjee A, [Lobie PE](#), Deivasigamani A, Hui KM, [Sethi G](#), Basappa, Rangappa KS, [Kumar AP](#).
- 120 Lorlatinib in patients with ALK-positive non-small-cell lung cancer: results from a global phase 2 study. *Lancet Oncol*. 2018 Nov 6. Solomon BJ, Besse B, Bauer TM, Felip E, [Soo RA](#), Camidge DR, Chiari R, Bearz A, Lin CC, Gadgeel SM, Riely GJ, Tan EH, Seto T, James LP, Clancy JS, Abbattista A, Martini JF, Chen J, Peltz G, Thurm H, Ignatius Ou SH, Shaw AT.
- 121 A review on liquid chromatography-tandem mass spectrometry methods for rapid quantification of oncology drugs. *Pharmaceutics*. 2018 Nov 8. 10(4). [Wong AL](#), Xiang X, Ong PS, Mitchell EQY, Syn N, Wee I, [Kumar AP](#), [Yong WP](#), [Sethi G](#), [Goh BC](#), Ho PC, Wang L.
- 122 Ophiopogonin D, a steroidal glycoside abrogates STAT3 signaling cascade and exhibits anti-cancer activity by causing GSH/GSSG imbalance in lung carcinoma. *Cancers (Basel)*. 2018 Nov 8. 10(11). Lee JH, Kim C, Lee SG, [Sethi G](#), Ahn KS.
- 123 Role of tumor-derived exosomes in cancer metastasis. *Biochim Biophys Acta Rev Cancer*. 2018 Nov 9. 1871(1):12-19. Wee I, Syn N, [Sethi G](#), [Goh BC](#), Wang L.
- 124 Whole exome sequencing identifies recessive germline mutations in FAM160A1 in familial NK/T cell lymphoma. *Blood Cancer J*. 2018 Nov 12. 8(11):111. Chan JY, Ng AYJ, Cheng CL, ... [Tan SY](#), Lim ST, Ong CK, Tang T.
- 125 Reproductive factors, obesity and risk of colorectal cancer in a cohort of Asian women. *Cancer Epidemiol*. 2018 Nov 15;58:33-43. Wong TS, Chay WY, Tan MH, Chow KY, [Lim WY](#).
- 126 The transcriptional coactivator WBP2 primes triple-negative breast cancer cells for responses to Wnt signaling via the JNK/Jun kinase pathway. *J Biol Chem*. 2018 Nov 15. Li Z, Lim SK, Liang X, [Lim YP](#).
- 127 Clinical pharmacogenetics implementation consortium (CPIC) guideline for thiopurine dosing based on TPMT and NUDT15 genotypes: 2018 update. *Clin Pharmacol Ther*. 2018 Nov 17. Relling MV, Schwab M, ... [Yeoh AEJ](#), Schmiegelow K, Yang JJ.
- 128 Expression of two non-mutated genetic elements is sufficient to stimulate oncogenic transformation of human mammary epithelial cells. *Cell Death Dis*. 2018 Nov 19. 9(12):1147. Pandey V, Zhang M, You M, Zhang W, Chen R, Zhang W, Ma L, Wu ZS, Zhu T, Xu XQ, [Lobie PE](#).
- 129 Pan-Asian adapted ESMO clinical practice guidelines for the management of patients with metastatic gastric cancer; a JSMO-ESMO initiative endorsed by CSCO, KSMO, MOS, SSO and TOS. *Ann Oncol*. 2018 Nov 22. Muro K, Van Cutsem E, Narita Y, Pentheroudakis G, Baba E, Li J, Ryu MH, Zamaniah WIW, [Yong WP](#), et al.
- 130 Pan-Asian adapted ESMO Clinical Practice Guidelines for the management of patients with metastatic oesophageal cancer; a JSMO-ESMO initiative endorsed by CSCO, KSMO, MOS, SSO and TOS. *Ann Oncol*. 2018 Nov 22. Muro K, Lordick F, Tsushima T, Pentheroudakis G, Baba E, Lu Z, Cho BC, Nor IM, Ng M, Chen LT, Kato K, Li J, Ryu MH, Zamaniah WIW, [Yong WP](#), Yeh KH, et al.
- 131 Ectopic cervical well differentiated thymic carcinoma: report of a diagnostically challenging rare case. *Pathology*. 2018 Nov 23. Goh GH, Wang FF, [Loh KS](#), [Pettersson F](#).  
  
MMSET I acts as an oncoprotein and regulates GLO1 expression in t(4;14) multiple myeloma cells. *Leukemia*. 2018 Nov 23. Xie Z, Chooi JY, Toh SHM, Yang D, Basri NB, Ho YS, [Chng WJ](#).
- 132 Human wharton's jelly mesenchymal stem cells show unique gene expression compared to bone marrow mesenchymal stem cells using single-cell RNA-sequencing. *Stem Cells Dev*. 2018 Nov 28. Barrett A, Fong CY, Subramanian A, Liu W, Feng Y, [Choolani M](#), Biswas A, Rajapakse J, Bongso A.
- 133 Super-enhancer-associated MEIS1 promotes transcriptional dysregulation in Ewing sarcoma in cooperation with EWS-FLI1. *Nucleic Acids Res*. 2018 Nov 28. Lin L, Huang M, Shi X, Mayakonda A, Hu K, Jiang YY, Guo X, Chen L, [Pang B](#), Doan N, Said JW, Xie J, Gery S, Cheng X, Lin Z, Li J, Berman BP, Yin D, Lin DC, [Koeffler HP](#).
- 134 Transcriptional landscape of B cell precursor acute lymphoblastic leukemia based on an international study of 1,223 cases. *Proc Natl Acad Sci U S A*. 2018 Nov 28. Li JF, Dai YT, ... [Yeoh AE](#), Hayakawa F, Chen Z, Pui CH, Fioretos T, Chen SJ, Huang JY.
- 135 Is high vitamin B12 status a cause of lung cancer? *Int J Cancer*. 2018 Nov 29. Fanidi A Carreras-Torres R, Larose TL, ..., Arnold SM, [Koh WP](#), Brennan P; LC consortium and the TRICL consortium et al.
- 136 A study of 1088 consecutive cases of electrolyte abnormalities in oncology phase I trials. *Eur J Cancer*. 2018 Nov. 104:32-38. Ingles Garces AH, Ang JE, Ameratunga M, Chénard-Poirier M, Dolling D, Diamantis N, Seeramreddi S, [Sundar R](#), de Bono J, Lopez J, Banerji U.
- 137 ARID1A and CEBPD cooperatively inhibit UCA1 transcription in breast cancer. *Oncogene*. 2018 Nov. 37(45):5939-5951. Guo X, Zhang Y, Mayakonda A, Madan V, ... [Koeffler HP](#).
- 138 CDK4-6 inhibitors in breast cancer: current status and future development. *Expert Opin Drug Metab Toxicol*. 2018 Nov. 14(11):1123-1138. Choo JR, Lee SC.
- 139 ENL: structure, function, and roles in hematopoiesis and acute myeloid leukemia. *Cell Mol Life Sci*. 2018 Nov. 75(21):3931-3941. Zhou J, Ng Y, [Chng WJ](#).
- 140 Maftools: efficient and comprehensive analysis of somatic variants in cancer. *Genome Res*. 2018 Nov. 28(11):1747-1756. Mayakonda A, Lin DC, Assenov Y, Plass C, [Koeffler HP](#).
- 141 Modern-day palliative chemotherapy for metastatic colorectal cancer: does colonic resection affect survival? *ANZ J Surg*. 2018 Nov. 88(11):E772-E777. [Lau JW](#), [Chang HSY](#), [Lee KY](#), Gwee YX, Lee WQ, [Chong CS](#).
- 142 Sequential treatment with afatinib and osimertinib in patients with EGFR mutation-positive non-small-cell lung cancer: an observational study. *Future Oncol*. 2018 Nov. 14(27):2861-2874. Hochmair MJ, Morabito A, Hao D, Yang CT, [Soo RA](#), Yang JC, et al.
- 143 Weekly versus 3-weekly paclitaxel in combination with carboplatin in advanced ovarian cancer: which is the optimal adjuvant chemotherapy regimen? *J Gynecol Oncol*. 2018 Nov. 29(6):e96. [Lee MX](#), [Tan DS](#).

# NCIS EVENTS & PROGRAMMES (JAN - JUN 2019)

## JANUARY

- ▶ 1<sup>st</sup> Singapore Geriatric Cancer Symposium  
For Healthcare Professionals / Allied Health Professionals / Researchers
- ▶ Caregiver Workshops  
For NCIS Caregivers
- ▶ Chinese New Year Craft Workshop  
For NCIS Patients / Caregivers
- ▶ GP CME Talk - NCIS Cancer Updates for GP: Prostate Cancer Screening, Cervical Cancer Screening and Cancer Prevention: Obesity Management  
For GPs / Family Physicians
- ▶ January Oncology Grand Rounds – Genes, Genomics and Immunology: Cancer Medicine Transformed  
For Healthcare Professionals
- ▶ January Oncology Grand Rounds – Polypharmacy and Drug Interactions in Cancer Patients  
For Healthcare Professionals
- ▶ January Oncology Grand Rounds - Optimization of Care of Geriatric Oncology Patients with the 65+ Programme in MSKCC  
For Healthcare Professionals
- ▶ Relax your Mind Yoga Class  
For NCIS Patients / Caregivers

## FEBRUARY

- ▶ Chinese New Year Craft Workshop  
For NCIS Patients and Caregivers
- ▶ February Oncology Grand Rounds - Esophageal Cancer in 2019: A Surgeon's Vantage Point  
For Healthcare Professionals
- ▶ February Oncology Grand Rounds – Rehabilitation in Chemo Induced Peripheral Neuropathy  
For Healthcare Professionals
- ▶ Look Good Feel Better Workshop  
For NCIS Patients only
- ▶ MindCAN Research Programme  
For NCIS Patients only
- ▶ Relax Your Mind Yoga Class  
For NCIS patients / Caregivers

## MARCH

- ▶ 9<sup>th</sup> National Myeloma Forum  
For the Public
- ▶ Colorectal Cancer Awareness  
For the Public
- ▶ Living Well with Cancer Education Series  
For NCIS Patients only
- ▶ March Oncology Grand Rounds  
For Healthcare Professionals

- ▶ NCIS Ribbon Challenge  
For the Public
- ▶ MindCAN Research Programme  
For NCIS Patients only
- ▶ Relax Your Mind Yoga class  
For NCIS Patients / Caregivers

## APRIL

- ▶ April Oncology Grand Rounds – Discussing Do Not Resuscitate Status, Discussing Hospice Care  
For Healthcare Professionals
- ▶ GP CME Talk  
For GPs / Family Physicians
- ▶ Living Well with Cancer Education Series  
For NCIS Patients only
- ▶ Look Good Feel Better Workshop  
For NCIS Patients only
- ▶ MindCAN Research Programme  
For NCIS Patients only
- ▶ Relax Your Mind Yoga class  
For NCIS Patients / Caregivers

## MAY

- ▶ Living Well with Cancer Education Series  
For NCIS Patients only
- ▶ May Oncology Grand Rounds – Volume Care, Value Care and Patient Centered Care  
For Healthcare Professionals
- ▶ Relax Your Mind Yoga class  
For NCIS Patients / Caregivers
- ▶ Skin Cancer Public Forum  
For the Public
- ▶ Women's Gynaecological Cancer Awareness Activities  
For the Public

## JUNE

- ▶ June Oncology Grand Rounds  
For Healthcare Professionals
- ▶ Living Well with Cancer Education Series  
For NCIS Patients only
- ▶ Look Good Feel Better Workshop  
For NCIS Patients only
- ▶ Relax Your Mind Yoga class  
For NCIS Patients / Caregivers
- ▶ Women's Gynaecological Cancer Awareness Activities  
For the Public

# YOUR GIFT BRINGS HOPE TO MANY


Every year, the NCIS Cancer Fund provides financial assistance to more than 100 needy cancer patients. Your generous gift will also help us develop better methods to diagnose and treat the disease, improving the survival rates of cancer patients.


For further enquiries on making a donation, please call (65) 6773 7888 or email [ncis@nuhs.edu.sg](mailto:ncis@nuhs.edu.sg).



As a registered charity organisation that has Institute of Public Character status, all donations to the NCIS Cancer Fund qualify for tax deduction.

 **National University  
Cancer Institute, Singapore**  
A member of the NUHS

 (65) 6773 7888

 (65) 6777 4413

 [CancerApptLine@nuhs.edu.sg](mailto:CancerApptLine@nuhs.edu.sg)

 [www.ncis.com.sg](http://www.ncis.com.sg)

 [www.facebook.com/NationalUniversityCancerInstituteSingapore](https://www.facebook.com/NationalUniversityCancerInstituteSingapore)

 [www.youtube.com/NCISNUHS](https://www.youtube.com/NCISNUHS)

Copyright 2016. All rights reserved. The National University Cancer Institute, Singapore (NCIS) shall not be held responsible in any way whatsoever for changes in information after the date of publication. All information is correct as of February 2019.