



National Supercomputing Centre (NSCC) Singapore e-newsletter

# NewsBytes

November 2019



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**SCAAsia**  
Supercomputing 2020  
Gathering the Best of HPC in Asia

[Click to Register](#)  
HPC EMPOWERING  
INTELLIGENT CITIES

24 - 27 February 2020  
Singapore Convention Centre & Exhibition Centre

## SupercomputingAsia 2020 (SCA20)

**Registration is Now Open!**

Visit [SCA20 website](#) now to enjoy limited time early bird rates.

### Message from the CE

#### NSCC 2.0 – Another milestone for supercomputing in Singapore!

Dear Readers

On 1 October 2019, NSCC received the Letter of Award from A\*STAR to initiate NSCC's next phase of development, "NSCC 2.0", for the term 2019-2024. The award taps on the National Research Foundation's funds, under the [National Research Infrastructure](#) framework of the [Research Innovation and Enterprise \(RIE\) 2020](#) plan.



This five-year grant will allow the expansion of HPC resources aimed at boosting the capabilities of all Singapore Institutes of Higher Learning and Research Institutes, including researchers from private industry, on a partial cost recovery of our operational costs. I would like to take this opportunity to thank all of our stakeholders, partners and users for your immense contributions to the proliferation of HPC in Singapore. I urge you to continue developing HPC in Singapore, which will be a crucial resource in advancing Singapore's plans for a digitally transformed smart nation.

The journey forward will be challenging. The accelerated growth of Singapore's research ecosystem depends on us. On behalf of NSCC, we look forward to your continued support in helping us create a vibrant HPC culture.

Thank you and I look forward to working with all of you to write this new chapter of HPC in Singapore and beyond.

Onward!

## Supercomputer sequences genome of Singapore's multi-ethnic Asian population

*The analysis of this genetic data helps researchers expand the understanding of the biology of diseases that affect Singaporeans.*

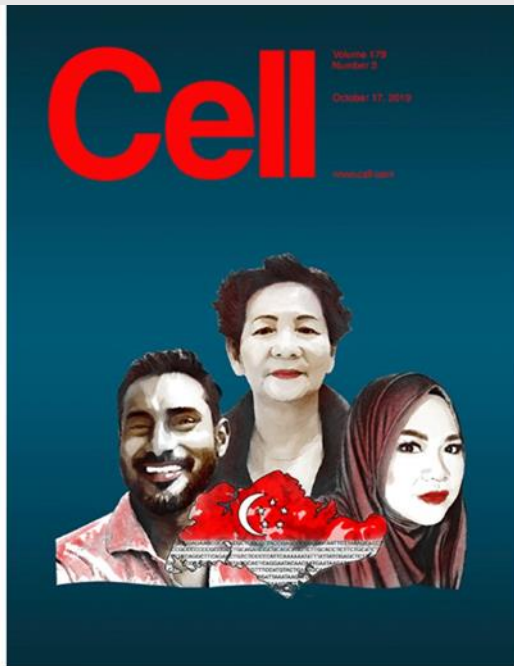


Image credit: Gloria Fuentes - The Visual Thinker LLP  
Cover of the *Cell* scientific journal featuring the published paper.

*“The success of this project was heavily reliant on access to NSCC resources and as such ensured data and results were delivered on schedule”*

A new study - [said to be the largest whole genome sequencing analysis of a diverse Asian population](#) to date - provides valuable insights into the genetic diversity of the varied ethnicity makeup of Singapore's population. The work is a major stepping stone toward more accurate diagnosis of genetic diseases, advancing research and guiding prevention and targeted therapeutic intervention for chronic diseases.

The study, which is the pilot study of the [SG10K project](#), contains the completely sequenced genomic information of close to 5,000 Singaporeans. The research findings in the paper, [“Large-scale whole-genome sequencing of three diverse Asian populations in Singapore”](#), were published in the scientific journal, *Cell*, on 17 October 2019. The analysis of the genomic information was done with the aid of the ASPIRE1 petascale supercomputer at the National Supercomputing Centre (NSCC) Singapore.

“Our primary analytics pipelines for joint-calling 4,810 genomes would not have been possible without the supercomputing resources,” said Dr Nicolas Bertin, Programme Manager for National Precision Medicine at [A\\*STAR's Genome Institute of Singapore](#). “The success of this project was heavily reliant on access to NSCC resources and as such ensured data and results were delivered on schedule”.

The study was a collaboration among scientists and clinicians from A\*STAR's GIS, National University Health System (NUHS), Singapore Eye Research Institute (SERI), Tan Tock Seng Hospital (TTSH), National Neuroscience Institute (NNI), Khoo Teck Puat Hospital (KTPH), National University Hospital (NUH), SingHealth Duke-NUS Institute of Precision Medicine (PRISM), National University of Singapore (NUS) and Singapore General Hospital (SGH).

To give a scale of some of the supercomputing resources needed, the SG10K pilot project leveraged on nearly 3 million core CPU hours and 1PB of storage provided by NSCC.



The poster for SupercomputingAsia 2020 (SCA2020) features a city skyline at night. A red starburst graphic in the top right corner reads "DEADLINE EXTENDED!". The text on the poster includes: "SCA2020 SupercomputingAsia 2020", "HPC POWERING INTELLIGENT CITIES", "24 - 27 FEBRUARY 2020, SINGAPORE", and "CALL FOR PAPERS". Below the poster, a grey box contains the following submission deadlines: "Paper Submission Extension", "Abstract Submissions Due: 15 Nov 2019", "Paper Submissions Due: 30 Nov 2019", and "Notification of Acceptance: 06 Jan 2020".

**<EXTENDED>**

## **SCFA20 Call For Papers**

*If you missed the call, good news! The submission for [Supercomputing Frontiers Asia 2020 \(SCFA20\)](#) papers has been extended!*

SCFA20 is the technical papers arm and a key co-located event of the [SupercomputingAsia 2020 \(SCA20\)](#) conference. The main HPC topics include Application, Algorithms & Libraries; Programming & System Software; Architecture, Network / Communications & Management; and Data, Storage & Visualisation. For any queries of clarification about SCFA and paper submissions, please contact [papers@sc-asia.org](mailto:papers@sc-asia.org).



*The ICHEC Annual Seminar 2019 comprised updates from HPC centres around the world and HPC activities in Ireland.*

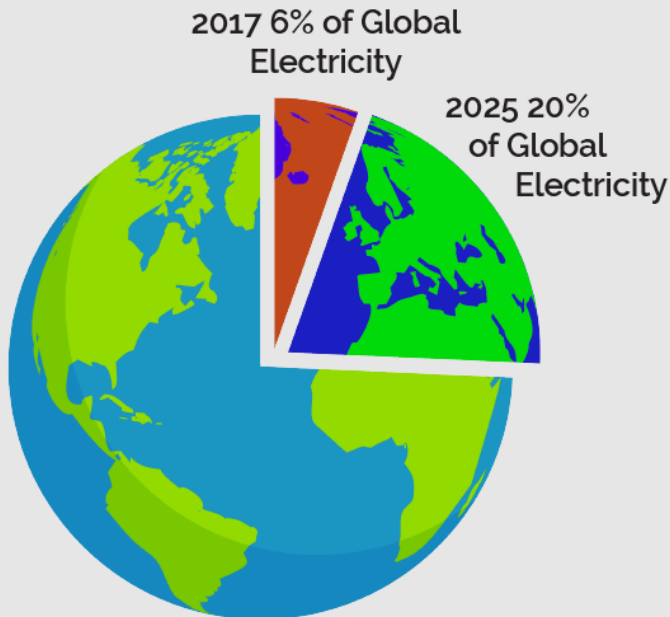
## **NSCC at the ICHEC Annual Seminar**

*NSCC was the only HPC centre outside of Europe to be invited to present at the [Irish Centre for High-End Computing \(ICHEC\) Annual Seminar in Dublin, Ireland](#).*

The annual conference by ICHEC included updates from major European HPC centres in Finland, Spain and the Czech Republic. The pan-European *EuroHPC* programme which is gearing up towards Exascale HPC resource deployment also updated the conference about their recent developments and future plans. NSCC gave updates about Singapore's own HPC resource developments. Find out more about the [ICHEC Annual Seminar 2019](#).

### **Data Centers Are Energy Hogs**

Data centers and cloud providers now devour 6% of global electricity. By 2025 that number could easily reach 20%!



What is immersion cooling? [Read the full article on GRC's blog.](#)

## **When Does Liquid-Immersion Cooling Make Sense?**

*by Jim Weynand*

*Chief Revenue Officer, Green Revolution Cooling (GRC)*

*Life is full of must-haves and just nice-to-haves. Brakes on a car? Gotta have 'em. Seat warmers? Totally optional. Given the challenges data center operators face now and in the future, [liquid immersion cooling](#) is well on its way to becoming a must have to keep ICT (Information and Communications Technology) from overheating...*

### **Liquid Immersion Works When You Want to –**

- Future-proof a new or existing data center through a dramatic increase in compute density in the same footprint
- Grow compute density incrementally
- Easily create a high-performance computing (HPC) pod within your current site
- Optimize white (compute) space and lift constraints on grey space (supporting infrastructure)
- Effectively cool different compute densities (mixed racks) within the same data center
- Simplify your operations by eliminating legacy data center infrastructure and increase your data center resiliency with far, far fewer moving parts and machinery



**Powering Innovation  
Supercomputing in Asia**

**National Supercomputing Centre (NSCC) Singapore**

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