The Agency for Science, Technology and Research (A*STAR)

Ms Chin Koh Shing, Senior Officer, A*STAR Graduate Academy
21 May 2013
Introduction to Singapore’s R&D Landscape
RIE 2015
Research ▶ Innovation ▶ Enterprise

5-year S&T Plans

National Technology Plan (1991-1995) S$2 billion
National Science & Technology Plan (1996-2000) S$4 billion

- Invest in basic science for future innovation
- Attract and develop scientific talent
- Emphasise on competitive funding
- Foster synergies in public-private partnership
- Focus on research with economic outcome
- Support for technology commercialisation

National Technology Plan
S$2 billion
National Science & Technology Plan
S$4 billion
Science & Technology Plan 2005
S$6 billion
Science & Technology Plan 2010
S$13.9 billion
Research, Innovation & Enterprise Plan 2015
S$16.1 billion

5-year S&T Plans
Singapore’s Research Ecosystem

CREATE Campus

Cleantech Park

Biopolis and Fusionopolis

Mediapolis

Seletar Aerospace Park

Tuas Biomedical Park

Jurong Island

A*STAR

Academia

Industrial Parks

Nanyang Technological University

Agency for Science, Technology and Research

Lee Kong Chian School of Medicine

Singapore University of Technology and Design

Duke-NUS Graduate Medical School

National Research Foundation

NUS National University of Singapore

Singapore Science Park

Agency for Science, Technology and Research
Agency for Science, Technology and Research (A*STAR)

Lead agency fostering world-class scientific research and talent for a vibrant knowledge-based and innovation-driven Singapore
A*STAR's Research Entities

A*STAR has more than 2,900 RSEs
(More than 50% are international talent from some 60 countries)
A*STAR’s Scientific Leadership

Dr Sydney Brenner
Senior Fellow

Dr Edward Holmes
Exec Dy Chmn, BMRC

Dr. Frank Eisenhaber
Dir, BII

Dr. Tan Geok Leng
ED, I²R

Dr. Alexander Matter
CEO, ETC

Prof. Lam Kong Peng
ED, BTI

Prof Ng Huck Hui
ED, GIS

Prof Jackie Ying
ED, IBN

Prof Birgitte Lane
ED, IMB

Prof Hong Wanjin
ED, IMCB

Prof Judith Swain
ED, SICS

Prof Philippe Kourilsky
Chmn, SlgN

Prof Paola Castagnoli
SD, SlgN

Dr Pantelis Alexopoulos
ED, DSI

Dr Keith Carpenter
ED, ICES

Prof Dim-Lee Kwong
ED, IME

Prof Andy Hor
ED, IMRE

Dr Lim Ser Yong
ED, SIMTech

Dr Liew Yun Fook
ED, NMC

Prof Paola Castagnoli
SD, SlgN

Prof Philippe Kourilsky
Chmn, SlgN

Prof Judith Swain
ED, SICS

Prof Dim-Lee Kwong
ED, IME

Prof Andy Hor
ED, IMRE

Dr Lim Ser Yong
ED, SIMTech

Dr Liew Yun Fook
ED, NMC
Biomedical Research Council

Creating economic value for Singapore through delivering excellent science; building world-class research infrastructure; growing our research talent base and enhancing public-private partnerships

PHARMACEUTICALS
Development of small molecule therapeutics

MEDICAL TECHNOLOGY
Medical devices, info tech, diagnostics

HEALTHCARE SERVICES & DELIVERY
Prevention of diseases; delivery of healthcare

BIOTECHNOLOGY & BIOLOGICS
Development of protein-based therapeutics

Bioprocessing
Bioimaging
Genomics & Proteomics
Molecular & Cell Biology
Bioengineering & Nanotechnology
Computational Biology
Immunology
Drugs/Biologics
Discovery and Devt
Science & Engineering Research Council

Supporting a wide spectrum of leading edge science and engineering R&D capabilities and nurturing talent for innovation and industry development

Electronics
- Semiconductors
- Data Storage
- Electronic Components
- Electronic Modules
- Network Technology

Infocomm & Media
- Communications
- Software and Computing
- Digital Content and Media
- Networking

Chemicals and Materials
- Specialty Chemicals
- Performance Materials
- Bio-Pharma Processing
- Functional Films

Engineering
- Precision Engineering
  - Aerospace
  - Marine Oil & Gas
  - Automotive
- Logistics & Supply Chain Management

Extensive Industry Engagement

A*STAR has more than 250 industry partners (both MNCs and SMEs)

Pre-competitive Partnerships
Technology Transfers
R&D roadmapping
Scientist Secondment
Joint Projects
A*STAR Research

LATEST HIGHLIGHTS

28 MARCH 2012

Biomaterials: The right tool for the right job
Biomaterials
The right membrane coating and morphology could dramatically enhance the performance of human kidney cells in bioartificial kidneys

Photonics: Integrated laser on silicon is looking good
Applied Physics Letters
A unique ‘micro-loop mirror’ design may enhance the performance of integrated laser on silicon

Nanotechnology: Feel the pressure
Journal of Micromechanics and Microengineering
Nanowires have superior electrical and mechanical properties and can be put to good use in pressure sensors

Biomedical engineering: A simulator for liver blood vessels
IEEE Transactions on Biomedical Engineering
The latest technology can automatically generate 3D models of
Research Opportunities for Students in Singapore
Invitation to International Students

Opportunities for Graduate & Pre-Graduate students from around the world

**Singapore International Graduate Award (SINGA)**
- Partnership between A*STAR, NUS and NTU
- Full PhD scholarships for international students

**A*STAR Research Attachment Programme (ARAP)**
- PhD research opportunities at A*STAR Research Institutes under joint supervision of A*STAR scientists and overseas universities

**Singapore International Pre-Graduate Award (SIPGA)**
- Short-term research attachments at A*STAR Research Institutes for students in late Bachelors or Masters
### Our International Scholars

<table>
<thead>
<tr>
<th>Region</th>
<th>PhD</th>
<th>Non-PhD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>408 SINGA</strong></td>
<td>408</td>
<td></td>
</tr>
<tr>
<td>(119 from Europe)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>99 ARAP</strong></td>
<td>99</td>
<td></td>
</tr>
<tr>
<td>(90 from Europe)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>440 SIPGA</strong></td>
<td>440</td>
<td></td>
</tr>
<tr>
<td>(260 from Europe)</td>
<td></td>
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</tr>
</tbody>
</table>

- **The Netherlands**
  - PhD: 1
  - Non-PhD: 12

- **France**
  - PhD: 15
  - Non-PhD: 30

- **United Kingdom**
  - PhD: 45
  - Non-PhD: 9

- **Germany**
  - PhD: 20
  - Non-PhD: 63

- **Sweden**
  - PhD: 3
  - Non-PhD: 1

- **Poland**
  - PhD: 18
  - Non-PhD: 38

- **Switzerland**
  - PhD: 2
  - Non-PhD: 6

- **Austria**
  - PhD: 3
  - Non-PhD: 7

- **Italy**
  - PhD: 21
  - Non-PhD: 9

- **Spain**
  - PhD: 4
  - Non-PhD: 9

- **Hungary**
  - PhD: 7
  - Non-PhD: 7

- **Czech Rep**
  - PhD: 2
  - Non-PhD: 4
Our International Scholars

Alessandro Riccio
Nationality: Italy
PhD: University of Liverpool, UK
ARAP - Institute of Molecular & Cell Biology (IMCB)

Antoni Aules
Nationality: Spain
BSc: University of Barcelona, Spain
SIPGA - Institute of Molecular and Cell Biology (IMCB)

Buse Arase
Nationality: Turkey
MSc: Koc University
SINGA (NUS)
Research: Faculty of Engineering

Antonio Guagnano
Nationality: Italy
BSc: Bari Technical University, Italy
SIPGA - Singapore Institute of Manufacturing Technology (SIMTech)

Jonathan William Dennis
Nationality: United Kingdom
MSc: University of Oxford
SINGA (NTU)
Research: Institute for Infocomm Research, A*STAR

Carlos Campos Cuerva
Nationality: Spain
BSc: Utrecht University, The Netherlands
SIPGA - Institute of Chemical & Engineering Sciences (ICES)

Migliori Valentina
Nationality: Italy
BSc: University of Bologna
SINGA (NUS)
Research: Institute of Molecular and Cell Biology, A*STAR

Coronel Carrion Luis Eduardo
Nationality: Ecuador
BSc: Kazan Federal University
SINGA (NUS)
Research: p53 Lab, A*STAR
Singapore International Pre-Graduate Award (SIPGA)

- Provides opportunities for international students in their 3rd/4th year of their undergraduate studies or those in their master’s year to experience research in Asia’s innovation hub
- Supports short-term research attachments of 2 – 6 months at A*STAR Research Institutes
- Cumulative nos. since 2008: 440 SIPGA students, of which 9 are Italian

SIPGA Awardees
Singapore International Pre-Graduate Award (SIPGA)

Award Terms:
• Monthly stipends of $1,500

Student eligibility:
• In the 3rd/4th year of undergraduate studies or doing his/her master studies
• Bachelor’s degree is / on track to at least Second Class (Upper) Honours or equivalent
A collaboration between A*STAR and overseas universities to provide research opportunities at A*STAR Research Institutes and Consortia

PhD students spend 1-2 years under the joint supervision of staff of the A*STAR Research Institute and the university

Also open to PhD students from other overseas universities where the university supervisor has a collaboration with an A*STAR researcher

Cumulative nos. since 2008: 99 ARAP students, of which 13 are Italian

Partners include:
A*STAR Research Attachment Programme (ARAP)

Award terms:
• Monthly stipends of S$2,500 for the period based at A*STAR
• One-time settling-in allowance of S$1,000
• One-time airfare grant of S$1,500

Student eligibility:
• Enrolled in a PhD programme with the University
• Bachelor’s degree is at least Second Class (Upper) Honours or equivalent
Singapore International Graduate Award (SINGA)

• A partnership between A*STAR, NTU and NUS bringing together best global talent and world-class facilities.

• Outstanding international graduates are given the chance to:
  • Conduct cutting-edge research in A*STAR, NTU or NUS and
  • Receive a top tier PhD from either NTU or NUS.
Singapore International Graduate Award (SINGA)

- Since 2008: SINGA has attracted over 9,000 applications from over 100 countries
- Currently there are 408 PhD students from 66 countries who are pursuing a PhD or graduated under the SINGA programme
- Cumulative numbers as of the Jan 2013 intake:
  
  21 applications from Italian students, 8 awards made
Singapore International Graduate Award (SINGA)

Award terms:
• Tuition fees for 4 years PhD programme
• Stipend of S$2,000 per month, to be increased to S$2,500 after passing Qualifying Examination.
• One-time Airfare Grant of S$ 1,500
• One-time Settling-in Allowance of S$ 1,000

Student eligibility:
• Open to all international students
• Graduates with a strong passion for research and excellent academic performance
• 2 letters of recommendation from academic referees
• Good skills in written and spoken English
## Areas of PhD Studies

<table>
<thead>
<tr>
<th>Biomedical Sciences</th>
<th>Physical Sciences and Engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biochemistry / Chemistry</td>
<td>Electrical Engineering</td>
</tr>
<tr>
<td>Pharmaceutics</td>
<td>Computer Science &amp; Engineering</td>
</tr>
<tr>
<td>Immunology / Microbiology / Molecular Virology / Cell / Developmental Biology</td>
<td>Chemical Engineering</td>
</tr>
<tr>
<td>Bioinformatics / Systems Biology</td>
<td>Mechanical Engineering</td>
</tr>
<tr>
<td>Biotechnics</td>
<td>Physics &amp; Applied Physics</td>
</tr>
<tr>
<td>Neuroscience</td>
<td>Materials Science &amp; Engineering</td>
</tr>
<tr>
<td>Biostatistics / Epidemiology</td>
<td>Civil &amp; Environmental Engineering</td>
</tr>
</tbody>
</table>
Visit the websites!

Singapore International Pre-Graduate Award (SIPGA)
http://www.a-star.edu.sg/sipga

A*STAR Research Attachment Programme (ARAP)
http://www.a-star.edu.sg/arap

Singapore International Graduate Award (SINGA)
http://www.singa.a-star.edu.sg

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www.facebook.com/SINGAPhD
Thank you!