

Embracing the future

ASIA PACIFIC'S MOST INNOVATIVE UNIVERSITY builds on success to claim its stake as a global player in science's new era of discovery

What makes a university not just future-proof, but a champion of change? For South Korea's KAIST (Korea Advanced Institute of Science and Technology), the keys are innovation, collaboration, and speed. With this in mind, the university is now approaching its 50th anniversary and leveraging its string of recent high-profile successes to fight for its place at the forefront of academia.

KAIST's history is short, yet distinguished, in part thanks to the major role it continues to play in the development of South Korea's economy. "KAIST was born out of the government's idea to set up a research-oriented science and technology university back in 1971," explains Sung-Chul Shin, KAIST's president (pictured).

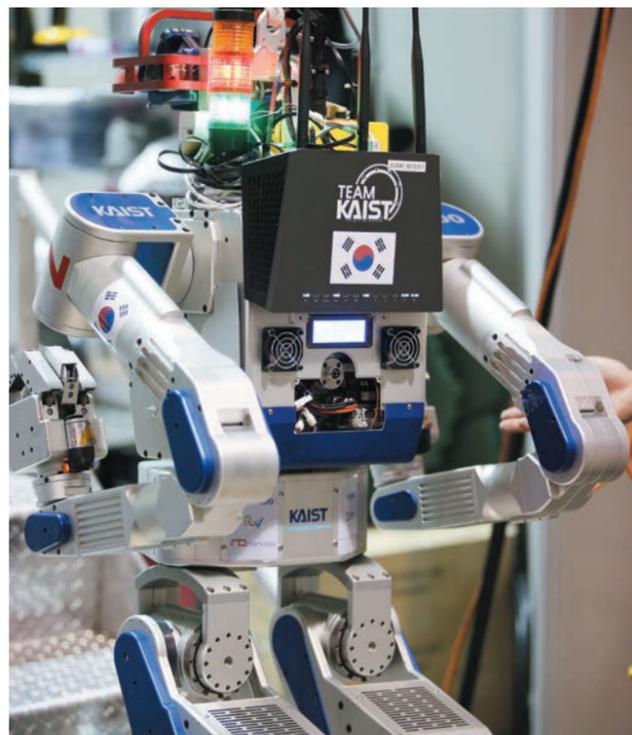
"Back then, we were undergoing very challenging times economically, with the national GDP standing at less than US\$300 per person." A US\$6 million loan from the United States Agency of International Development provided the initial funding for the university.

South Korea's faith was not misplaced. Since its humble beginnings, KAIST has been making waves of increasing amplitude, with no less than 58,000 graduates passing through the university's doors,

including 11,700 PhDs. "KAIST now serves as a critical pipeline for the top echelon of South Korea's research personnel," says Shin, highlighting that graduates currently hold chairperson-level offices at Samsung and LG. Approximately one in five KAIST PhDs now hold leadership roles in South Korean industry and academia, with a further one in five serving as the CEOs of start-up ventures. "Since the formation of KAIST, the government has funded the university with approximately 2.9 trillion South Korean Won (KRW) [US\$2.5 billion]," says Shin. "However, start-up ventures from KAIST graduates have generated average annual sales of 13.6 trillion KRW. In terms of 'return on investment,' that's quite successful."

WANTING TO BE ONE OF THE WORLD'S BEST UNIVERSITIES HAS ITS CHALLENGES, BUT, A CHALLENGE IS SOMETHING WE LIKE

One particularly inspiring case study is that of the university's Humanoid Robot Research Center. Back in 2015, Center Director Junho Oh and



his team of researchers defied the odds to win the DARPA Humanoid Robotics Challenge – a US military initiative aimed to spur international innovation in robotics-led disaster response operations. 'Team KAIST,' and their spin-out company Rainbow Robotics, made international headlines when they surpassed the likes of NASA and MIT to take home the US\$2 million prize money with their bipedal creation, DRC-HUBO (pictured).

What set them apart? "I've asked myself this, many times," says Oh. "In one

word? Teamwork. Alongside that, we combined 20 years of experience with the confidence we could make it, and we practiced — hard." With Rainbow Robotics, KAIST has shown its capacity to innovate and spin off successful ventures. Oh says that, following a valuation at US\$70 million, the firm expects to list on the Korean version of NASDAQ as early as next year.

Racking up headlines and accolades, KAIST is also flying up a varied list of league tables: in 2014 KAIST claimed third

KAIST AT A GLANCE

KAIST continues to go from strength to strength, shooting up the global rankings as well as being Asia Pacific's most innovative university for two consecutive years

TOP RANKED SOUTH KOREAN INSTITUTION IN CHEMISTRY (2012, 2014-2016; WFC)

#1

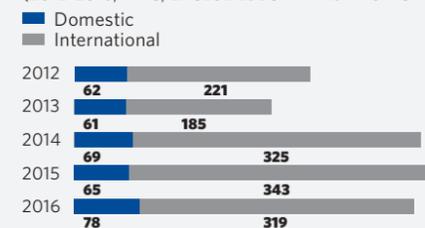
ASIA-PACIFIC ACADEMIC INSTITUTIONS IN PHYSICAL SCIENCES (2016; WFC)

TOP 10

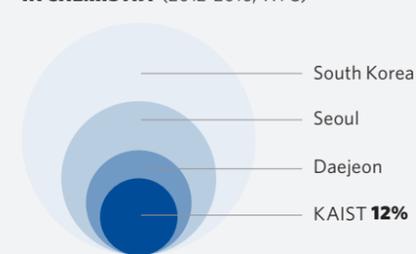
ACADEMIC INSTITUTIONS GLOBALLY (2016; WFC)

TOP 100

NUMBER OF DOMESTIC AND INTERNATIONAL COLLABORATING INSTITUTIONS (2012-2016; WFC; EXCLUDES JOINT INSTITUTIONS)

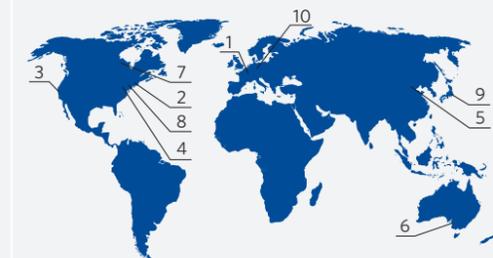


SOUTH KOREA'S NATURE INDEX OUTPUT IN CHEMISTRY (2012-2016; WFC)



TOP 10 INTERNATIONAL COLLABORATORS (2016; FC)

1. French National Centre for Scientific Research (CNRS), France **6.45**
2. Harvard University, USA **6.35**
3. Stanford University, USA **4.45**
4. Smithsonian Institution, USA **3.83**
5. Chinese Academy of Sciences, China **3.31**
6. The University of Adelaide, Australia **3.20**
7. University of Minnesota, USA **2.80**
8. Massachusetts Institute of Technology, USA **2.67**
9. The University of Tokyo, Japan **2.59**
10. Max Planck Society, Germany **2.51**



Source: Nature Index/QS World University Rankings
FC: fractional count; WFC: weighted fractional count

place in the Times Higher Education's "100 Under 50" ranking of the world's best universities less than half a century old. In June 2017, Reuters named it "Asia Pacific's Most Innovative University" for the second year running.

Shin puts their success down to "an institutional culture that champions creativity and the willingness to take on new challenges. Creative thinking, a challenging spirit, and unwavering innovation are deeply rooted in the KAIST DNA." Taking the university's reins in February 2017, he now oversees KAIST during a crucial period in its development and has taken no hesitation in launching multiple initiatives to cement the university's place in

the years to come. Of particular importance is the development and implementation of 'Vision 2031,' a "longer-term strategic development plan which will open the second chapter of KAIST," according to Shin.

And this is where KAIST's recipe — innovation, collaboration, speed — comes into play. "I envision KAIST creating top-level knowledge that the whole world will use," says Shin. "This knowledge should carry the unsurpassable technological and economic value that will have a formative impact on humanity."

"For this mission, I think the three driving forces of innovation, collaboration, and speed will work to build our competitive edge."

Collaboration is a theme on which KAIST and its leadership put great emphasis. Sang Yup Lee, dean of the interdisciplinary KAIST Institutes, shares a personal experience: "The KAIST Institute for the BioCentury, for instance, not only has professors of biology, but professors of chemical engineering, physics, maths, and science policy. What they do, they do by collaborating. Together, they facilitate the identification of important problems that cannot be solved solely by one discipline. Our institutes are formed by an alliance of people working in different disciplines, and it's working really well."

Moving forwards, KAIST hopes to secure more funding

and let their hard work draw in top talent from the world's pool of scientists. "We want to increase the number of faculty members, and grow the university in size," says Lee. "With an expanded campus, we can compete more readily with universities such as MIT and Harvard."

President Shin sums up the KAIST attitude rather succinctly: "Wanting to be one of the world's best universities has its challenges, but, a challenge is something we like." ■



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