



# Substantial Development Goals Report (SDG9)

Industry, Innovation and Infrastructure



2021

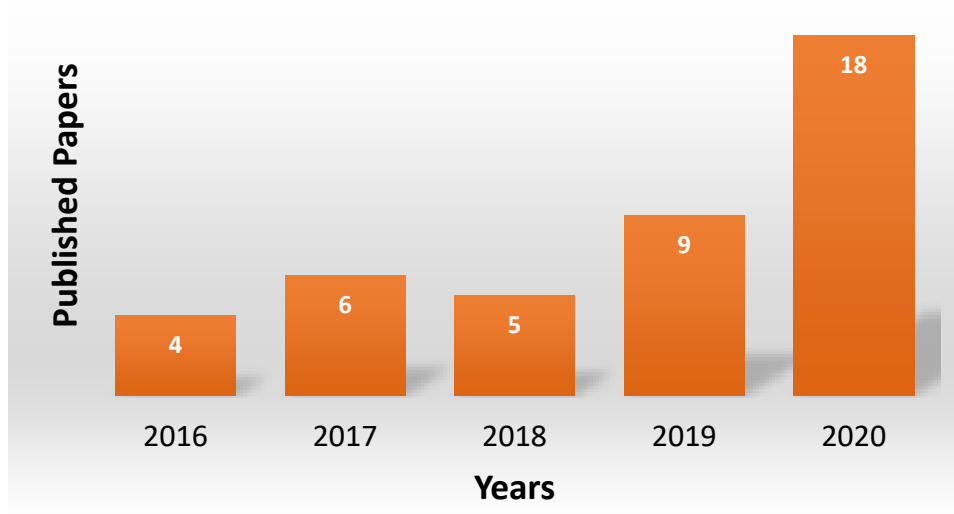
# Research & Innovation

- Chang Gung University (CGU) published 42 scholarly papers related to SDG 9 between 2016-2020 (based on Scopus database)
- Chang Gung secured 2445 research grants between 2018-2020
- Total 10 spin-off companies originated from CGU

# Operations

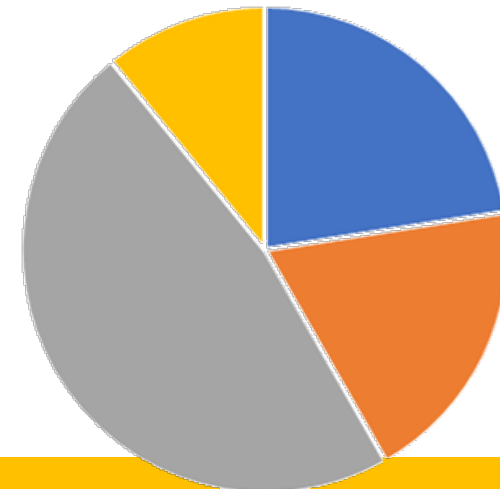
- The amounts of the faculty by STEM, Medicine, and Art& Humanities/ Social were 173,427 and 98.

Publications relating to SDG 9 from CGU



Academic Staffs

- Non-academic staff
- STEM
- Medicine
- Arts, Humanities and Social Science



# Outreach & Partnership

In order to expand the industrial chain channel and transform industrial demand into innovative ideas and cutting-edge technologies, the university has signed an agreement on production, learning and practice cooperation platform with 12 industrial zones in the North District and colleges and universities in 9 places, and has long cooperated with trade associations (Photonics Industry & Technology Development Association (PIDA) / Taiwan Electronic Equipment Industry Association / Taiwan Electrical and Electronic Manufacturers' Association (TEEMA), etc.), continue to promote technology sharing and industry-university cooperation through the platform, so as to promote the diffusion of university education and R & D innovative technologies, make long-term contributions to industrial upgrading and benefit human well-being. Every year, inter-university joint technical seminars (matchmaking) will be held regularly, which invite professors of each university to publish R & D achievements related to the topics, expand exchanges with people in the industry, share the joint marketing of technical achievements taught in each university, help promote and facilitate relevant industry-university cooperation, form a dialogue with manufacturers in various industrial zones, expand cooperation opportunities with manufacturers, and drive the industry university momentum of the University.

[\[https://cisrc.cgu.edu.tw/p/412-1064-6769.php\]](https://cisrc.cgu.edu.tw/p/412-1064-6769.php)





# CGU Highlights related to SDG9

- Chang Gung University and Far East Bio-Tec Co., Ltd. discovered that FB-1603, the main ingredient of Apomivir in the human influenza clinical trials, could significantly inhibit the activity of COVID-19. The new drug is expected to be successfully developed and is expected to reach more than 90 billion yuan at the beginning of the year.

[\[https://www.chinatimes.com/newspapers/20201202000374-260210?chdtv\]](https://www.chinatimes.com/newspapers/20201202000374-260210?chdtv)

- Chang Gung University, MJ Group and AUO Digitech Taiwan Inc. jointly developed a new generation intelligent health examination process system, which used machine learning training algorithm to find the mode and relevance of large data sets, and made the best decision and prediction according to the analysis. This principle is applied to the original health examination system of MJ Group and upgraded to an intelligent health examination system with the function of network platform app "MJ's Automated Multiphasic Health Testing and Service (AMHTS)", and will be promoted as a leading pioneer of global health management services in the future.

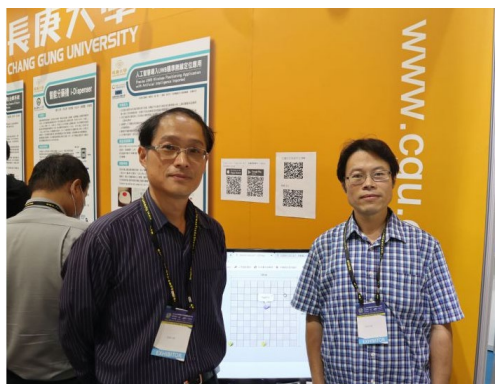
[\[美兆健檢再升級 與長庚大學、友達數位合作全面AI優化\(yahoo.com\)\]](https://www.yahoo.com)



# CGU Highlights related to SDG9



- The international intelligent biomedical alliance of Chang Gung University participated in the "BIO Asia–Taiwan 2020", which covered topics related to detection, early diagnosis and prediction of diseases, clinical application and treatment, health promotion and rehabilitation, antimicrobial and so on. Under the witness of the Ministry of Science and Technology, it signed a cooperation plan with Ezconn Corporation to jointly develop a portable multifunctional 3D skin and ophthalmic optical detector, and jointly developed a technology for skin texture detection and skin disease diagnosis. This technology has also won the "Industrial Value Creation Program for Academia" of the Ministry of Science and Technology, which will realize high-level diagnostic medical materials for skin cancer in the future. [\[2020亞洲生技大展 長庚大學16組研發成果吸睛 | 台灣好新聞 TaiwanHot\]](#)

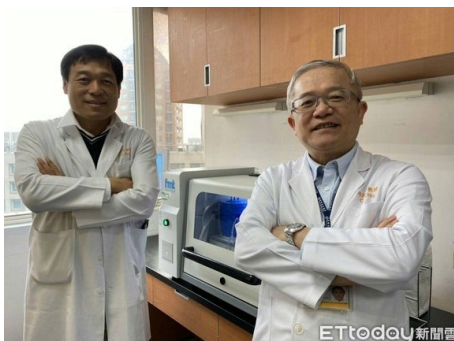


- Taiwan's population structure has turned to the trend of aging. In this situation, the accurate use of long-term care resources has become a necessary act for the government and medical institutions. Recently, Chang Gung University and SMIMS Technology Corporation have jointly developed an ultra wideband accurate wireless positioning system, which not only greatly shortens the system construction time and improves the accuracy, but also extends the intelligent function of the positioning technology by combining with AI technology to judges the posture of the elderly, and sends it back to the back end for analysis. When the returned information shows that the elderly lies horizontally and the caregiver's position is not somewhere near the hospital bed, the system will determine that the old person is very likely falling down, and immediately notify the caregivers to check and deal with it. [\[https://tinyurl.com/z8f3j776\]](https://tinyurl.com/z8f3j776)

# CGU Highlights related to SDG9



Chang Gung University and Formosa Plastics Group cooperated to develop "Dr's Formula antivirus spray", which can effectively inhibit COVID-19 and commercialize it to promote medical and epidemic prevention. [<https://finance.ettoday.net/news/2013149>]



Chang Gung established a "microflora treatment center" and signed a memorandum of cooperation with the Food Industry Research and Development Institute(FIRDI), to jointly develop a synthetic "precision microflora treatment" method and promote more translation research with new technology to explore the mechanism of microflora and ensure safety. [<https://health.ettoday.net/news/1629268>]



Chang Gung University implemented the plan of the Ministry of Science and Technology, the "Multidisciplinary Consortium in Creative Idea of Medical Care", and worked with Taiwan Flex Electronics Inc. and the Plastics Industry Development Center (PIDC) to develop the "Sampling and inspection isolation protection hood". This newly invented hood can prevent the virus from polluting the environment as much as possible, while taking into account the protection of medical staff and reducing the sense of oppression of the examinee, so as to guard the new life under epidemic prevention. [<https://cgunews.cgu.edu.tw/p/406-1049-74896,r964.php?Lang=zh-tw>]



# CGU Highlights related to SDG9

- The Ministry of Science and Technology has introduced SmartLabs, a biomedical accelerator. Hawk Scientific Co., Ltd, established by the technology transfer of Chang Gung University, has developed a detection kit for pathogenic nucleic acids and proteins, as well as a hand-held fast-screening instrument combined with test paper detection. Both methods can be applied to the detection of COVID-19 virus. At present, the fast screening instrument can complete 300 nucleic acid tests per machine in one hour. It is expected to be used in rural areas and places without medical testing laboratories.

[\[https://finance.ettoday.net/news/1701041\]](https://finance.ettoday.net/news/1701041)

- Rotary International participated in the IDS program of Ministry of Health and Welfare, cooperated with the Chang Gung team, and the Chang Gung Medical Technology Co., Ltd. integrates the hospital equipment to build an ophthalmic tour vehicle, which can go deep into the mountain tribes communities. Combined with 5G communication and AI image processing, 4K high-resolution images can be transmitted to the Department of Ophthalmology, Linkou Chang Gung Memorial Hospital for interpretation, so as to assist the tour doctors in judgment and reduce errors.

[\[https://health.ettoday.net/news/1749351\]](https://health.ettoday.net/news/1749351)



# CGU Highlights related to SDG9



- Using object recognition technology, Chang Gung University has developed an innovative instant mask wearing detection system, which can instantly detect whether people wear masks and whether the wearing method is correct; at the same time, it also further breaks through the image technology to judge whether pedestrians comply with the social distance regulations. In addition to being applied to the campus to remind teachers and students participating in activities or gatherings to pay attention to epidemic prevention at any time, it can also be combined with the general intersection monitor images, which contributes a lot to epidemic prevention monitoring. [\[https://www.ftvnews.com.tw/news/detail/2021311L08M1\]](https://www.ftvnews.com.tw/news/detail/2021311L08M1)



- With the support of the Ministry of Science and Technology's "Program Project for Regenerative Medicine" and the "New type industry-university research chain project - Industrial Value Creation Program", Chang Gung Hospital and Chang Gung University have built the world's first missile cancer specific target peptide technology platform. By using the characteristics of the combination of peptides and cancer cells, cancer cells can be accurately targeted as long as they are matched with appropriate anti-cancer drugs. The research team is currently developing innovative cancer immunotherapy for a variety of clinical cancers. It also established a start-up company last year, which will focus on one or two cancers at the beginning, and then expand its range to a high share of various cancer markets. [\[https://health.udn.com/health/story/6016/4510788\]](https://health.udn.com/health/story/6016/4510788)



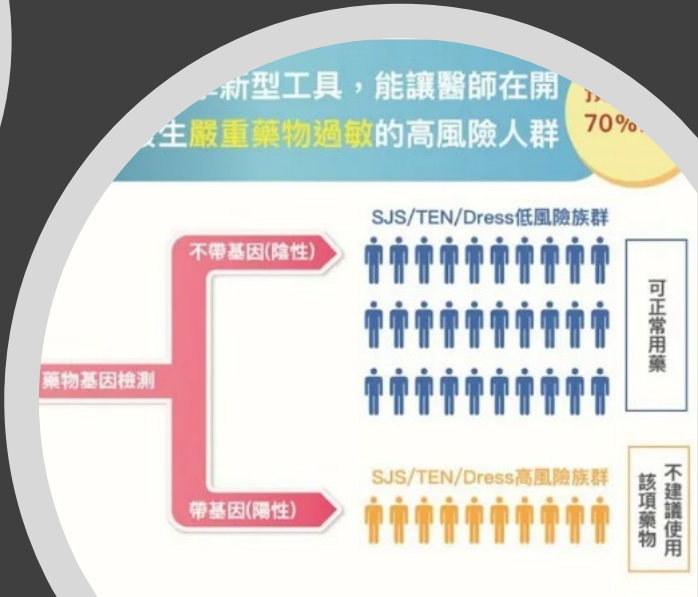
# CGU Highlights related to SDG9



- The achievement of "Application of seismocardiogram measurement technology and inertial motion sensing in medical care" developed by Chang Gung University completed the human clinical trial verification in Chang Gung hospital, and the technology was transferred to VierMTech Inc. In the future, this non-invasive technology will be combined with wearable technology, machine learning and AIoT for commercialization to achieve the objectives of real-time detection, risk assessment and early warning of heart failure. [<https://cgunews.cgu.edu.tw/p/406-1049-76444,r964.php?Lang=zh-tw>]
- Chang Gung University and Chang Gung Hospital jointly developed the "Application of pressure sensor", and officially transferred the technology to Plastics Industry Development Center (PIDC) to further develop "A Pressure Detecting Monitor System For An In Vivo Operation". Making use of the characteristics and clinical application of pressure monitoring system, possible injury during operation can be avoided. [<https://cgunews.cgu.edu.tw/p/406-1049-77268,r964.php?Lang=zh-tw>]

# CGU Highlights related to SDG9

- As many as 200,000 to 300,000 people in Taiwan use Baktar, a commonly used drug for the treatment of various human infections, but this kind of antibiotics may cause serious drug allergic reactions and even death to some people. The team of Chang Gung Hospital found out the allergy gene of Baktar, which can be applied to pre-medication gene screening. It has also applied for a global patent, making a big step forward in the progress of precision medicine. [<https://tinyurl.com/4sknsc2x>]
- Chang Gung University / Chang Gung Hospital has developed fundus AI-aided diagnosis software, which can predict eye diseases and see the possible disease trend of the whole body from the fundus image. [<https://tinyurl.com/366yuy55>]
- The digital capsule developed by Chang Gung Hospital using IoT communication system can be used to detect the changes of intraperitoneal pressure of severe patients, so that doctors can make correct surgical decisions immediately and the treatment of patients with high-risk complications with abdominal compartment syndrome (ACS) can be more timely. [<https://www.ithome.com.tw/news/140942>]
- The research team of CGU/CGHU collected the data of nearly 80,000 patients with liver disease C in the past 10 years and made efforts in comparison. The results showed that patients who received interferon clearance treatment as soon as possible reduced the incidence of Parkinson's disease by nearly 40% compared with those who did not receive treatment. This result is a big step forward from the feasibility of preventing Parkinson's disease. [<https://www.cgmh.org.tw/tw/News/PressNews/200610001>]







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global and social impacts*

