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GOOD HEALTH AND WELL-BEING

Research

Aging and Health Research Center and Cancer Progression Research Center

NYCU has 23 research centers across hospitals, institutions and homes working together on the hierarchical exploration of life course research, from emergency treatment, disease management, and preventive medicine, as well as the promotion of people's health and well-being. It's worth noting that the University's research extends from basic medical science to clinical applications and policy implementation, leading international standards.

The University's "Aging and Health Research Center" focuses on gerontology, and has signed a collaboration agreement with Japan's National Center for Geriatrics and Gerontology to collaborate on relevant gerontological research. The Center has established a research platform covering basic science, clinical medicine, public health, information technology, health policies, health service system, and long-term care. In terms of basic medical science, the Center's research into longevity genes has moved on from laboratory research to clinical research. Currently, researchers have discovered the genetic code that affects skin aging and are currently working on the anti-aging effects of body functions. Also, the brain science team developed an AI-based diagnostic system that can predict an individual's brain age with precision and analyze the risk of neurological and psychiatric disorders. The system can assist seniors receive preventative intervention early on which is conducive to maintaining cognitive functions. The research won the Asia Championship in the International Predictive Analytics Competition. The Center worked to implement aging lifestyle intervention measures in hopes of gradually achieving an ageless world, and using community-level sample surveys to verify its feasibility.

"NYCU Cancer Progression Research Center" is dedicated to basic and translational research on cancer progression. Using the latest "high-throughput, single-cell" screening method combined with machine learning and big data analysis, the Center conducted systematic research on head and neck cancer, and lung adenocarcinoma, which particularly affect Taiwanese people. Overcoming previous technical difficulties, the Center conducted single-cell sequencing for a very small number of circulating tumor cells and tumor tissue specimens that are difficult to analyze, as well as a retrospective analysis of tissues that contain multiple cell populations. The Center also utilized the clinical resources of the "Taipei Veterans General Hospital" to research and develop new anti-cancer biomarkers. These research findings are used to provide comprehensive precision healthcare, which includes early diagnosis, treatment response prediction, and prognosis tracking.

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13337
Students who chose the Course Units

17.2%
Percentage of All Taiwan Publications


5648
Publications in SCOPUS

Social Impact

Research Center for Epidemic Prevention Collaborated with The Yilan County Government

NYCU focuses on combining healthcare expertise and technology to provide "Digital Telemedicine Services" and achieve healthcare without borders. Amidst the outbreak of the COVID-19 pandemic in 2020, the University embraced this "new normal" service model, demonstrating its forward-looking efforts over the years and contributing positively to society and Taiwan as a whole.

In 2020, NYCU's Research Center for Epidemic Prevention collaborated with the Yilan County government to estab-

lish a dedicated coronavirus lab at the National Yang Ming Chiao Tung University Hospital in Yilan, so samples taken locally would no longer have to be sent to the lab in Taipei. One of the first places impacted by the COVID-19 outbreak—Yilan County was able to expand its screening and testing volume to 1,500 PCR tests per day thanks to the University's full support. National Yang Ming Chiao Tung University Hospital handles 80% of Yilan's PCR testing, providing swift results as the staff works hard with the Yilan County Public Health Bureau to protect Yilan and prevent the spread of the virus.

Digitalization is the current and future trend. The "NYCU Digital Medicine Center" uses technology to accelerate the development of "telemedicine" in remote areas in

Taiwan. With the University as a starting point, the Center provides off-campus medical units with digital technology services. The Center developed cloud x-ray interpretation technology and an invisible low blood-oxygen cloud platform, using cloud data streaming AI to help interpret medical information. The machine learning system will automatically generate judgments to effectively assist physicians. For example, when a chest x-ray is uploaded, the AI will determine whether there are signs of pulmonary fibrosis, the severity of pulmonary edema, or if there are any abnormalities in blood oxygen saturation, providing real-time alerts to on-duty care physicians and nurses. When local COVID-19 cases broke out, the University was the first to implement the latter smart healthcare application in the actual medical field, ahead of other academic and research institutions. These well-developed technologies are gradually being introduced into local clinics and even quarantine stations to help Taiwan develop telemedicine and the new normal "zero-contact" care during the pandemic.

Student Cultivation

Learning from Community Services

NYCU values students' study-life balance. Therefore, the University provides a total of 543 physical and online courses on the Sustainable Development Goal 3, regarding Good Health and Well-being. At the same time, the University expanded opportunities for field experience to improve students' physical and mental health, as well as their resilience to overcome challenges, and improve problem-solving skills.

Regarding physical courses, the "Yang-Ming Crusade" is composed of student volunteers who regularly visit remote areas across Taiwan, providing services like simple health checkups and health education to nearly a thousand senior citizens over the age of 65 every year. Over the past eight years, the "Yang-Ming Crusade" has completed its first comprehensive interview of senior citizens in Yilan. The group also began following up on the health of interviewees in 2017 and discovered that the proportion of senior citizens suffering from chronic illness are on the rise. More specifically, 85% of the senior citizens interviewed suffer from at least one chronic illness and almost 60% suffer from more than two. On average, every senior citizen interviewed suffers from two chronic illnesses. The proportion of senior citizens with disabilities or dementia also increases with age.

As for opportunities for field experience, students who expect to get clinical licenses at Yang-Ming Campus do an internship at the University's hospital. Computer science and information engineering students from the Chiao-Tung Campus will also analyze the use of smart care technology at the University's hospital. The University's hospital has developed different types of health

promotion and long-term care services, and has been approved to establish a level A case of the Community-based Integrated Care Service System. In response to the needs of elderly people in the community, a health promotion center was established to provide a comprehensive health implementation plan. The hospital then further integrated these plans in hopes of not only finding more individuals in need of long-term care, but also providing more comprehensive services for senior citizens in the Yilan region. After years of hard work, in 2020, National Yang Ming Chiao Tung University Hospital was approved to establish a small multi-functional service center that will allow it to provide better care for senior citizens in the community.

Stewardship

The Library and Mental Health and Counseling Center Care Mental Health of The Students and Faculty

With professional fields and humanistic communication as hard and soft power, NYCU provides diverse extracurricular activities as part of its practical actions to enrich its smart power and build a resilient campus that caters to the well-being of students and faculty members.

The library organizes a variety of book and film festivals to cultivate students' and teachers' intellectual and cultural literacy. In response to the University's commitment to improving the quality of life and mental health of the students and faculty, the libraries of each campus regularly organize art exhibitions, book fairs, and film festivals. In 2020, the library provided a venue for eight exhibitions displaying the paintings and calligraphy of individual students, faculty members, student clubs, and extramural artists, using art to improve the quality of life on campus. To encourage reading, the library organizes various book fairs and film festivals, regularly selecting books and films to display and recommend to readers. In 2020, the libraries of the two main campuses held a total of 15 book fairs and five film festivals. They screened 92 films and encouraged visitors to gain knowledge and emotional catharsis through reading.

The "NYCU Mental Health and Counseling Center" has always focused on the mental health of the students and faculty. In the spirit of environment therapy with the concept of Morita therapy, the Center screened movies every Wednesday and held 102 mental health promotion events in 2020. These events, which focused on mental health and primary prevention, sensory experiences, and inner strengthening, were attended by 2,270 people.

The Center also provided 1,435 individual secondary prevention counseling sessions to 291 individuals as part of its efforts to care for the mental well-being of all students and faculty members.


543
Course Units