03

GOOD HEALTH AND WELL-BEING

2020-2024 Publications	7,262
2020-2024 Percentage of all Taiwan Publications	16.1%
Course Units	2,087
Student Engagement with Units on SDG 3	38,703

Research

Breakthroughs in Bioprinting and Biomimetic Materials

Inspired by spider silk, Associate Professor Ming-Chia Li (Department of Biological Science and Technology) and his team developed a self-healing nanocomposite hydrogel. Using biomimetic 3D printing, the material can form a helical 24-faceted polyhedral cell scaffold and human auricle without support structures. By emulating the spider's salting-out mechanism, the team exposed the hydrogel to a high–ionic strength environment, inducing helical entanglement of protein molecules that markedly enhanced mechanical properties and printing stability. Coupled with a digital-twin workflow—building personalized digital phantoms from biomedical imaging, running fluid-dynamics simulations, and feeding results back into printing—the platform enables customized applications in regenerative medicine, reconstructive surgery, and cartilage tissue engineering, while reducing reliance on animal experiments, thus promoting animal welfare. This work was featured as a 25th-anniversary cover story in Biomacromolecules.

Health Risk Assessment of Tobacco Products

Professor Hsiang-Tsui Wang (Institute of Pharmacology) and colleagues used advanced chemical analytics to compare aerosols from heated tobacco products with the smoke from conventional combustible cigarettes. The results showed that heating, rather than combustion, substantially reduces the emissions of multiple known toxic and carcinogenic compounds. The team also identified distinct aerosol chemical profiles between the two product types, consistent with the findings reported by the U.S. FDA, Germany's BfR, and Japan's National Institute of Health Sciences. These data provide important scientific evidence for risk assessment, tobacco control efforts, and public health policy. The study has been published in the journal, Regulatory Toxicology and Pharmacology.

03 Good Health and Well-Being

Social Impact

AI-Empowered, All-Ages Healthy Living Community

Aligned with the Phase II expansion of our affiliated hospital, our university and Chateau Group launched an AI-enabled Continuing Care Retirement Community (CCRC) initiative to create a model for an all-ages healthy living community behind the Yilan Train Station, adjacent to the university hospital. Centered on the integration of healthcare, long-term care, and AI, the plan includes smart wellness residences and a smart medical–care hotel. Residences will incorporate health management systems and universal, barrier-free designs to strengthen in-home health and safety. The hotel will function as a post-acute transition space that provides continuous care and supports patients in smoothly returning to their home life. The plan combines BOT development and smart medical care services to respond to the local needs of Yilan's elderly population, which is close to 20%, and to improve the efficiency of medical care integration and community health resilience. This cooperation is expected to become a benchmark for age-friendly, healthy, and long-lasting communities.

Deepening Community for Sustainable Health Care

The hospital affiliated with our school held the 13th Crusade Yilan Team's "Crossing the Past and Deeply Cultivating Lanyang" event, and launched a five-day community care visit. They went to various areas of Yilan City to conduct home health examinations and questionnaire surveys for the elderly, and continued to promote the "Healthy and Lively Yilan City Community Care" plan. Since the launch of the project, more than 3,000 health tracking questionnaires have been completed, and the survey has been expanded to all areas of the city. Years of data show that the proportion of older adults' perceived health and happiness has increased year by year, demonstrating the effectiveness of community health promotion and long-term care policies. The plan uses institutionalized generational health tracking to accumulate transparent and credible local epidemiological data as a scientific basis for public policies and long-term care planning. It also connects campus and medical resources to expand health promotion and long-term care bases. With the vision of "healthy aging, aging in place, and peaceful death," it consolidates trust in the public medical system and improves care for the vulnerable, creating a sustainable local health care system.

Education & Cultivation

Co-Educating the Next Generation of Medical Professionals

Our university is advancing the University & High School Co-creating Online Learning (UHCOOL) initiative in partnership with the New Taipei City Government and practicing clinicians to build a collaborative model of medical education. University professors, clinical physicians, and high school teachers co-designed a high-quality Introduction to Medicine digital course, providing at least 20 hours of instruction with companion materials. A dedicated learning and interaction space was set up for partner schools on the ewant Open Education Platform, alongside teacher upskilling and instructional support. This project breaks through the connection threshold between higher medical education and high school, allowing high school students across the country to have early access to cutting-edge medical knowledge, cultivate scientific literacy and career vision through inquiry-based learning, and encourage young people to invest in the medical and public health fields through the improvement of early health and medical literacy.

International Collaboration in Digital Dentistry

Our School of Dentistry promotes the "Southeast Asian Dental Expert Training Program" and invites 30 experts and scholars from seven countries, including Vietnam, Indonesia, and Malaysia, to study at the school. The course focuses on 3D printing, smart diagnosis and treatment systems, and digital treatment plans to strengthen students' ability to apply digital dentistry to local medical services. During the 2024 event, the School of Dentistry signed a memorandum of cooperation (MOU) with five top dental schools in Southeast Asia to deepen academic exchanges and clinical technology sharing and establish a long-term cooperation mechanism between the two parties. This project uses technical training and institutionalized partnerships to advance dental care in the Asia-Pacific region.

Stewardship

Co-Creating a Smoke-Free, Sustainable Campus Across Disciplines

With a vision of “healthy, safe, and smoke-free,” our university’s Health Services Division (Office of Student Affairs) launched the New Wave of Tobacco Refusal initiative to build partnerships between administrative units and student communities, and to catalyze campus-wide health promotion. Moving beyond one-way messaging, the program connected the Puppet Theater Club and the Hip-Hop Dance Club to co-produce anti-smoking videos that blended traditional and contemporary aesthetics. An integrated communication strategy spanning social media, campus digital displays, and freshman orientation simplified the message, shaping a shared language and a collective commitment to rejecting tobacco harm. Centered on student empowerment and cross-domain collaboration, this model converts artistic energy into health advocacy momentum, strengthening campus health literacy and creating a supportive environment.

Breast Cancer Prevention Through Social Engagement

In response to International Breast Cancer Awareness Month, the University’s Sustainable and Peer Education Center partnered with the Hope Foundation for Cancer Care to run a crochet prosthetic breast workshop, a triadic model combining health education, skills training, and social service. The plan is to recruit faculty and students to learn crocheting techniques and make prosthetic breasts for the transitional period after surgery to help patients maintain body balance and prevent scoliosis. Handwritten cards will also be attached to provide warm companionship, both physical and psychological support. Our school acts as a platform and training hub, from providing venues and resources to connecting non-profit organizations, establishing a service chain of "campus - public welfare - medical care." The finished products are donated by the foundation to the first-line breast medical center to ensure accurate resources.