

Songklanagarind Hospital: first successful plasma treatment of COVID-19 patients in Southern Thailand

Assoc. Prof. Dr. Sarunyou Chusri, M.D., Infectious Disease Specialist, Department of Internal Medicine, Faculty of Medicine, Prince of Songkla University, revealed that Songklanagarind Hospital has succeeded using plasma from COVID-19 patients who have recovered from the disease, to treat patients with critical symptoms of COVID-19 for the first time in southern Thailand. The cured patient has been sent back to their domicile on 19 May 2020, making them the last COVID-19 patient at Songklanagarind Hospital. (At the time of writing, two more patients remain at the second branch of the hospital, located at the Tinsulanon Building, Elderly Care Center, General Prem Tinsulanonda Historical Park.)

The confirmed COVID-19 patient was sent from Narathiwat province to be treated with the standard antiretroviral drug Favipiravir for three days, with no improvement in their conditions, displaying symptoms of decreased blood oxygen saturation, low heart rate, and respiratory failure. Endotracheal intubation was then performed, along with complementary treatment of using plasma donated by the first COVID-19 patient who recovered through standard hospital treatment.

The medical team injected 200 cc of plasma twice, and after three to four days, the respiratory functions and heart rate have improved, and inflammation has decreased. The viral load in the pharynx and phlegm was below measurable levels. Pneumonia symptoms have markedly improved, and the patient could be taken off the ventilator.

"However, we still can't say that this treatment will work for everyone: it has to be considered on a case-by-case basis. The recovery of this patient is considered a report of successful individual treatment." Associate Professor Dr. Sarunyou Chusri, M.D said.

The use of plasma is complementary treatment performed only in cases when the patient does not recover through standard treatment: it is not a preventive procedure. Nevertheless, recovered patients have contacted Songklanagarind Hospital to donate their plasma in the hospital's blood bank. Donors must be tested to ensure that they are free of any infection that can be transmitted through blood transfusion. Normally, 400 - 600 cc of blood can be donated at a time, and the donation can be repeated if immunity is sufficient.

Since the outbreak of COVID-19, Songklanagarind Hospital has treated 30 COVID-19 patients, nearly all of whom were in critical condition. Such patients are treated at Infectious Disease Ward 1, the old emergency building's 5th floor. This ward is divided into three zones, with four beds in each, for a total of 12 beds. Recovering patients are sent to Songklanagarind Hospital Branch 2 in the Tinsulanon Building, Elderly Care Center, General Prem Tinsulanonda Historical Park, Mueang district, Songkhla province.



The first patient recovered from COVID-19 at Songklanagarind Hospital has returned to donate her plasma.



09/05/2020
Chest radiograph of patient with severe pneumonia, before plasma treatment



Plasma from the recovered COVID-19 patient



13/05/2020
Chest radiograph of patient with severe pneumonia, after plasma treatment

News and photos from Songklanagarind Hospital's Facebook page



PSU produces accessible devices to disinfect banknotes

Assistant Professor Dr. Jumphon Chuenjitsiri, Vice President for Legal and Academic Services, Prince of Songkla University, revealed that the university makes the best use of the academic potential of all existing programs to inhibit the spread of the coronavirus disease 2019 (COVID-19) outbreak, as indicated by the achievements of the School of Health Sciences in the past two months.

National agencies voiced their concern that banknotes often changing hands can be a potential source of microbial infection. To find an accessible, low-cost solution, Prince of Songkla University initiated a coordinated response from researchers of the Department of Electrical Engineering, Faculty of Engineering. The resulting invention of ultraviolet radiation boxes rely on UV radiation in the form of UVC for the disinfection process.

At its core, the device consists of simple equipment, such as ready-made UV lamps which can be purchased at any general appliance store, and a simple box casing that can also be sourced or crafted by the user. A fuse is used to break the circuit in the event of excessive current, and the box is lined with aluminum foil to reflect the UV rays evenly. An additional safety system ensures that the UV light turns on only when the box is closed. The operator can check the working status of the device by looking through a small hole in the box.

The effectiveness of UVC lamps has already been demonstrated by their use in water filters, where UV light emitted from the lamps destroys up to 95 percent of germs. At the same time, caution needs to be exercised, since the light is harmful when exposed to the body and eyes. The boxed enclosure ensures safe operation, only the banknote needs to be inserted and the lid closed. After a disinfection process of 15 seconds, the banknote can be removed.

With slight modifications, the device is also able to disinfect used masks - two UV tubes simultaneously disinfect both sides of the mask. Another recent example of the same concept can be found at the Khunying Long Athakravitsunthorn Learning Resources Center of PSU's Hat Yai campus, where books in circulation are disinfected via a belt conveyor system moving the books through UV light.

UV radiation is widely used by professionals to disinfect medical devices, or equipment in beauty salons, but the process has not been made accessible to laypeople, nor have been any attempts to create practical applications to be used for the current pandemic situation. In contrast, the device PSU has invented costs somewhere between 600-1,000 baht depending on the size and quality of the box, is widely accessible, and has been adapted to meet the current health safety needs of the community. Furthermore, the university is collaborating with Luangpratanratnikorn Industrial and Community College and Hat Yai Technical College to make the device available to the general public.



OUR PRIDE

The new viral epidemic has been spreading at an unprecedented rate. We all unite in this endeavor, including all of us at Prince of Songkla University, joining hands to fight against the epidemic, through cooperation between various faculties.

Responding to the situation by developing beneficial innovations, we all follow our shared aspiration **"Our Soul is for the Benefit of Mankind"**.

Hat Yai Campus



"Warriors in white" A team of doctors and nurses from Songklanagarind Hospital takes care of infected patients at Songklanagarind Hospital Branch 2, in cooperation with hospitals in Songkhla province (SONGKHLA COVID-19 Recovery Camp), and at Songklanagarind Hospital Branch 3, located on PSU's Phuket Campus.



Automatic gel dispenser helps reduce the number of required staff, exposure, and transmission, at a cost that is lower than the market rate.



Mask seal foam prevents infections by increasing the sealing efficiency of surgical masks.



Automatic door opener
An automatic door-opening device that uses sensors to detect objects.



Covid-19 protective shield



Sanitizing booths for whole-body disinfection.



Robot for food delivery to COVID-19 patients.



Mobile UVC cleaning robot



Training and production clips organized to provide knowledge on prevention and appropriate conduct for the general public.



Sci-Thermometer, to develop the infrared thermometer for rapidly checking the temperature of one's forehead.



Sci Thermoscan infrared fever screening system, a remotely operated thermometer with infrared light helps doctors take COVID-19 patients' temperature online. Patients can take their own temperature remotely as well, reducing viral spread and exposure.



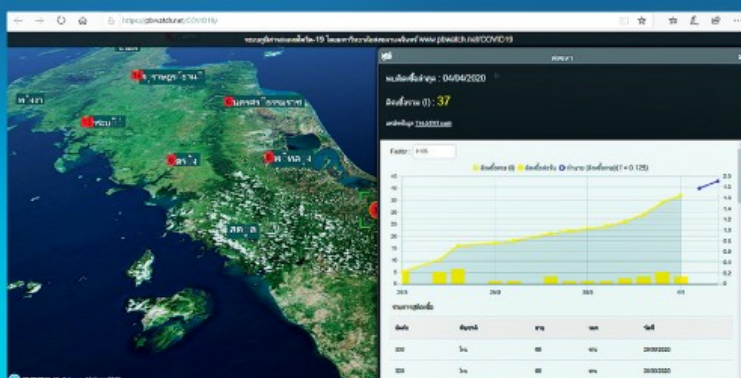
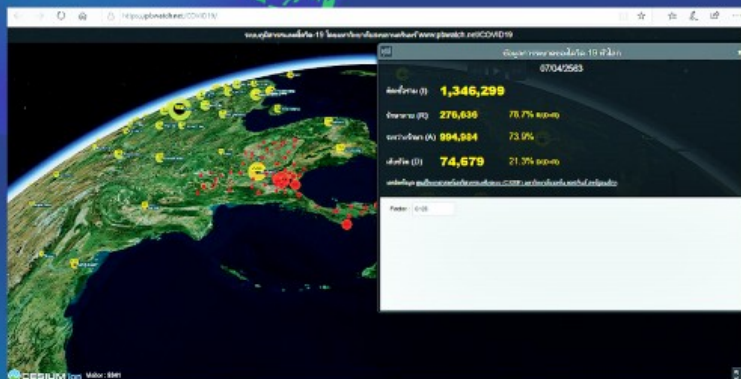
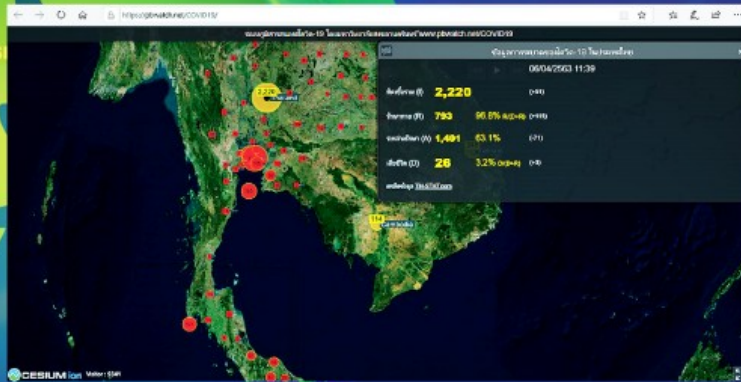
EnviTrap, a 3D triple-layered fabric face mask that protects the wearer from germs by absorbing secretions. The unique 3D shape is designed for a tight fit.



Sci-Mask Filter, a fiber filter that increases the efficiency of cloth masks to nearly N95-level.



3D website for global monitoring of COVID-19 developed at Pattani Campus



Assist. Prof. Dr. Somporn Chuai-aree , Director of the Office of Academic Services, and Mr. Alongkot Wongsuwan, a graduate from the Faculty of Science and Technology at PSU's Pattani Campus have developed a 3D website that enables visitors to monitor the COVID-19 situation both locally and around the world. The bilingual (Thai, English) website displays data in Thailand by province, and in the world by region. The data is retrieved from the Center for Systems Science and Engineering (CSSE), Johns Hopkins University, USA, and Department of Disease Control, Ministry of Health, Thailand, and is displayed in an easily understandable way so that laypeople, media and executives can stay informed of the most up-to-date statistics regarding the number of the infected people, fully-recovered patients, and patients under treatment. Furthermore, visitors can also see trends and predictions by a system that estimates the most likely tendency based on the current COVID-19 situation, allowing policymakers and responders to make timely preparations, monitoring and planning to promptly control the spread of the disease. The mobile-friendly site, optimized for a wide variety of system configurations, can be reached at <https://pbwatch.net/COVID19/> .

Collaboration with Stanford University and MHESI for digital science innovation in southern Thailand



Vice President for International Affairs Asst. Prof. Dr. Thakerng Wongsirichot revealed PSU's innovative plan "Digital science to create innovation

for economic, social and human resource development". The ambitious project aims to support the development of human resources with digital skills and competencies through the use of knowledge and abilities in teaching, research, and academic services in conjunction with tools, equipment, and existing digital technology systems. The plan is expected to improve digital competencies in the fields of marine and coastal resource development, tourism, and public health. To achieve these ambitious goals, academic collaboration has been initiated with Stanford University, USA, and financial support is provided by Ministry of Higher Education, Science, Research and Innovation (MHESI)

The complex plan requires coordinated expertise in a wide range of fields, including mathematics, statistics, computers, medicine, epidemiology and public health. To ensure effective implementation, over 50 people on each campus participate to provide qualified responses to the unique problems in each of these fields. For example, Pattani Campus will address environmental pollution and the southern border provinces problem; Surat Thani Campus plans to experiment with the use the Internet of Things (IoT) and digital science to help with agricultural development in Thung Sai Chai; Phuket Campus will develop tourism and digital science, and Hat Yai Campus will focus on improvements in health and medicine.

An important part of the plan is the funding provided by the Ministry of Higher Education, Science, Research and Innovation (MHESI), under Thailand's Reinventing University, for the following three projects:

1. "Human Resources Development in Digital Science" – Master's and Doctoral degree programs, along with non-degree programs, for the enhancement of new skills, learning new technologies, or practicing necessary skills;
2. "Digital Twin for Andaman Coast Tourism" – a research project focusing on the similarities and differences between searching information online and in real life, in the context of tourism in the Andaman region;
3. Application of Digital Science in Marine and Coastal Resources Development" – a project for the development of Thung Sai Chai, Chaiya District, Surat Thani Province, with potential support for 2-3 years depending on the initial success of project implementation.

The projected success of this wide-reaching plan will lead to increased economic and social development of the southern region in many aspects, including a greater number of qualified digital science professionals able to conduct research and innovation to create knowledge to solve problems at the local, national and international levels; increased local income from community tourism; enhancement of aquaculture knowledge through the application of digital technology; modern management, and effective primary health care services.





Faculty of Nursing produces graduates in southern Thailand and abroad; helps solving health crises

Assoc. Prof. Dr. Nongnut Boonyoung, Dean of the Faculty of Nursing, revealed the secret behind the faculty's global renown: an active network of international institutions, and alumni from Indonesia, Malaysia, the People's Republic of China, Bhutan and Pakistan, who, upon returning home, progress their career and increase PSU's reputation abroad. Over time, these two factors lead to a broader exchange of knowledge and learning, joint research and academic conferences, along with opportunities to provide career advice to potential international students to study at PSU's Faculty of Nursing. In their quest to expand their reach, the faculty is currently building cooperative networks in Serbia and Japan as well.

As another important step in this direction, the Faculty of Nursing is expanding educational opportunities abroad by establishing the PSU Extension Center in Indonesia. The center focuses on a distance learning program that allows Indonesian students to enroll and study in their home countries, communicating with their professor, advisor and fellow participants remotely from time to time. Previously, similar distance learning technology has been used by PSU students in the People's Republic of China, unable to return to PSU due to the COVID-19 outbreak. The process impressed the local students there, resulting in a number of Chinese students contacting PSU and expressing their interest to study by the same method.

In addition, Dr. Nongnut emphasized the faculty's readiness to tackle unexpected situations such as natural disasters and epidemics, and explained the faculty's role in providing the necessary knowledge, skills and provisions to support the people of Songkhla province and surroundings in times of need.



Faculty of Nursing

Pattani Campus



Design and manufacturing of protective clothing for doctors and nurses, to be distributed to medical personnel.



"Open pantry", a community pantry for people affected by COVID-19 in Pattani province.



PSU Pattani Volunteer Center mobilizes community potential to help solve problems arising from COVID-19.

Surat Thani Campus



Producing hand sanitizer gel, cloth face masks and face shields to be distributed to departments in need.



Producing cloth face masks and face shields to raise funds for hospitals in need.

Trang Campus



"SWAB ROOM", an innovative sample cabinet for COVID-19 medical examiners.



Co-design and improvement of Trang's hospital wards as a cohort ward to prepare for Covid-19 patients.



Donation of COVID-19 protective equipment to hospitals and Immigration offices in the south.



PSU Bazaar, the online market for helping affected entrepreneurs.

With much more to be done for society, Prince of Songkla University remains determined and dedicated to overcoming this crisis together.

PSU develops rubber shoe cover for protection against COVID-19

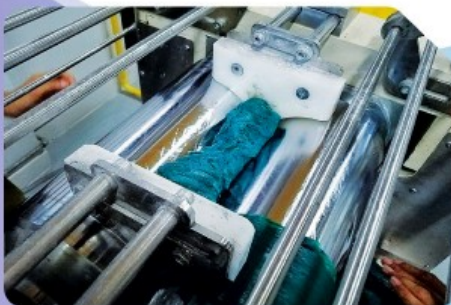


An anti-germ rubber shoe cover has been developed to prevent the transmission of germs on the floors of medical facilities. The innovation is the work of researchers at Prince of Songkla University, under the support of the Office of Human Resource Development and Social Engagement, Faculty of Engineering, Natural Rubber Innovation Research Institute and Industrial Promotion Center Region 11.

On April 28, 2020, Dr. Nattapon Uthaipan, head of the research project, pointed out the advantages of using rubber instead of plastic cover products commonly used for similar protective purposes in laboratories and commercial industries: rubber is a tear-resistant, highly flexible material, and since it is washable and reusable, its usage reduces the amount of plastic waste.

Regarding the coronavirus disease 2019 (COVID-19) outbreak, research studies found that the coronavirus can live and can spread for many hours in the air and on various surfaces for several days. The PSU research team, consisting of Dr. Nattapon Uthaipan, Dr. Karnda Sengloyluan (Sino-Thai International Rubber College) and Asst. Prof. Dr. Ekwipoo Kalkornsuraprane, (Faculty of Science), therefore, has initiated research and development of a rubber shoe cover that can be re-sterilized and reused, in addition to development of a similar disposable product.

On April 16, 2020, PSU President Asst. Prof. Dr. Niwat Keawpradub, Asst. Prof. Dr. Jumphon Chuenjitsiri, Vice President for Legal and Academic Services, Assoc. Prof. Dr. Tanit Chalermyanont, Dean, Faculty of Engineering, Assoc. Prof. Dr. Mitchai Chongcheawchamnan, Director of the Office of Human Resource Development and Social Engagement, Mr. Prasatsuk Niyomrat, Director of Industrial Promotion Center Region 11, and a group of researchers delivered the germ-resistant shoe cover products to several hospitals in Songkhla province, including Hat Yai Hospital, Na Mom Hospital, Chana Hospital, and Padang Besar Hospital, for increased safety of medical staff during the coronavirus disease 2019 (COVID-19) outbreak.





COVID-19 Rapid Test Kit developed by PSU researchers



Prince of Songkla University, in cooperation with private enterprises Energy Absolute Public Co. Ltd., Dhipaya Insurance Public Co. Ltd., Somapa Information Technology Public Co. Ltd., Bangchak Corporation Public Co. Ltd., BCPG Public Co. Ltd., Krung Thai Bank Public Co. Ltd., Lao Airlines, Pisona Group Co. Ltd., has developed a virus infection test kit, able to screen patients in just 15-20 minutes.

The talented research team, led by Asst. Prof. Dr. Theerakamol Pongsakul and comprised of Dr. Jidapa Szekeley, Dr. Piyawut Swangphon, Dr. Teerapat Nualnoi, Dr. Natthaphon Na Nakorn and Dr. Paweena Wongwitwichot from the Faculty of Medical Technology and Faculty of Pharmaceutical Sciences, has extended an intensive collaborative effort for the collective safety of mankind, fulfilling PSU's mandated responsibility for the wellbeing of people in southern Thailand and of the country as a whole, as proclaimed by the royal wishes of His Royal Highness Prince Mahidol Adulyadej: "Our soul is for the benefit of mankind".



Diagnosis of COVID-19 infection usually involves the detection of the genetic material (RNA) of the virus in respiratory tract secretions. While this is considered the standard method, it requires highly skilled personnel with expertise in operations and interpreting diagnostic test results. The inspection takes about 2-3 hours and the equipment is expensive and not suitable for fieldwork. Furthermore, the staff collecting specimens are at high risk of getting infected with the virus.

In contrast, with the newly developed PSU COVID-19 Rapid Test Kit, medical personnel are able to perform a quick basic screening of patients with high risk of being infected, allowing early detection. Instead of respiratory tract secretions, the test uses blood samples of 15-20 microliters (about 2-3 drops) drawn from the fingertips. These samples have a very small amount of the virus, therefore posing a much lower risk of infection to staff. Interpreting the test results does not require advanced knowledge or intensive training. This, combined with the affordability and rapid reaction time, makes the test suitable for fieldwork, enabling medical staff to check patients quarantined at home. Once approved by the Thai FDA, the PSU COVID-19 Rapid Test Kit will enter mass production and distribution.



PSU ranked among top five Thai universities in teaching and research

เด่นด้านการสอนและวิจัย

จากชื่อเสียงด้านการสอน การวิจัยระดับนานาชาติ การได้รับการอ้างอิงในวงวิชาการ และจำนวนงานวิจัยที่ได้รับการตีพิมพ์ระดับนานาชาติ

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Prince of Songkla University has been ranked #5 in teaching/learning and research by Round University Ranking (RUR) on May 1, 2020. The rankings are based on twenty indicators, including the number of academic staff per students, international teaching reputation, number of doctorate students, references, impact, the amount of research, and international research reputation.

Reaching the overall 6th place in the country and 618th place in the world, PSU has undergone a marked improvement from last year's 8th and 679th places, respectively. The advancement is likely due to PSU's long-standing commitment to excellence in teaching and research, extensive knowledge and ability of its lecturers. The university's strategic location of five campuses in the South also contribute to the success, giving PSU a wide reach and diverse research opportunities to provide solutions tailored to the unique needs of each region.

The future is looking even brighter, with PSU undertaking Education Transformation to answer the challenges of modern times. Furthering this goal, PSU also focuses on widening its international reach, which has already earned the institution a regional reputation among the top 5 in Thailand and the 6th in the country for international student exchanges.



Round University Ranking (RUR) 2020

PSU's world-first identification report of emerging fungal epidemic at rubber plantations



A severe case of rubber tree leaf fall disease has been discovered in October 2019 in Thailand's Narathiwat province. Since then, the epidemic was also found to have spread to Yala, Trang, Phang Nga, Pattani, Surat Thani, Songkhla, Krabi, and Satun provinces, with over 100,000 rai of rubber plantations reported as damaged. The fungal disease affects rubber tree strains RRIM 600, RRIT 251, PB 235 and PB311, at all stages of growth, including seedlings. Nearly all parts of rubber trees are prone to infection: pods, leaves, branches and cut surfaces. The destroyed pods will rot and remain on the tree without cracking and falling naturally, thus becoming further sources of infection. Over time, the epidemic resulted in a severe decrease in rubber production.



The PSU Faculty of Natural Resources research team, led by Assoc. Prof. Dr. Anurag Sunpapao and consisting of Asst. Prof. Dr. Chaninun Pornsuriya, Asst. Prof. Dr. Thanunchanok Chairin and Asst. Prof. Dr. Narit Thaochan, attempted to diagnose the true cause of the disease, and conducted a field survey, collecting diseased specimens in Narathiwat province.

The research team was able to isolate the infection and identify the type of pathogen by using advanced morphology and molecular biology techniques, studying the sequence of fungal DNA and comparing the results with an international database until the correct fungus type was found. The laboratory examination results found that the rubber leaf fall is caused by two types of fungus in the family Neopestalotiopsis (*N. cubana* and *N. formicarum*), making this report a world-first revelation. The authors caution however that prevention methods are yet to be discovered due to the emerging nature of this disease, therefore the exact timeline for control cannot be yet made.



The research results have been published in an international journal of plant disease, and now the research team studies fungicides available in Thailand. Provisionally, Dr. Narit recommends using Cabendazim, Captan, Mancozeb or Propineb at the prescribed dosage, since these substances can inhibit the growth of these fungi without having to import expensive chemicals, and may be equally effective. In the future however, the research team plans to carry out field studies of substances in real growth conditions in order to find the proper long-term advice for rubber farmers.

PSU

students get Intercultural Passport, 8-week trip to Bulgaria



Enterprising students of PSU were offered the chance to gain intercultural competency and spend eight weeks at the prestigious Varna University of Management (VUM) in Bulgaria, via a contest event organized by the PSU International Affairs Office. The contest, part of the FRIENDS project Erasmus+ initiative, involved the completion of an 18-unit Massive Online Open Course (MOOC) and the creation of a digital story regarding the contestant's international experiences.

Between 6 March and 17 May, a total of 216 PSU students have enrolled in the MOOC, and used the course's video-recorded materials (lectures, presentations, interviews), interactive quizzes and assignments to learn a number of useful cross-cultural skills, including working in multicultural business environments, overcoming linguistic barriers, using proper business etiquette and protocol abroad, and gaining intercultural communication skills.

Eighteen of these students have also submitted their digital stories, detailing their most profound international experiences using digital media. Fulfilling both requirements, these students have earned their Intercultural Passport, signifying their intercultural competence.

In addition, authors of the three best entries will visit VUM in the near future, where they will participate in an eight-week Student Boot Camp alongside 33 winners from other Asian institutions that are part of this project. Through the camp, students will learn event and project management skills, along with enhancing their creativity and innovation, in order to be effective student leaders and managers of the FRIENDS "Teahouse" at PSU, a multicultural hub and social space for the PSU student body.



They put the palms of their hands together

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