Pharos University in Alexandria
Vice President for Graduate Studies & Research
International Ranking committee

THE Impact Ranking SDG3 Report

SDG

3

Good Health and Well-being

SDG 3. Good Health and Well-being

Major progress has been made in improving the health of millions of people, increasing life expectancy, reducing maternal and child mortality, and fighting against leading communicable diseases. Concerted efforts are required to achieve universal health coverage and sustainable financing for health, to address the growing burden of non-communicable diseases, including mental health, and to tackle antimicrobial resistance and determinants of health such as air pollution and inadequate water and sanitation.
Pharos University has records contributing to SDG3 in several aspects including aid convoys, health initiatives, conferences and seminars, activities of Pharos university clinics, local national and international cooperation, and international research publications. Below is a summary of Pharos University achievements in the health sector.

3.1 The Healthy Campus Initiative Campaign

- The Faculty of Arts and Media Blood Donation Campaign
The Faculty of Arts and Media in collaboration with the Faculties of Legal Studies, Engineering, Pharmacy and Dentistry organized a blood donation campaign on Tuesday, March 15th, 2022. The event was organized within the framework of PUA's participation in community service activities. The event started at 11 am with the arrival of a blood donation vehicle from the Blood Bank. The campaign was met with an overwhelming turnout of students, while the faculties cooperated in organization and motivation of the students.

https://www.pua.edu.eg/%d9%83%d9%84%d9%8a%d8%a9-%d8%a7%d9%84%d9%81%d9%86%d9%88%d9%86-%d9%88%d8%a7%d9%84%d8%aa%d8%b5%d9%85%d9%8a%d9%85-%d8%aa%d9%86%d8%b8%d9%85-%d8%ad%d9%85%d9%84%d8%a9-%d9%84%d9%84%d8%aa%d8%a8%d8%b1%d8%b9/

3.2 Seminars, Conferences and Workshops

- The faculty of Dentistry participated in the Egyptian Dental Exhibition (EDE 2020) on Thursday, 13 February 2020 in at Cairo International Convention Centre (CICC). The trip aimed at apprising the PUA delegation which included several faculty members, teaching assistants and students of different academic years of the state-of-the art equipment and technology in general and in the field of dentistry in particular.

https://www.pua.edu.eg/the-faculty-of-dentistry-organized-a-trip-to-the-egyptian-dental-exhibition/

- The Faculty of Pharmacy and Drug Manufacturing at Pharos University organized a symposium entitled "OTC from A to Z" on 7 March 2020. The lecture was delivered by Dr. Magdy Shalash, the Director of El Taybey Academy for Pharmaceutical Training and Dr. Sally Ibrahim, the Head OTC Department at El Taybey Academy for Pharmaceutical Training. It is worth mentioningthat the symposium discussed the following points: How the pharmacist deals with different cases of chronic Arthritis? How to dispense medicines without medical prescription and what are theseOTC drugs? What are the cases that should be directly referred to a physician not a pharmacist?

"OTC from A to Z" Symposium | Pharos University in Alexandria (pua.edu.eg)

- The Faculty of Health and Applied Science Technology organized a seminar entitled “Significance of a Vegetarian Diet on Health and Environment” on Tuesday 19/4/2022. The seminar was held under the supervision of Prof. Dr. Ezzat Hassan, Dean of the Faculty of Health and Applied Science Technology, and Prof. Dr. Hamdy Al-Wakeel, Vice Dean for Education and Student Affairs, and in the presence of several Faculty students. This event was held as part of the activities of the Scientific Committee of Student Activities Department. Dr. Duha Abu Zahra and students/ Muhammad Essam and Nada Hamida participated in the seminar by making a poster on the food pyramid for vegetarians. Students/ Rodina Adly and Sandy Mohamed also participated by explaining the benefits and harms of vegetarian diet.

https://www.pua.edu.eg/significance-of-a-vegetarian-diet-on-health-and-environment-seminar/

- The Faculty of Pharmacy held its biannual Conference on Pharmacology at 11 and 12th March 2020. The conference was carried out under the auspices of the president of the university and is supported by several pharmaceutical companies and AUF agency of France. The conference was attended by about 300 expert and researcher, where 102 scientific papers were presented, and published in the conference booklet after being reviewed. International attendees were from France, Finland, Sweden, and Canada. Selected scientific presentations in the conference included:

- Sustainable Development in Pharmacy Education and Practice.
- Biosimilar Medicines.
- Pharmacoeconomics: Cost analysis of clinical pharmacy interventions.
- Pharmacovigilance: Case Safety report.
- A Path from Academic to Innovation in Pharmaceutical Industries.
- Nanotechnology: Current Trends and Future Perspective.
- Challenges in Novel Drug Delivery Systems.
- New Aspects of Natural Products in Drug Discovery.
- Immunotherapy, Genetics and Pharmaceutical Biotechnology.
- Infection Prevention and Control.
- Computer Aided Drug Design and Synthesis.
- Bioanalytical Chemistry.
- The Road from Pharmaceutical Sciences to Patient Care Approach.
- Evidence – Based Pharmaceutical Care.
- New Perspectives and Advances in Pharmacotherapy (Cardiovascular, Nephrology, Gastroenterology, Endocrinology, Respiratory System, Neurology and Neurodegenerative Diseases).

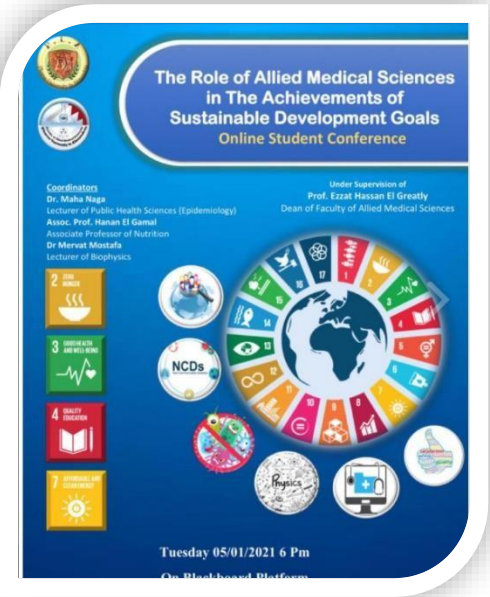
https://www.pua.edu.eg/icmaps/

- The Faculty of Applied Health Sciences Technology organized a symposium to raise the awareness of coronavirus on Tuesday,10 March 2020. The symposium was delivered by Dr. Mohamed Salah El Din, an Assistant Professor of Biochemistry, and Immunity in the Medical Laboratory Department. The symposium explained the modes of the coronavirus transmission, its symptoms, and methods of protection.

https://www.pua.edu.eg/the-faculty-of-applied-health-sciences-technology-organized-a-symposium-about- coronavirus/

- The First student conference of the faculty entitled “Role of Allied Medical Sciences in the Achievement of Sustainable Development” on Blackboard platform. This was held on Tuesday, 5 January 2021. This conference was attended by 23 students from different departments. The participating students gave a synopsis about the sustainabledevelopment goals and the effect of COVID 19 Pandemic on the progress made to reach those goals. During the conference, they discussed the role of Epidemiology, nutrition, infection control, medical informatics, and biophysics in achieving the sustainable development goals.

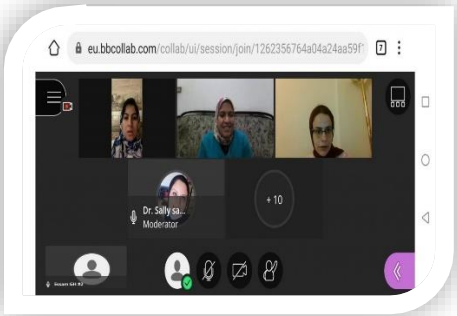
https://www.pua.edu.eg/the-first-student-conference-entitled-role-of-allied-medical-sciences-in-the-achievement-of-sustainable-development/



- A seminar entitled "Bright Side of COVID-19 Pandemic" was organized on Thursday, 24 December 2020 using Blackboard platform. The seminar was delivered by Dr. Heba Al Shehi, a Lecturer in the Nutrition and Food Safety Technology Department who discussed with the students the positive side of COVID-19 pandemic as well as the consequences of quarantine and its effect on the environment, personal hygiene, nutrition and relationships. Moreover, she explained that every subject has two points of view one positive and the other negative depending on how we see it. It is worth mentioning that COVID-19 and quarantine have closed factories, stopped gatherings, and banned travel but on the bright side it has positive impact such as:

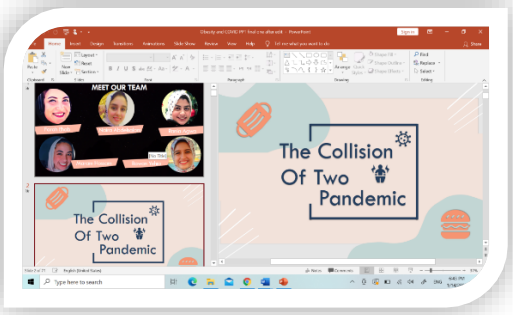
- Reduced air and water pollution.
- People benefited from quarantine in taking self-improvement sessions.
- Reducing the consumption of fast food and the transformation to e-stores and home delivery to reduce gatherings.
- Schools and universities tend to e-learning.

https://www.pua.edu.eg/bright-side-of-covid-19-pandemic/



- The Faculty of Applied Health Sciences Technology held a scientific competition entitled “Obesity and Covid-19”. It was organized on Thursday, 14 January 2021 online on Blackboard platform. The participating students were divided into 5 groups consisting of 6 students and each group prepared a presentation on obesity and Covid-19 by defining obesity, its damages, its relationship to Covid-19, and how the risk of developing it can be avoided by changing the negative lifestyle. At the end of the competition, the judging panel evaluated the presentations based on the scientific content, PowerPoint design and presentation skills.

https://www.pua.edu.eg/the-faculty-of-applied-health-sciences-technology-organized-a-scientific-competition-entitled-obesity-and-covid-19/



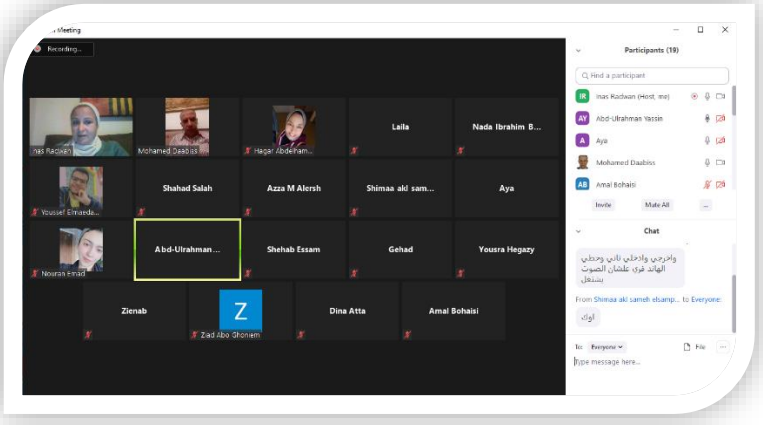
- The Faculty of Applied Health Sciences Technology held an online seminar entitled “Reasons that Can Impede Weight-Loss” on Blackboard Platform. The seminar was delivered by Dr. Sally Salah, a Lecturer in the Nutrition and Food Safety TechnologyDepartment on Tuesday, 5 January 2021. The seminar discussed the reasons for the failure of weight-loss diets, the proposed solutions to overcome those barriers and how to make any healthy weight-loss diet work. Moreover, Dr. Doha Magdy, Dr, Nermine Khamis and Dr. Heba El Shehy, Lecturers in the Nutrition and Food Safety Technology Department had an open discussion with participating students, learning about their different experiences in following different

types of diets, answering their inquiries,and providing a number of tips to improve the results of these diets.

https://www.pua.edu.eg/the-faculty-of-applied-health-sciences-technology-organized-seminar-entitled-reasons-that-can-impede-weight-loss/

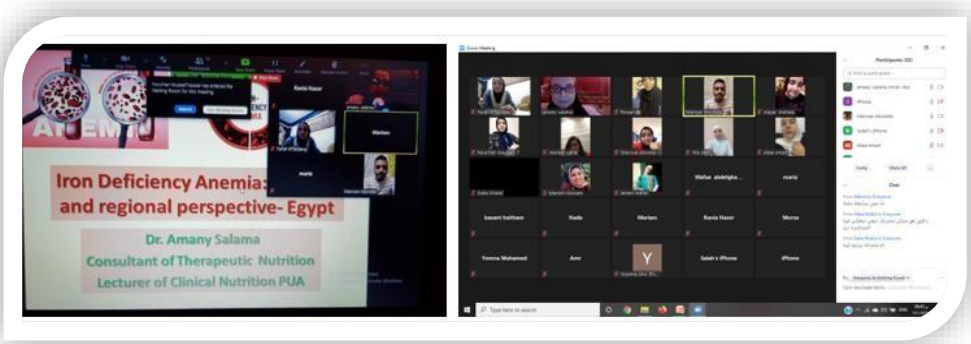
- The Faculty of Applied Health Sciences Technology organized an online symposium entitled “The Risks of Anesthesia between Reality and Illusion” using Zoom application on Thursday, 17 December 2020. The symposium was delivered by Dr. Enas Abd Elmoneim and Dr. Mohamed Ali Daabis, Lecturers in the Critical Care and Anesthesia Technology Department. The symposium discussed the risks of anesthesia to which the patient or medical staff may be exposed. Moreover, different potential problems were also presented and discussed by the attendees, e.g. how to avoid health problems, appropriate solutions evaluating the scale of health risks and society awareness on sound scientific grounds. The symposium was attended by several students who asked a lot of questions and gave their opinions about the topics discussed.

https://www.pua.edu.eg/the-faculty-of-applied-health-sciences-technology-organized-a-symposium-entitled-the-risks-of-anesthesia-between-reality-and-illusion/



- The faculty of Applied Health Sciences Technology organized a symposium entitled "Iron Deficiency anemia a global and regional perspective- Egypt"given by Dr. Amany Salama, a Lecturer in the Nutrition Department. Thesymposium washeld on Tuesday, 1December 2020. This symposium covered the causes of anemia, and the commonest causeis iron deficiency as well as other causes such as:
    - Acute and chronic infections that result in inflammation and hemorrhages.
    - Deficiencies of other vitamins and minerals especially folate, vitaminB12 and vitamin A.
    - Genetically inherited traits such as thalassemia.

https://www.pua.edu.eg/the-faculty-of-applied-health-sciences-technology-organized-a-symposium-entitled-iron-deficiency-anemia-a-global-and-regional-perspective-egypt/



- The faculty of Pharmacy and Drugs Manufacturing received Dr. Manal Abu ELfadl, in the presence of Dr. Sameh Younis- the Pioneer of the student activities and the representatives of EVA Pharma to discuss the continuous cooperation in Nutrition and Health field in general. Dr. Manal Abu ELfadl talked about the importance of healthy food and its result in the long term and short then, the various types of healthy diets were presented. This was followed by having the representatives of the company measured the fats percentage,muscles, water, and metabolism rate in body for the students and universitystaff by using InBody devices.

https://www.pua.edu.eg/health-care-and-nutrition/

3.3 Activities

- Within the framework of its plan for community service and environmental development, PUA has adopted dispatching several medical convoys periodically at 5/4/2022 under the supervision of Prof. Ramadan Abu El-Ala, President of Community Service & Environment Development Affairs. Accordingly, a medical convoy was prepared for a nursing home in Al Ras Al-Souda, in cooperation between the Faculty of Dentistry and the Faculty of Applied Health Sciences Technology. Further, an agreement was reached with the home's officials to transfer the elderly women to the Faculty of Dentistry, Pharos University by a bus provided by the home to receive the necessary service and carefree of charge. Physicians from the Faculty of Health Sciences Technology from the Department of Nutrition, Medical Laboratories, Dental Prosthesis, and some resident doctors conducted nutritional health education for the home residents, a nutritional screening, and provided some health tips and instructions for the kitchen staff. At the end of the visit, gifts were presented to the residents of the home in a family atmosphere.

https://www.pua.edu.eg/medical-convoy-for-a-nursing-home-in-al-ras-al-souda/

- In the framework of the summer training 2020-2021, the Department of Architectural Engineering participated with a group of students from the Fourth Level (8th Semester): Aisha Mohamed, Nadine Hisham and Sarah Al Murabai, under the supervision of Associate Prof. Riham Nady Faragallah and the team won the First Prize (People and Jurors Choice Award). The main aim of the competition is to design a sustainable and healthy environment that meets all the needs of pilgrims through functional design of small spaces and upgrading their experience in the light of the increasing number of pilgrims in the city of Mina, Saudi Arabia. It takes into account the precautionary and hygienic measures to confront COVID-19, as well as applying various environmental treatments that are compatible with this desert area. In this way, the tents in the city of Mina are ready for the growth of pilgrims in the future. The Saudi office INJ Architects, in cooperation with UNI Competitions, launched an International Architectural Competition entitled: “The White Lands”, in which a large group of architectural offices, architects and architectural students have participated from 23 different countries around the world. Jury Comments: Good concept with reference to the “Tent” legacy of Mina, allowing for future growth and challenges of any health threatening issues (like the current COVID-19) with good health, hygiene and distancing measures.

https://www.pua.edu.eg/a-sustainable-and-healthy-tent-for-pilgrims/

- The Faculty of Applied Health Sciences Technology and Dr. Mohamed El Safawany, a Lecturer in diagnostic radiology, the faculty organized a training visit for fourth year students in Ayadi al Mostakbal Hospital in Alexandria. This trip was held on the 3rd and 4th of November 2020. During the visit the students used the atomic scanners and visited radioactive materials preparation laboratories. This visit was managed under the supervision of Prof. Omar Shebl Zahra, Professor of Oncology and Nuclear Medicine and an adjust Lecturer in the Radiological Sciences and Medical Imaging Department and the Former Head of the Nuclear Medicine Department in Ayadi al Mostakbal Hospital, Mr. Magdy Aly and Mr. Mohamed Zakria Assistant Lecturers, Demonstrator Hanan Ahmed.

https://www.pua.edu.eg/the-faculty-of-applied-health-sciences-technology-organized-a-visit-to-ayadi-al-mostakbal-hospital/

- The Medical Equipment Department, of the Faculty of Applied Health Sciences Technology participated in “Egypt Make Electronics” Innovation funded by ITEDA and the Ministry of Communications and Information Technology. This was held on Saturday, 21 November 2020. A number of third- and fourth-year students, faculty members and teaching assistants visited EME Innovation Hub- Borg to be acquainted with the available

facilities and gave the students ideas for their graduation projects. Moreover, they attended the closing ceremony of the "Egypt IoT and AI challenge 2020" competition.

https://www.pua.edu.eg/the-medical-equipment-department-participated-in-egypt-make-electronics-innovation/

- On Tuesday, March 08, 2022, the Faculty of Computer Science and Artificial Intelligence organized a sports day for its students. The day witnessed a strong participation from students, faculty members, and teaching assistants. They participated in sports activities such as football, basketball, and table tennis. In addition to physical activities, Zumba, and various games, in cooperation with Gold's Gym. At the end of the day, medals were given to the winning students, and pictures of the day's activities were taken.

  https://www.pua.edu.eg/faculty-of-computer-sciences-and-artificial-intelligences-sports-day/

- Under the supervision of the Activities Department, the Architecture Department of the Faculty of Engineering, organized a sports day on 29/5/2022 for the department students. The day included two football tournaments, as well as Basketball, Volleyball, Table Tennis, and many

other recreational games. Further, many faculty members participated with their students in this sports day held on Pharos University playgrounds to support and encourage them to move forward in their athletic excellence as well as their scientific excellence.
https://www.pua.edu.eg/%d8%a7%d9%84%d9%8a%d9%88%d9%85-%d8%a7%d9%84%d8%b1%d9%8a%d8%a7%d8%b6%d9%8a-%d9%84%d9%82%d8%b3%d9%85-%d8%a7%d9%84%d8%b9%d9%85%d8%a7%d8%b1%d8%a9-%d8%a8%d9%83%d9%84%d9%8a%d8%a9-%d8%a7%d9%84%d9%87%d9%86/

- Students of Medical Equipment Maintenance Department have won the third place in the “Pandemic TechHack –Egypt 2020” Competition out of 40 participating ideas which was held on Tuesday, 15 April 2020. The competition is a part of “The Egyptian Virtual Hackathon Against Coronavirus” which is a national initiative to unite efforts and resources using technology and science to:
    - Confront the epidemic.
    - Help reduce the spread of the virus in Egypt.
    - Find the technological solutions necessary for dealing with theresulting risks in the case of virus outbreak.

It is worth mentioning that this competition is one of the innovation and entrepreneurship competitions which are managed under the supervision of the Academy of Scientific Research and Technology, the U.S Embassy, the EgyptianMinistry of Health and Population and the American University in Cairo. The participating students developed a Smart Coronavirus Mask “SCM” using a 3Ddesign program. The SCM is for protection and early detection of COVID-19 and also sending the results to a mobile application that can automatically display and update the health status of the mask user. The participating students are Mark Miald, Ramzy Habel and Hassan Mohamed Hussien fourth-year students in the Medical Equipment Maintenance Department. This project

was made under the supervision of Dr. Ehab Barakat, a Lecturer in the Medical Equipment Maintenance Department and Mr. Karim Saied, an Assistant Lecturer in the Department.

https://www.pua.edu.eg/pharos-university-won-the-third-place-in-pandemic-techhack-egypt-2020-competition/

- Cancer Prevention Month with The American Institute for Cancer Research
- Within the framework of its keenness on community service and environmental development activities, the Community Service and Environmental Development Committee of the Faculty of Applied Health Sciences Technology with all its departments participated, under the auspices of Prof. Dr. Ezzat Hassan, Dean of the Faculty, and Prof. Dr. Hamdy Al-Wakeel, Vice Dean, in raising the awareness of the University community and Faculty personnel, on Tuesday, March 1, 2022. This event tackled comprehensive cancer control, through discussing the prevention measures, encouraging early screening, diagnosis, and treatment. Furthermore, the event included distribution of fliers and posters, along with wrapped plates containing fresh fruits, cups of fresh juices to the students and Faculty personnel, who attended the event. Advocacy and outreach activities
    - Raising awareness about how to combat cancer through prevention, encouraging early screening, diagnosis, and treatment.
    - Encouraging the following of a diet rich in whole grains,

vegetables, and fruits.

- Encourage the integrating of physical activities as part of the daily life routine.

https://www.pua.edu.eg/%d9%81%d8%b9%d8%a7%d9%84%d9%8a%d8%a9-%d8%b4%d9%87%d8%b1-%d9%85%d9%83%d8%a7%d9%81%d8%ad%d8%a9-%d8%a7%d9%84%d8%b3%d8%b1%d8%b7%d8%a7%d9%86-%d9%85%d8%b9-%d8%a7%d9%84%d9%85%d8%b9%d9%87%d8%af-%d8%a7%d9%84/

- The Faculty of Applied Health Sciences Technology organized a campaign was to raise the awareness of the faculty students about vitamin (D) deficiency on Tuesday, 10 March 2020. The campaign shed light on the importance of vitamin (D), its nutritional sources, the causes of its deficiency anddeficiency tests. During the campaign, food and drinks rich with vitamin (D) were distributed. Many third-year students of the Nutrition and Food Safety Department and the fourth-yearstudents from the Medical Laboratory Department participated in the coordination of the day.

  https://www.pua.edu.eg/raising-awareness-of-vitamin-d-deficiency/

- Under the auspices of Prof. Yehia Ashour, the Dean of the faculty of Dentistry, a trip was organized to the Egyptian Dental Exhibition (EDE

2020) on Thursday, 13 February 2020 in at Cairo International Convention Centre (CICC). The trip aimed at apprising the PUA delegation which included a number of faculty members, teaching assistants and students of different academic years of the state-of-the art equipment and technology in general and in the field of dentistry in particular.

https://www.pua.edu.eg/the-faculty-of-dentistry-organized-a-trip-to-the-egyptian-dental-exhibition/

- Community Service Committee of the Faculty of Applied Health Sciences, PUA launched "Obesity Day" initiative on Tuesday, March 22nd, 2022 in parallel with the World Obesity Day. This initiative aims to raise the awareness of the students, staff members, and faculty members, and answer their questions. It also calls representatives from the faculty members of all faculties to participate in the initiative.

  https://www.pua.edu.eg/obesity-day-initiative/

- The Faculty of Applied Health Sciences organized a field trip for the students of the third- and fourth-year classes to El Shatby University Hospital for Children. This was held on Wednesday, 26 February 2020. During the visit, Associate Prof. Maha Youssef, the Head of the Hematology Unit escorted the delegation in a tour around the hospital

different departments, including the Endocrinology Department, the Gastroenterology Department, the Hematology Department, the Dialysis Unit and the Reception. At the end of the visit, the delegation visited the university blood bank where the students were acquainted with the blood transfusion process, the apheresis technology and the apparatus used in it.

https://www.pua.edu.eg/a-field-trip-to-el-shatby-university-hospital-for-children/

3.3.1. Vaccination activities

The Egyptian government has made COVID-19 vaccination compulsory for students above the age of 18, faculty staff and other workers at both public and private universities. Egyptian-made Chinese Sinovac shots will be supplied to vaccination centers at university hospitals to vaccinate university workers, students and higher education staff before the beginning of the next academic year, in October. Each institute and research Centre will also establish its own vaccination clinic.

- Vaccination activities in Pharos University

Pharos University has put a plan for vaccination against Covid 19 of students an staff members, as well and community nearby the universitypremises. The plan started on September 2nd, where 2500 dose pf Sinovac were received associated with special 0,5 cc sterile syringes. Each dose received is enough for two persons which makes these amounts sufficient to vaccinate 5000 persons. The target number of persons to be vaccinated at the university for the local community is 14500 during the whole month of September with average daily dosages of about 232 recipient. The vaccination work was extended till the

middle of October to meet the targeted number and receiving more doses of vaccine that would be sufficient for all. vaccinating all members of the university community would improve the chances for a return to face-to-face educational activities. However, returning to in-person education should not mean heading back to a hybrid education system. A new system "should continue on building" digital education, while adding the benefits of face-to-face activities.

Waiting Hall	
Reporting & check ups	 
Vaccination	  

- The Corona Virus Boosting Dose Vaccination campaign

The Corona Virus Boosting Dose Vaccination campaign will start at the university medical clinic on Saturday the 21st of May 2022 for 10 days in the

medical focal clinic. The daily timing : 9 am to 3 pm
https://www.pua.edu.eg/the-corona-virus-boosting-dose-vaccination-campaign/

3.4 Students' community Projects in the Field of Health

- *The faculty Pharmacy and Pharmaceutical Manufacturing* Project"Factors affecting COVID-19-related health literacy in Egyptian population
- Project idea: Elevating health literacy levels of individuals can be promoted via focusing on gaining capacities, such as reading and acting upon written health information, encouraging effective communication of their needs to health professionals, and understanding health instructions (Peerson & Saunders, 2009; Schyve, 2007; Seng et al., 2020). This can be addressed by educating the public to become more resourceful via improving social responsibility about the provision of high-quality, trustworthy, easy-to-access, easy-to-understand, easy-to-use, culturally appropriate, update information about COVID-19, and relevant to various populations (Hernández-García & Giménez-Júlvez, 2020; Okan, Sørensen, et al., 2020; Paakkari & Okan, 2020). However, health literacy research of COVID-19 infodemic has remained insufficient (Paakkari & Okan, 2020), because scientists often focus on the prevention of disease, not on promoting health literacy of the disease.

- *The faculty of Allied Medical Sciences* Project "Assessment and Intervention Program to Raise Nutritional and Health Awareness of Females in the Reproductive Age and their children in Alexandria Rural Area "Houd 10"
- Project Idea: Assessment of nutrition status of rural women to tackle any nutritional problems and evaluation of their nutritional knowledge aiming at providing targeted educational sessions to raise their awareness and improve their nutritional knowledge.

- *The faculty of Dentistry* Project "Implementing "Dental Traumatic Injuries Educational Program" Among teachers of different Governmental Elementary schools in Alexandria, Egypt.)
  - Project Idea: Traumatic Dental Injuries (TDIs) are a serious dental public health problem among children (International Society of Preventive & Community Dentistry, 2019). It can vary from a minor tooth fracture to extensive maxillofacial damage. Oral injuries are the fourth most common area of bodily injuries. The prevalence of

Traumatic injuries in permanent teeth have been reported to exceed 60%. In Egypt, a study was conducted by ElKelany M. et al concluded that the most common areas of TDIs among children were at school (50%) then at home (30%); this was mostly due to increased predisposition of accidents, fights & sports traumas at school age.

3.5 Pharos clinics

Pharos University provides free treatment for the community in the field of dentistry and physical therapy and nutrition.

3.5.1. The Faculty of Dentistry have six clinics: student clinics & HouseOfficer clinic, in addition to postgraduate clinic, outpatient clinic, dentalimplant clinic and operating room equipped with all modern medical equipment and equipment. These clinics provide therapeutic service annually to more than sixty thousand patients free of charge in variousbranches of dentistry, these service include Conservative Treatment, Filling, Fixed, Removable Prostheses, Scaling, Root Planning, Pediatric andMinor surgery, these services done under supervision of highly qualified dental professors, these Practical Programs Prepare the Pharos DentalStudent to be strong competitors in Labor Markets. https://www.pua.edu.eg/faculty-of-dentistry/dental-clinic/

Another special program for the final year student called CCC (Comprehensive Clinical Case) which include Complete Oral and Dental Rehabilitation of clinical case under supervision of Dental Staff. The CCC include most or all dental branches like (surgery, Periodontology, Endodontic, Restorative, Filling, Removable, Crown and Bridge). Comprehensive case care program (CCC) is one of the programs that distinguish the Faculty of Dentistry of Pharos University as graduation projects for students because they provide a community service aimed at raising health awareness through integrated treatment and diagnostic services carried out by college students completely free for a large number of patients (Table 1)

Table 1. New and follow-up Frequent Cases Visiting the Dental clinic

Academic Year	No. of Patients (CCC)	New coming cases (Free treatment)	Follow-up Frequent (cases Free treatmentCases)	Surgical cases
2019-2020	175	12882	31353	
2020-2021	75	10124	25344	
2021-2022	189	11865	40788	17
Total	439	34871	97485	17

Some examples:

BEFORE TREATMENT	AFTER TREATMENT
	

3.5.2. The Faculty of Physical Therapy external clinics include the following departments

- Clinic for orthopedics and surgery, post operational rehabilitation andsports injury.
- Clinic for disabled children suffering delayed motor skills
- Clinic for neurological disorders and its surgery
- Clinic for electromyography and nerve conduction velocities
- Clinic for women health.

https://www.pua.edu.eg/physical-therapy/#1555829383849-6d2ec5ee-5bdf

The outpatient clinic receive the revealed cases in orthopedics, traumatology, neurology, neurosurgery, pediatrics, delayed motor development, diabetic feet and sports injuries under supervision of faculty members in addition to Electromyography (EMG unit). (Table 2 and Table 3) shows the number of children and adult patients in the academic year 2019-2020 respectively

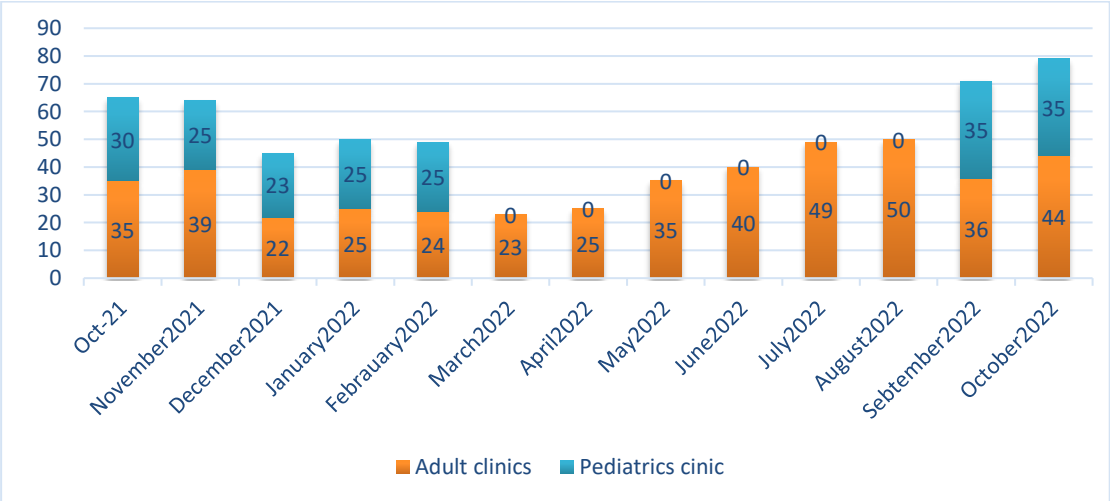
https://www.pua.edu.eg/physical-therapy/facilities/physical-therapy-outpatient-clinics/.

Table 2. The number of children patients in the academic year 2020 to 2022

Month	No. of Patientsin pediatricclinic
January2020	50
February2020	-
March 2020	-
April 2020	-
May 2020	-
June 2020	-
July 2020	68
August2020	102
September2020	143
October2020	136
November2020	189
December2020	201
October2021	30
November2021	25
December2021	23
January2022	25
Febrauary2022	25
March2022	تم توقف العمل بعيادة (43 الاطفال من تاريخ 3/21)
April2022	تم توقف العمل بعيادة الاطفال
May2022	تم توقف العمل بعيادة الاطفال
June2022	تم توقف العمل بعيادة الاطفال
July2022	تم توقف العمل بعيادة الاطفال
August2022	تم توقف العمل بعيادة الاطفال حتى يوم 27/8/2022
Sebtember2022	35
October2022	35

Table 3. The number of patients in adult clinic

Month	No. of Patientsin adult clinic
January 2020	131
February 2020	-
March 2020	-
April 2020	-
May 2020	-
June 2020	-
July 2020	78
August2020	96
September 2020	120
October 2020	143
November 2020	187
December 2020	205
October2021	35
November2021	39
December2021	22
January2022	25
Febrauary2022	24
March2022	23
April2022	25
May2022	35
June2022	40
July2022	49
August2022	50
Sebtember2022	36
October2022	44



The Physical Therapy Clinic

Several activities have been carried out in thephysical therapy clinic.

1. The college held a two-day workshop on Thursday 3-3 and 17-3-2022 under the title of “sports emergency resuscitation” under the supervision of Dr. Akram Al-Daoudi, consultant orthopedic surgeon, for the fifth-year students, internship students at the college and some university graduates. The workshop yielded great results.

2. A training day was held for faculty members, the assistant staff and the privileged staff on Monday 28/8/2022 to explain the new devices and how to operate them.

3. Part of the training activities for internship students in the outpatient clinics of the Faculty of Physiotherapy, Pharos University, on Thursday, 1/9/2022, on the applications of Electrotherapy with the latest therapeutic technologies for different therapeutic currents devices, ultrasound and therapeutic laser and how to apply them to patients in different cases to treat device diseases. The musculoskeletal and nervous system.

3.6 MOUS for Students Training

In 2020, the faculty of Pharmacy have signed several MOUS for cooperation between Pharos University and hospitals and pharmaceutical companies in Egypt with the aim of students training for the completion of their gradation these hospitals are:

Hospital Name withsigned agreements	No of students
Alexandria University Hospital	104
Armed forced hospital	109
International center for Cardiology (ICC)	45
Andalusia Hospital	14
NAPHS	50
Zamzam Hospital - Alex	62

3.6. Cooperation in Health Sector

3.6.1. Cooperation with Hospitals, NGOs and Private sector

Pharos University cooperates with governmental and private national hospitals that belongs to the Ministry of Health in Alexandria and Beheria governorates (Table 4). Training of students of the faculties of Pharmacy, dentistry, Applied health sciences and technology, and physical therapy are held in such hospitals.

Table 4. List of governmental and Private hospitals in Alexandria and Beheria Governorates that cooperated with Pharos University for t students' Training and internships

Hospital Name	Purpose
Armed Forces Hospital- Mustafa Kamel	Internships
Naval Forces Hospital	Internships
General Military Hospital	Internships
Institute of Medical research hospital	Training and internships
Faculty of Medicine Hospital of Alexandria University	Training and research
America Hospital	Training
Ahmed Maher Hospital	Students Projects
Abou Kir Hospital	Training
Gomhoria Hospital	Training
El Qasr El Ainy Hospital	Training
Dekernis Hospital	Training
Police Hospital	Training
Abou Homous Hospital	Training
Wenget Hospital	Training

Hospital Name	Purpose
El Menshawy Hospital	Training
57375 Hospital	Students activities
Burg El Arab Hospital	Students activities

3.6.2. **Cooperation with Ministers and governmental agencies** Pharos university cooperates with ministries and national directorates in the health sector (Table 5) as well as NGO (Table 6) for implementing Students' community projects.

Table 5. List of Ministries and National Directorates in the health sector that Pharos University cooperated with for implementing Students' community projects.

Institute of Cultural Affairs	Students Projects
Education Directorate – Alexandria Governorate, Ministry of education	Community service projects
Education Directorate – Beheria Governorate, Ministry of education	Community service projects
Health Directorate – Ministry of Health	Community service projects
Cairo University	Research
Alexandria University	Research
Al Azhar University	Research Project
Menia University	Research Project
Academy of Science and Technology	Research Project

Table 6. List of NGOs that Pharos University Cooperates with for Community Service Projects

Egyptian Network for Research Ethics Committees	Research Project
Naba'a Al Hayat Foundation	Community service projects
Mojeeb Al Salayen Foundation	Community service projects
Al Staqrar Foundation	Community service projects
Kafalat Al Yateem Foundation at Fata neighborhood	Community service projects
Al Qalaa for Community Development.	Community service projects
Eleen ElGaria association	Community service projects
Abdel Kadr Association	Community service projects
Tarek Charity Association (MustafaKamel)	Community service projects
Abu Masoud Suburb (Amiria)	Community service projects
Ayadi Mostakbal medical center (NGO)	Training
Omda Development Association (NGO)	Students Projects
Association of community based rehabilitation for disabled children(NGO)	Students Projects
Red Crescent Association (Mohandeseen)	

3.6.3. Cooperation with Private sector

Private sector is an important sector that Pharos university is keen to cooperate with for different purposes, mainly for meeting, conferences, and workshops. Such meetings allow the recognition of new trends in the local and regional market and allow meeting the market needs.

Table 7. List of private sectors That Pharos University Cooperates with

Company name	Type of cooperation
Eva Pharma	Participation in Conference
Innova Pharma	Participation in Conference
Hygint Pharmaceutical company Ltd.	Participation in Conference
Goweily Academy	Workshops
Andalusia Hospital (Private Hospital)	Students activities
El Yousr Hospital (private Hospital)	Students Projects
Fawzy Moaaz Hospital (Private Hospital)	Students Projects
Carrefour	Partnership
Easy Care Company	Partnership
Mena For Touristic and Real Estate Development	Partnership

International Cooperation in the field of Health:

Pharos University received a high-ranking delegation of the *KTH Royal Institute of Technology* on Thursday, 26 September 2019. The delegation was comprised of Prof. Stefan Ostlund, the Vice President for Global Relations at the KTH Royal Institute of Technology and Prof. Albania Nissan, the KTH-PUA Joint Program Leader. The visit included meetings with the aim of establishing cooperation between the two parties in the field of Pharmacy. Prof. Stefan Ostlund praised the research concerning facilities at the faculty of Pharmacy and Drug Manufacturing and gave approval to start cooperation in the field of research between the faculty and the KTH Institute. Table 8 is the list of International MOUs established with European universities in the health sector.
https://www.pua.edu.eg/a-kth-high-ranking-delegation-in-a-visit-to-pharos-university/

Table 8. List of International MOUs established with European Universitiesin the Health sector.

Dentistry	The University of Naples Federico II, Italy
Pharmacy	Aston University, Birmingham, UK
	Kingston University, London, UK
	The University of Naples Federico II, ItalyKTH Royal Institute of Technology
	JAMK University f Applied Sciences
	School of Pharmacy, University of Eastern Finland
	AUF)Agence Universitaire de la francophonie
	Kingston University
	Aston University
Physical therapy	Goethe' University , Frankfurt, Germany

3.7 Highlights on research 2021

https://www.pua.edu.eg/postgraduate-studies-and-research/research/highlights-on-research/

Title	SDGs SciVal	Picture
Epigallocatechin-3-gallate-loaded gold nanoparticles: Preparation and evaluation of anticancer efficacy in ehrlich tumor-bearing mice. Safwat, M.A.| Kandil, B.A.| Elblbesy, M.A.| Soliman, G.M.| Eleraky, N.E. Pharmaceuticals. 2020. https://doi.org/10.3390/ph13090254 Abstract: Epigallocatechin-3-gallate (EGCG) is a pleiotropic compound with anticancer, anti-inflammatory, and antioxidant properties. To enhance EGCG anticancer efficacy, it was loaded onto gold nanoparticles (GNPs). EGCG-GNPs were prepared by a simple green synthesis method and were evaluated using different techniques. Hemocompatibility with human blood and in vivo anticancer efficacy in Ehrlich ascites carcinoma-bearing mice were evaluated. EGCG/gold chloride molar ratio had a marked effect on the formation and properties of EGCG-GNPs where well-dispersed spherical nanoparticles were obtained at a molar ratio not more than 0.8:1. The particle size ranged from ~26 to 610 nm. High drug encapsulation efficiency and loading capacity of ~93 and 32%, respectively were obtained. When stored at 4 °C for three months, EGCG-	SDG 3	Bothaina A. Kandil Department of Radiological Science and Medical Imaging, Faculty of Allied Medical Science, Pharos University, Alexandria 21311, Egypt

GNPs maintained over 90% of their drug payload and had small changes in their size and zeta potential. They were non-hemolytic and had no deleterious effects on partial thromboplastin time, prothrombin time, and complement protein C3 concentration. EGCG-GNPs had significantly better in vivo anticancer efficacy compared with pristine EGCG as evidenced by smaller tumor volume and weight and higher mice body weight. These results confirm that EGCG-GNPs could serve as an efficient delivery system for EGCG with a good potential to enhance its anticancer efficacy		

The spread of SARS-CoV-2 as an emerging novel coronavirus disease (COVID-19) had progressed as a worldwide pandemic since the end of 2019. COVID-19 affects firstly lungs tissues which are known for their very slow regeneration. Afterwards, enormous cytokine stimulation occurs in the infected cells immediately after a lung infection which necessitates good management to save patients. Exosomes are extracellular vesicles of nanometric size released by reticulocytes on maturation and are known to mediate intercellular communications. The exosomal cargo serves as biomarkers in diagnosing various diseases; moreover, exosomes could be employed as nanocarriers in drug delivery systems. Exosomes look promising to combat the current pandemic since they contribute to the immune response against several viral	SDG 3	Sally A.El-Zahaby Department of Pharmaceutics and Pharmaceutical Technology, Faculty of Pharmacy, Pharos University in Alexandria, Alexandria 21311, Egypt

pathogens. Many studies have proved the potential of using exosomes either as viral elements or host systems that acquire immune-stimulatory effects and could be used as a vaccine or drug delivery tool. It is essential to stop viral replication, prevent and reverse the massive storm of cytokine that worsens the infected patients' situations for the management of COVID-19. The main benefits of exosomes could be; no cells will be introduced, no chance of mutation, lack of immunogenicity and the damaged genetic material that could negatively affect the recipient is avoided. Additionally, it was found that exosomes are static with no ability for in vivo reproduction. The current review article discusses the possibilities of using exosomes for detecting novel coronavirus and summarizes state of the art concerning the clinical trials initiated for examining the use of COVID-19 specific T cells derived exosomes and mesenchymal stem cells derived exosomes in managing COVID-19.		

Niosomes of active Fumaria officinalis phytochemicals: Antidiabetic, antineuropathic, anti-inflammatory, and possible mechanisms of action. Raafat, K.M.| El-Zahaby, S.A. Chinese Medicine (United Kingdom). 2020 https://doi.org/10.1186/s13020-020-00321-1 Abstract Background Fumaria officinalis (F. officinalis, FO) has	SDG 3	Sally A.El-Zahaby Department of Pharmaceutics and Pharmaceutical Technology, Faculty of Pharmacy, Pharos University in Alexandria, Alexandria 21311, Egypt

been used in many inflammatory and painful-ailments. The main aim of this work is to perform an in-depth bio-guided phytochemical investigation of F. officinalis by identifying its main-active ingredients. Optimizing pharmacokinetics via niosomal-preparation will also be done to enhance their in vivo antineuropathic and anti-inflammatory potentials, and to explore their possible-mechanism of actions. Methods Bio-guided phytochemical-investigations including fractionation, isolation, chromatographic-standardization, and identification of the most active compound(s) were done. Optimized niosomal formulations of F. officinalis most active compound(s) were prepared and characterized. An in vivo biological-evaluation was done exploring acute, subchronic, and chronic alloxan-induced diabetes and diabetic-neuropathy, and carrageenan-induced acute inflammatory-pain and chronic-inflammatory edema. Results In-vivo bio-guided fractionation and chromatographic phytochemical-analysis showed that the alkaloid-rich fraction (ARF) is the most-active fraction. ARF contained two major alkaloids; Stylopine 48.3%, and Sanguinarine 51.6%. In-vitro optimization, analytical, and in vivo biological-investigations showed that the optimized-niosome, Nio-2, was the		

most optimized niosomal formulation. Nio-2 had particle size 96.56±1.87 nm and worked by improving the pharmacokinetic-properties of ARF developing adequate entrapment-efficiency, rapid-degradation, and acceptable stability in simulated GI conditions. FO, ARF, and Nio 2 were the most potent antidiabetic and anti-inflammatory compounds. The reduction of the pro-inflammatory tumor necrosis factor-alpha (TNF-alpha) and Interleukin 6 (IL-6), and elevation the anti-inflammatory factor IL-10 levels and amelioration of the in vivo oxidative-stress might be the main-mechanism responsible for their antinociceptive and anti-inflammatory activities. Conclusions Fumaria officinalis most-active fraction was identified as ARF. This study offers an efficient and novel practical oral formulation ameliorating various inflammatory conditions and diabetic complications especially neuropathic-pain.		

Sitagliptin and tofacitinib ameliorate adjuvant induced arthritis via modulating the cross talk between JAK/STAT and TLR-4/NF-κB signaling pathways. Ibrahim, S.S.A.| Salama, M.A.| Selima, E.| Shehata, R.R. Life Sciences. 2020 https://doi.org/10.1016/j.lfs.2020.118261 Abstract Aims Rheumatoid arthritis is an autoimmune	SDG 3	 Sherihan Salaheldin AbdelhamidIbrahim Department of Pharmacology and Therapeutics, Pharos

systemic disorder causing pain, swelling, stiffness, and disability in various joints. This work was designed to evaluate the effect of sitagliptin and tofacitinib on Janus kinase (JAK)/signaling transducer and activator of transcription (STAT) and toll like receptor (TLR-4)/nuclear factor kappa B (NF-κB) signaling pathways in adjuvant induced arthritis in rats. Materials and methods Severity of arthritis was evaluated and serum was analyzed for inflammatory mediators. The mRNA and protein expression level of the most important members of the two signaling pathways were determined. Lipid profile, transaminases and renal function parameters were assessed. Key findings Sitagliptin and tofacitinib significantly decreased the level of inflammatory parameters, the mRNA and protein expression level of the members of JAK/STAT and TLR-4/NF-κB pathways with more prominent effect of sitagliptin on TLR-4/NF-κB pathway and more expected obvious effect of tofacitinib on JAK/STAT pathway. The combination offered additional anti-inflammatory effect by inhibiting the cross talk between these pathways as inhibition of NF-κB activation decreased the serum level of IL-6 preventing the activation of STAT-3 in tibiotarsal tissues. Significance The combination of tofacitinib and sitagliptin normalized serum lipids and		University in Alexandria, Alexandria, Egypt

blood glucose level which could offer protection against cardiovascular diseases and caused partial reversal of serum transaminases and creatinine levels which can protect against tofacitinb's related hepato and nephrotoxicity. We could conclude that the combination of Sitagliptin with tofacitinib can offer synergistic anti-inflammatory effect and more protective action against side effects of tofacitinib.		

Effective cellular transport of ortho-halogenated sulfonamide derivatives of metformin is related to improved antiproliferative activity and apoptosis induction in MCF-7 cells. Markowicz-Piasecka, M.| Komeil, I.| Huttunen, J.| Sikora, J.| Huttunen, K.M. International Journal of Molecular Sciences. 2020 https://doi.org/10.3390/ijms21072389 Abstract Metformin is a substrate for plasma membrane monoamine transporters (PMAT) and organic cation transporters (OCTs); therefore, the expression of these transporters and interactions between them may affect the uptake of metformin into tumor cells and its anticancer efficacy. The aim of this study was to evaluate how chemical modification of metformin scaffold into benzene sulfonamides with halogen substituents (compounds 1–9) may affect affinity towards OCTs, cellular uptake in two breast cancer cell lines (MCF-7 and MDA-MB-231) and antiproliferative efficacy of metformin. The uptake of most sulfonamides was	SDG 3	 Ibrahim Komeil Department of Pharmaceutics, Faculty of Pharmacy and Drug Manufacturing, Pharos University, Alexandria 21311, Egypt

more efficient in MCF-7 cells than in MDA-MB-231 cells. The presence of a chlorine atom in the aromatic ring contributed to the highest uptake in MCF-7 cells. For instance, the uptake of compound 1 with o-chloro substituent in MCF-7 cells was 1.79 ± 0.79 nmol/min/mg protein, while in MDA-MB-231 cells, the uptake was considerably lower (0.005 ± 0.0005 nmol/min/mg protein). The elevated uptake of tested compounds in MCF-7 was accompanied by high antiproliferative activity, with compound 1 being the most active (IC50 = 12.6 ± 1.2 µmol/L). Further studies showed that inhibition of MCF-7 growth is associated with the induction of early and late apoptosis and cell cycle arrest at the G0/G1 phase. In summary, the chemical modification of the biguanide backbone into halogenated sulfonamides leads to improved transporter-mediated cellular uptake in MCF-7 and contributes to the greater antiproliferative potency of studied compounds through apoptosis induction and cell cycle arrest.		

Lactoferrin/Hyaluronic acid double-coated lignosulfonate nanoparticles of quinacrine as a controlled release biodegradable nanomedicine targeting pancreatic cancer. Etman, S.M.| Abdallah, O.Y.| Mehanna, R.A.| Elnaggar, Y.S.R. International Journal of Pharmaceutics. 2020 https://doi.org/10.1016/j.ijpharm.2020.119097 Abstract Quinacrine is an antimalarial drug that was	SDG 3	 Yosra S.R.Elnaggar Head of International Publication and Nanotechnology Center

repositioned for treatment of cancer. This is the first work to enhance quinacrine activity and minimize its associated hepatotoxicity via loading into bio-degradable, bio-renewable lignosulfonate nanoparticles. Particles were appraised for treatment of pancreatic cancer, one of the most life-threatening tumors with a five-year survival estimate. Optimum nanocomposites prepared by polyelectrolyte interaction exhibited a particle size of 138 nm, a negative surface charge (−28 mV) and a pH dependent release of the drug in an acidic environment. Ligands used for active targeting (lactoferrin and hyaluronic acid) were added to nanoparticles' surface via layer by layer coating technique. The highest anticancer activity on PANC-1 cells was demonstrated with dual active targeted particles (3-fold decrease in IC50) along with an increased ability to inhibit migration and invasion of pancreatic cancer cells. In vivo studies revealed that elaborated nanoparticles particles showed the highest tumor volume reduction with enhanced survival without any toxicity on major organs. In conclusion, the elaborated nanoparticles could be considered as a promising targeted nanotherapy for treatment of pancreatic cancer with higher efficacy& survival rate and lower organ toxicity.		INCC, Department of Pharmaceutics, Faculty of Pharmacy and Drug Manufacturing, Pharos University of Alexandria, Egypt

In vivo bio-distribution and acute toxicity evaluation of greenly synthesized ultra-small gold nanoparticles with different biological activities. Aljohani, F.S.| Hamed, M.T.| Bakr, B.A.| Shahin, Y.H.| Abu-Serie, M.M.| Awaad, A.K.| El-Kady, H.| Elwakil, B.H. Scientific Reports. 2022 https://doi.org/10.1038/s41598-022-10251-7	SDG 3	 Bassma Elwakil Department of Medical Laboratory Technology, Faculty of Applied Health Sciences

Abstract Ultra-small gold nanoparticles (Au-NPs) "≤10 nm diameters" have potent biomedical applications. Hence, the present study aimed to greenly synthesize ultra-small gold nanoparticles using Egyptian propolis extract. Different biological activities, in vivo bio-distribution and acute toxicity study were assessed. Results revealed that, Egyptian propolis extract can successfully synthesize the highly pure and stable ultra-small Au-NPs with average diameter 7.8 nm. In vitro antimicrobial and antimycobacterial activities revealed the powerful effect of the prepared Au-NPs. Moreover, the cytotoxic effect on human cancer cell lines revealed the potent inhibition of the cancer cells' proliferation with high reactive oxygen species-mediated apoptosis induction. In vivo bio-distribution and acute toxicity studies were performed (10 and 100 mg/kg doses) in male albino rats. The ultra-small Au-NPs showed low or no toxicity upon using the Au-NPs low dose. The mean area accumulation (%) of the Au-NPs was higher in the liver, kidney, and brain tissues (4.41, 2.96, and 0.3 times, respectively) treated with high Au-NPs dosage compared to those treated with the low dose. Surprisingly, Au-NP accumulation in brain tissue was observed in the glial cells only. Accordingly, the low dose (10 mg/kg) of Au-NPs can be used safely in a variety of biomedical applications.		Technology, Pharos University in Alexandria, Alexandria, Egypt

Novel Hybrid 1,2,4-and 1,2,3-Triazoles Targeting Mycobacterium Tuberculosis Enoyl Acyl Carrier Protein Reductase (InhA): Design, Synthesis, and Molecular Docking. El Sawy, M.A.| Elshatanofy, M.M.| El Kilany, Y.| Kandeel, K.| Elwakil, B.H.| Hagar, M.| Aouad, M.R.| Albelwi, F.F.| Rezki, N.| Jaremko, M.| El Ashry, E.S.H. https://doi.org/10.3390/ijms23094706 Abstract Tuberculosis (TB) caused by Mycobacterium tuberculosis is still a serious public health concern around the world. More treatment strategies or more specific molecular targets have been sought by researchers. One of the most important targets is M. tuberculosis' enoyl-acyl carrier protein reductase InhA which is considered a promising, well-studied target for anti-tuberculosis medication development. Our team has made it a goal to find new lead structures that could be useful in the creation of new antitubercular drugs. In this study, a new class of 1,2,3- and 1,2,4-triazole hybrid compounds was prepared. Click synthesis was used to afford 1,2,3-triazoles scaffold linked to 1,2,4-triazole by fixable mercaptomethylene linker. The new prepared compounds have been characterized by different spectroscopic tools. The designed compounds were tested in vitro against the InhA enzyme. At 10 nM, the inhibitors 5b, 5c, 7c, 7d, 7e, and 7f successfully and totally (100%) inhibited the InhA enzyme. The IC50 values were calculated using	SDG 3	Maged A. El Sawy Department of Pharmaceutical Chemistry, Faculty of Pharmacy, Pharos University, Alexandria 21311, Egypt  Bassma Elwakil Department of Medical Laboratory Technology, Faculty of Applied Health Sciences Technology, Pharos University in Alexandria, Alexandria, Egypt

different concentrations. With IC50 values of 0.074 and 0.13 nM, 7c and 7e were the most promising InhA inhibitors. Furthermore, a molecular docking investigation was carried out to support antitubercular activity as well as to analyze the binding manner of the screened compounds with the target InhA enzyme's binding site		

Anti-neoplastic action of Cimetidine/Vitamin C on histamine and the PI3K/AKT/mTOR pathway in Ehrlich breast cancer. Ibrahim, S.S.A.| El-Aal, S.A.A.| Reda, A.M.| Achy, S.E.| Shahine, Y. Scientific Reports. 2022 https://doi.org/10.1038/s41598-022-15551-6 Abstract The main focus of our study is to assess the anti-cancer activity of cimetidine and vitamin C via combating the tumor supportive role of mast cell mediators (histamine, VEGF, and TNF-α) within the tumor microenvironment and their effect on the protein kinase A(PKA)/insulin receptor substrate-1(IRS-1)/phosphatidylinositol-3-kinase (PI3K)/serine/threonine kinase-1 (AKT)/mammalian target of rapamycin (mTOR) cue in Ehrlich induced breast cancer in mice. In vitro study was carried out to evaluate the anti-proliferative activity and combination index (CI) of the combined drugs. Moreover, the Ehrlich model was induced in mice via subcutaneous injection of Ehrlich ascites carcinoma cells (EAC) in the mammary fat pad, and then they were left for 9 days to develop obvious solid breast tumor. The combination therapy possessed the best anti-proliferative effect, and a CI<1 in the MCF7 cell line indicates a synergistic type of drug interaction. Regarding the in vivo study, the	SDG 3	 Sherihan Salaheldin Abdelhamid Ibrahim Department of Pharmacology and Therapeutics, Faculty of Pharmacy, Pharos University in Alexandria, Alexandria, Egypt  Yasmine Shahine Department of Microbiology & Immunology, Faculty of Pharmacy, Pharos University in Alexandria, Alexandria, Egypt

combination abated the elevation in the tumor volume, and serum tumor marker carcinoembryonic antigen (CEA) level. The serum vascular endothelial growth factor (VEGF) level and immunohistochemical staining for CD34 as markers of angiogenesis were mitigated. Additionally, it reverted the state of oxidative stress and inflammation. Meanwhile, it caused an increment in apoptosis, which prevents tumor survival. Furthermore, it tackled the elevated histamine and cyclic adenosine monophosphate (cAMP) levels, preventing the activation of the (PKA/IRS-1/PI3K/AKT/mTOR) cue. Finally, we concluded that the synergistic combination provided a promising anti-neoplastic effect via reducing the angiogenesis, oxidative stress, increasing apoptosis,as well as inhibiting the activation of PI3K/AKT/mTOR cue, and suggesting its use as a treatment option for breast cancer.		

Luteolin mediated targeting of protein network and microRNAs in different cancers: Focus on JAK-STAT, NOTCH, mTOR and TRAIL-mediated signaling pathways. Farooqi, A.A.| Butt, G.| El-Zahaby, S.A.| Attar, R.| Uteuliyev, Y.S| Jovic, J.J.| Tang, K.-F.| Naureen, H.| Xu, B. Pharmacological Research. 2020 https://doi.org/10.1016/j.phrs.2020.105188 Abstract There has always been a keen interest of basic and clinical researchers to search for cancer therapeutics having minimum off-target effects and maximum anticancer activities. In accordance with this approach, there has been an explosion in the field of natural products research in the past few decades because of extra-ordinary list of	SDG 3	Sally A.El-Zahaby Department of Pharmaceutics and Pharmaceutical Technology, Faculty of Pharmacy, Pharos University in Alexandria, Alexandria 21311, Egypt

natural extracts and their biologically and pharmacologically active constituents having significant medicinal properties. Apparently, luteolin-mediated anticancer effects have been investigated in different cancers but there is superfluousness of superficial data. Generalized scientific evidence encompassing apoptosis, DNA damage and anti-inflammatory effects has been reported extensively. However, how luteolin modulates deregulated oncogenic pathways in different cancers has not been comprehensively uncovered. In this review we have attempted to focus on cutting-edge research which has unveiled remarkable abilities of luteolin to modulate deregulated oncogenic pathways in different cancers. We have partitioned the review into various sections to separately discuss advancements in therapeutic targeting of oncogenic protein networks. We have provided detailed mechanistic insights related to JAK-STAT signaling and summarized how luteolin inhibited STAT proteins to inhibit STAT-driven gene network. We have also individually analyzed Wnt/β-catenin and NOTCH pathway and how luteolin effectively targeted these pathways. Mapping of the signaling landscape has revealed that NOTCH pathway can be targeted therapeutically. NOTCH pathway was noted to be targeted by luteolin. We have also conceptually analyzed how luteolin restored TRAIL-induced apoptosis in resistant cancers. Luteolin induced an increase in pro-apoptotic proteins and efficiently inhibited anti-apoptotic proteins to induce apoptosis. Luteolin mediated regulation of non-coding RNAs is an exciting and emerging facet.		

Excitingly, there is sequential and systematic accumulation of clues which have started to shed light on intricate regulation of microRNAs by luteolin in different cancers. Collectively, sophisticated information will enable us to develop a refined understanding of the multi-layered regulation of signaling pathways and non-coding RNAs by luteolin in different cancers.		

Valsartan solid lipid nanoparticles integrated hydrogel: A challenging repurposed use in the treatment of diabetic foot ulcer, in-vitro/in-vivo experimental study. El-Salamouni, N.S.| Gowayed, M.A.| Seiffein, N.L.| Abdel- Moneim, R.A.| Kamel, M.A.| Labib, G.S. International Journal of Pharmaceutics. 2021 https://doi.org/10.1016/j.ijpharm.2020.120091 Abstract The article presents an experimental study on the possible repurposed use of valsartan (Val), in the local treatment of uncontrolled diabetic foot ulcer. Solid lipid nanoparticles (SLN), loaded with Val were prepared by applying 32 full factorial design using modified high shear homogenization method. The lipid phase composed of Precirol® ATO 5 (P ATO 5) and/or Gelucire 50/13 (G 50/13) in different ratios and a nonionic emulsifier, Pluronic 188 (P188), was used in different percentages. Optimized formulation was further integrated in hydroxyl propyl methyl cellulose (HPMC) gel for the ease of administration. In-vitro and in-vivo characterizations were investigated. The prepared nanoparticles showed small particle size, high entrapment efficiency and sustained drug release. Microbiologically, Val-SLN showed a prominent decrease in the biofilm	SDG 3	 Noha S. El-Salamouni Department of Pharmaceutics & Pharmaceutical Technology, Faculty of Pharmacy, Pharos University in Alexandria, Alexandria, Egypt  Mennatallah A. Gowayed Department of Pharmacology & Therapeutics,

mass formation for both gram-positive and gram-negative bacteria, as well as a comparable minimum inhibitory concentration level to levofloxacin alone. Diabetes was induced in 32 neonatal Sprague-Dawley rats. At 8 weeks of age, rats with blood sugar level >160 were subjected to surgically induced ulcer. Treatment with Val-SLN for 12 days revealed enhanced healing characteristics through cyclooxygenase-2 (COX-2), nuclear factor kappa-light-chain-enhancer of activated B cells (NF-κB), nitric oxide (NO), transforming growth factor-beta (TGF-β), matrix metalloproteinase (MMPs) and vascular endothelial growth factor (VEGF) pathways. Histological examination revealed re-epithelization in Val-SLN treated ulcer, as well as decrease in collagen using trichrome histomorphometric analysis.		Faculty of Pharmacy, Pharos University in Alexandria, Alexandria, Egypt Nevine L. Seiffein Department of Microbiology & Immunology, Faculty of Pharmacy, Pharos University in Alexandria, Alexandria, Egypt

Oral genistein-loaded phytosomes with enhanced hepatic uptake, residence and improved therapeutic efficacy against hepatocellular carcinoma. Komeil, I.A.| El-Refaie, W.M.| Gowayed, M.A.| El-Ganainy, S.O.| El Achy, S.N.| Huttunen, K.M.| Abdallah, O.Y. International Journal of Pharmaceutics. 2021 https://doi.org/10.1016/j.ijpharm.2021.120564 Abstract Genistein (Gen) is one of the most potent soy isoflavones used for hepatocellular carcinoma (HCC) treatment. Low aqueous solubility and first-pass metabolism are the main obstacles resulting in low Gen oral bioavailability. The current study aims to introduce phytosomes as an approach to improve Gen solubility, protect it from metabolism by complexation with phospholipids (PL), and get used to PL in	SDG 3	 Ibrahim Komeil  Wessam M.El-Refaie Department of Pharmaceutics, Faculty of Pharmacy and Drug Manufacturing,

Gen lymphatic delivery. Different forms of PL namely: Lipiod® S100, Phosal® 53 MCT, and Phosal®75 SA were used in phytosomes preparation GP, GPM, and GPL respectively. The effect of formulation components on Gen absorption, metabolism, and liver accumulation was evaluated following oral administration to rats. Cytotoxicity and cellular uptake studies were applied on HepG2 cells and *in-vivo* anti-tumor studies were applied to the DEN-mice model. Results revealed that GP and GPL remarkably accumulated Gen aglycone in hepatic cells and minimized the metabolic effect on Gen. They significantly increased the intracellular accumulation of Gen in its complex form in HepG2 cells. Their cytotoxicity is time-dependent according to the complex stability. The enhanced *in-vivo* anti-tumor effect was observed for GP and GPL compared to Gen suspension on DEN-induced HCC in mice. In conclusion, Gen-phytosomes can represent a promising approach for liver cancer treatment.		Pharos University, Alexandria 21311, Egypt  Mennatallah A. Gowayed  Samar O.El-Ganainy Department of Pharmacology & Therapeutics, Faculty of Pharmacy, Pharos University in Alexandria, Alexandria, Egypt

Pegylated liquisomes: A novel combined passive targeting nanoplatform of L-carnosine for breast cancer. Gaafar, P.M.E.| El-Salamouni, N.S.| Farid, R.M.| Hazzah, H.A.| Helmy, M.W.| Abdallah, O.Y. International Journal of Pharmaceutics. 2021 https://doi.org/10.1016/j.ijpharm.2021.120666 Abstract PEGylated Liquisomes (P-Liquisomes), a novel drug delivery system was designed for the first time by incorporating phospholipid complex in	SDG 3	 Ragwa M. Farid Department of Pharmaceutics & Pharmaceutical Technology, Faculty of Pharmacy, Pharos

PEGylated liquid crystalline nanoparticles (P-LCNPs). L-carnosine (CN), a challenging dipeptide, has proven to be a promising anti-cancer drug. However, it exhibits high water solubility and extensive *in-vivo* degradation that halts its use. The objective of this work was to investigate the ability of our novel system to improve the CN anticancer activity by prolonging it's release and protecting it *in-vivo*. *In-vitro* appraisal revealed spherical light-colored vesicles encapsulated in the liquid crystals, confirming the successful formation of the combined system. P-Liquisomes were nano-sized (149.3 ± 1.4 nm), with high ZP (−40.2 ± 1.5 mV), complexation efficiency (97.5 ± 0.9%) and outstanding sustained release of only 75.4% released after 24 h, compared to P-LCNPs and Phytosomes. The results obtained with P-Liquisomes are considered as a break through compared to P-LCNPs or Phytosomes alone, especially when dealing with the hydrophilic CN. *In-vitro* cytotoxicity evaluation, revealed superior cytotoxic effect of P-Liquisomes (IC_{50} = 25.9) after 24 h incubation. Besides, P-Liquisomes proved to be non-toxic *in-vivo* and succeeded to show superior chemopreventive activity manifested by reduction of; % tumor growth (7.1%), VEGF levels (14.3 pg/g tissue), cyclin D1 levels 15.5 ng/g tissue and elevation in caspase-3 level (36.4 ng/g tissue), compared to Phytosomes and CN solution. Conclusively, P-Liquisomes succeded to achieve the maximum therapeutic outcome of CN without altering its activity and might be used as a sustained delivery system for other promising hydrophilic compounds.		University in Alexandria, Alexandria, Egypt

Pectin coated nanostructured lipid carriers for targeted piperine delivery to hepatocellular carcinoma. Shehata, E.M.M.| Gowayed, M.A.| El-Ganainy, S.O.| Sheta, E.| Elnaggar, Y.S.R.| Abdallah, O.Y. International Journal of Pharmaceutics. 2022 https://doi.org/10.1016/j.ijpharm.2022.121712 Abstract Piperine (PIP) is a herbal drug with well-known anticancer activity against different types of cancer including hepatocellular carcinoma. However, low aqueous solubility and extensive first-pass metabolism limit its clinical use. In this study, positively charged PIP-loaded nanostructured lipid carriers (PIP-NLCs) were prepared via melt-emulsification and ultra-sonication method followed by pectin coating to get novel pectin-coated NLCs (PIP-P-NLCs) targeting hepatocellular carcinoma. Complete in vitro characterization was performed. In addition, cytotoxicity and cellular uptake of nanosystems in HepG2 cells were evaluated. Finally, in vivo anticancer activity was tested in the diethylnitrosamine-induced hepatocellular carcinoma mice model. Successful pectin coating was confirmed by an increased particle size of PIP-NLCs from 150.28 ± 2.51 nm to 205.24 ± 5.13 nm and revered Zeta potential from 33.34 ± 3.52 mV to −27.63 ± 2.05 mV. Nanosystems had high entrapment efficiency, good stability, spherical shape, and sustained drug release over 24 h. Targeted P-NLCs enhanced the cytotoxicity and cellular uptake compared to untargeted NLCs. Furthermore, PIP-P-NLCs improved in vivo anticancer effect of PIP as proved by histological examination of liver tissues, suppression of liver enzymes and oxidative stress environment in the liver, and alteration of cell cycle regulators. To conclude,	SDG 3	 Yosra S.R.Elnaggar Head of International Publication and Nanotechnology Center INCC, Department of Pharmaceutics, Faculty of Pharmacy and Drug Manufacturing, Pharos University of Alexandria, Egypt  Mennatallah A. Gowayed  Samar O.El-Ganainy Department of Pharmacology & Therapeutics, Faculty of Pharmacy, Pharos

PIP-P-NLCs can act as a promising approach for targeted delivery of PIP to hepatocellular carcinoma.		University in Alexandria, Alexandria, Egypt

Egyptian Olea europaea leaves bioactive extract: Antibacterial and wound healing activity in normal and diabetic rats. Elnahas, R.A.| Elwakil, B.H.| Elshewemi, S.S.| Olama, Z.A. Journal of Traditional and Complementary Medicine. 2021 https://doi.org/10.1016/j.jtcme.2021.02.008 Abstract Background and aim In vitro activity evaluation of Egyptian Olea europaea leaves extracts, and in vivo healing activity assessment of the newly prepared ointment of Olea europaea leaves extracts mingled with Shea butter. Experimental procedure Different extraction methods and solvents were used to extract Egyptian Olea europaea bioactive agent(s). Antibacterial, scavenging activity and in-vivo evaluation of wound repair potentiality of Olea europaea extract were examined in normal and diabetic experimental rat models with induced circular excisions. Results and conclusion Olive leaves extract of Tanta was selected as the most active agent against Methicillin-resistant S. aureus (MRSA), with MIC value 15.6 µg/ml. Moreover, checkerboard dilution technique approved that the interaction between Tanta LEM crude extract and Ciprofloxacin was synergistic. Scavenging activity of the extract against DPPH free radicals was 87.55% at concentration of 50 µg/ml. In vivo normal and diabetic experimental rats	SDG 3	 Bassma Elwakil Department of Medical Laboratory Technology, Faculty of Applied Health Sciences Technology, Pharos University in Alexandria, Alexandria, Egypt

treated with Shea butter: Tanta LEM extract (1:3 w/v) showed the maximum wound contraction and healing activity.		

3.8 Courses that support Good Health and Well-Being

No	Faculty in Pharos University	Course name	Course code	SDG of relevance	Topics in each course
1	Applied Health Sciences Technology	Psychology	MGSY-201	SDG 3	Mental well being
2	Applied Health Sciences Technology	Infection Control	MLIC-401	SDG 3	Hygiene for good health
3	Applied Health Sciences Technology	Ethical and Legal Issues in Health Fields	MGME-101	SDG 3	Wellbeing and living standards
4	Pharmacy	Medicinal Chemistry I	(PCD 301) and (PCC 401)	SDG 3	Diagnostic agents that treat different infections
5	Pharmacy	Public Health and Preventive Medicine	PMC 401	SDG 3	Society health and wellbeing
6	Pharmacy	Project in Pharmacognosy & Natural Products	PG E08	SDG 3	Sustainable use of natural resources
7	Pharmacy	Nutrition & Health	PL 416	SDG 3	Combating malnutrition, Society health and wellbeing
8	Pharmacy	Public Health	PM 305	SDG 3	Society health and wellbeing

No	Faculty in Pharos University	Course name	Course code	SDG of relevance	Topics in each course
9	Pharmacy	Home Health Care	PN E19	SDG 3	Wellbeing of women health at home to reduce inequalities
10	Pharmacy	First Aid and Basic Life Support (BLS)	PLC 303	SDG 3	Society health and wellbeing
11	Pharmacy	Natural Cosmetics	PGD E01	SDG 3	Sustainable use of natural resources
12	Pharmacy	Herbal medicine	PGD E02	SDG 3	Sustainable use of natural resources
13	Pharmacy	Sustainability in Therapeutics	PLD E03	SDG 3	Sustainable use of natural resources
14	Pharmacy	Medicinal Chemistry II	(PCD 302) and (PCC 403)	SDG 3	pharmacological aspects of medicinal and pharmaceutical agents that belong to different categories
15	Pharmacy	Drug Design	(PCD 401) and (PCC E02)	SDG 3	Essentials of pharmaceutical chemistry and metabolism. Development of prodrugs, soft drugs, hard drugs
16	Pharmacy	Analysis of food & flavors	(PCD E02) and (PCC E03)	SDG 3	classification of flavoring agents and chemesthetic compounds found in food, their chemistry and methods of analysis.
17	Artificial Intelligence	Bioinformatics Programming and Scripting	DS307	SDG 3	Medical data handing
18	Artificial Intelligence	Biomedical Imaging	DS407	SDG 3	Medical data handing

No	Faculty in Pharos University	Course name	Course code	SDG of relevance	Topics in each course
19	Tourism	Current issues in food service (Elective)	HM 336	SDG 3	Healthy food for wellbeing, consumption reduction
20	Tourism	Safe Food Service Management	HM 434	SDG 3	Healthy food for wellbeing, consumption reduction
21	Dentistry	Dental clinic management & infection control	CD 312	SDG 3	Human health protection and control of infection in dental clinics
22	Physical Therapy	Public Health	PTBA 216	SDG 3	Good health of society particularly for poor
23	Physical Therapy	Psychology of Handicapped	PTBA 217	SDG 3	Psychic problem and treatment
24	Physical Therapy	Clinical Psychology	PTBA 337	SDG 3	Treatment sessions of Psychic patients
25	Physical Therapy	Woman Health Physical Therapy	PTWH 446	SDG 3	Women health and treatment