Beni-Suef University

Measures of Interdisciplinary Research Success

[1] Specialized unit for International Publishing

The university is home to eight distinctive faculties, each specializing in critical interdisciplinary fields. These faculties are the first of their kind in both Egypt and the Middle East. They include the Faculty of Earth Sciences, the Faculty of Special Needs Sciences, the Institute of Elderly Science Studies, the Faculty of Postgraduate Studies for Applied Sciences, the Laser Institute for Research and Application (LIRA), the Faculty of Navigation Science and Space Technology, the Research Institute of Medical and Aromatic Plants, and the Institute of Small and Medium Enterprises. All research conducted within these faculties is interdisciplinary, with additional collaborative interdisciplinary research carried out with other faculties at the university.

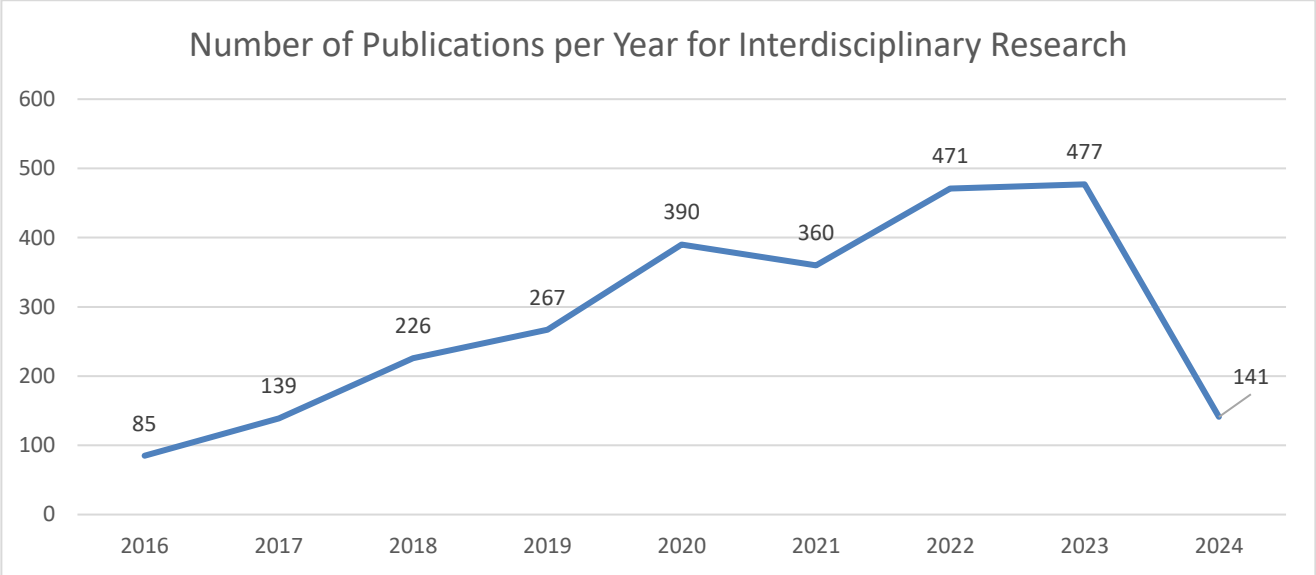
Scientific research, including interdisciplinary studies, at the university is managed and supervised by a dedicated unit, the “International Publishing Office.” This office is responsible for stimulating scientific research, securing research funds, and offering awards. You can find more information on this here.

The university also has a "Project Finance and Support Office," with the following goals:

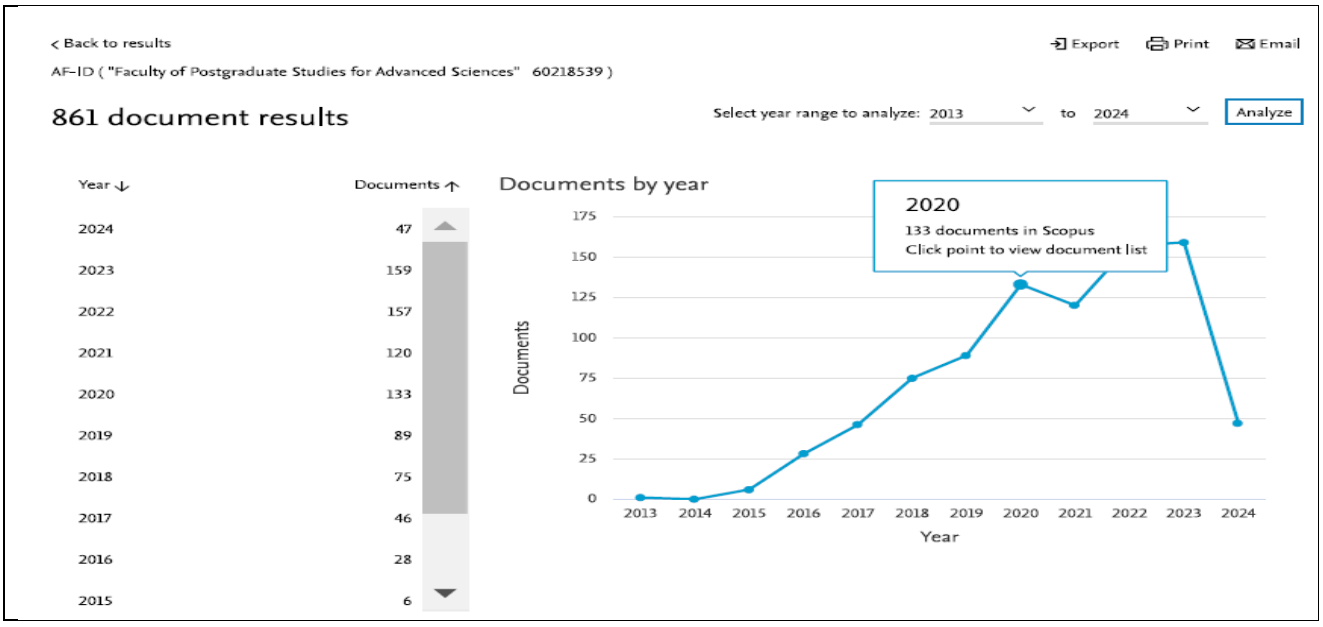
- Assisting faculty members in securing funding for their research proposals.
- Helping researchers improve their skills in writing competitive research projects.
- Evaluating submitted research projects.
- Following up on funded projects and facilitating their implementation.
- Evaluating the final outputs of funded projects.
- Establishing local and international collaborations, in cooperation with the International Cooperation Office, to attract funding institutions.

[2] Growing Number of Research Publications

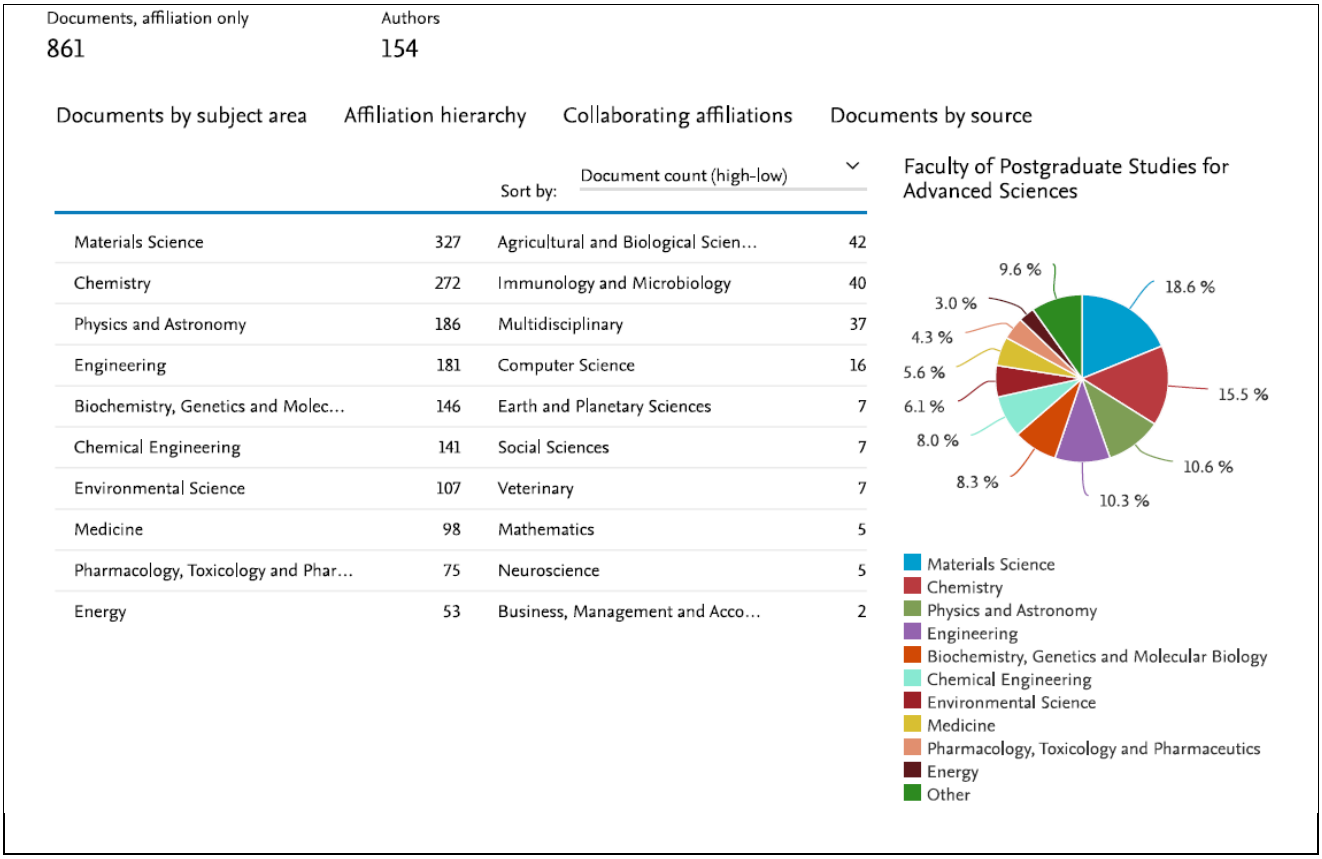
Interdisciplinary research is one of the university's most prominent research areas, with significant efforts dedicated to its advancement. The number of publications in interdisciplinary fields has surged dramatically over the past decade. According to the Scopus database, Beni-Suef University's interdisciplinary publications rose from 85 in 2016 to 477 in 2023. As of March 2024, there have already been 141 publications in this field in the first quarter. The following graph demonstrates the steady increase in the number of interdisciplinary research publications from 2016 to 2024.



The Faculty of Postgraduate Studies for Applied Sciences stands out as the leading contributor to interdisciplinary research publications. This is largely due to its four interdisciplinary departments, which work in close collaboration with the Faculty of Science and the Faculty of Medicine. Since its founding in 2013 through to 2024, the faculty has produced 861 interdisciplinary research publications, as shown in the following figure from Scopus.

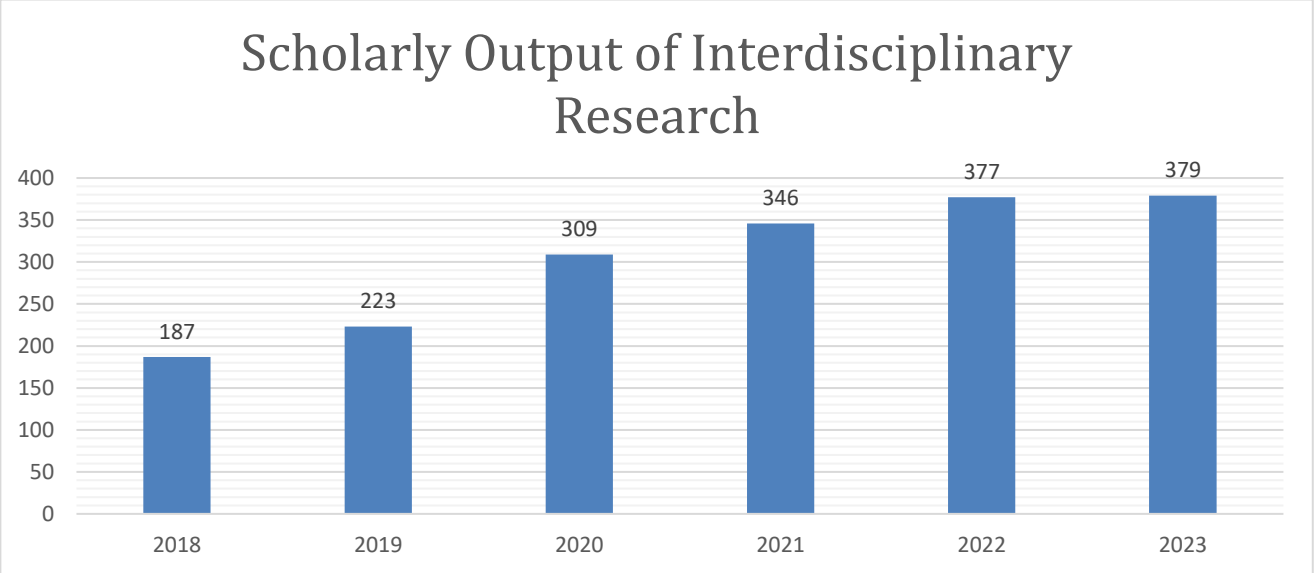


In addition to its high volume of interdisciplinary research output, the Faculty of Postgraduate Studies for Applied Sciences spans a wide range of subject areas, with particular emphasis on materials science and chemistry. Out of the total 861 publications, 327 are in the field of materials science and 272 in chemistry. The following graph illustrates the distribution of publications by subject area.



[3] Scholarly Output for Interdisciplinary Research

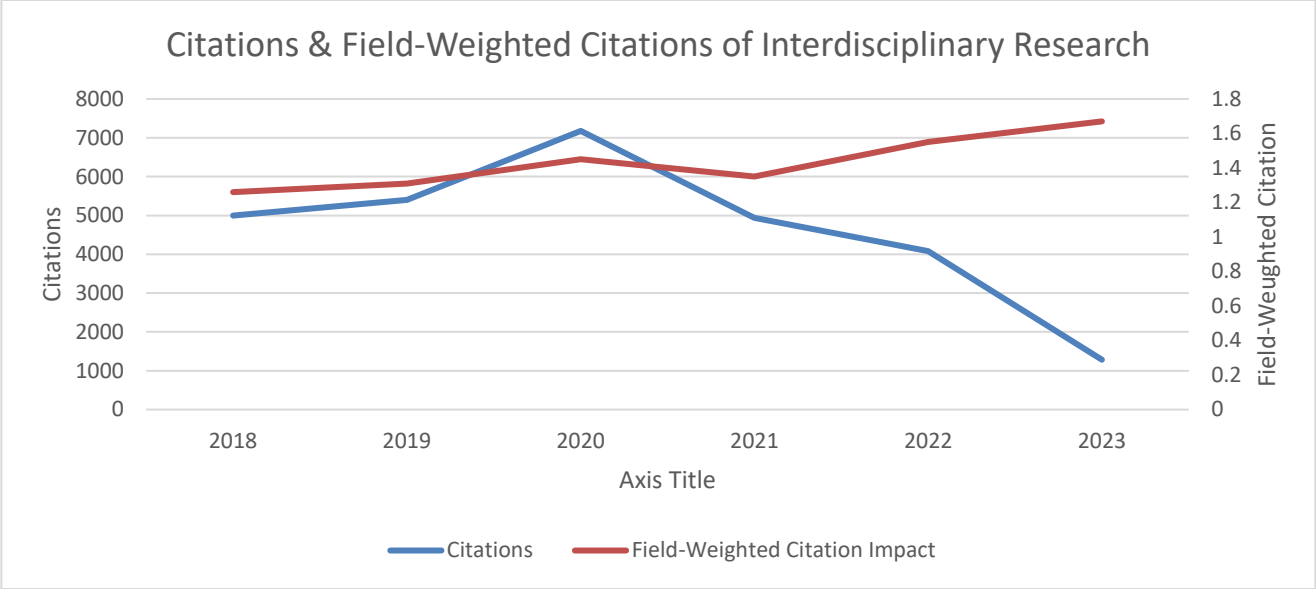
The scholarly output of interdisciplinary research has shown steady growth over the past five years. According to data extracted from Scopus, the number of interdisciplinary research publications increased from 187 in 2018



to 379 in 2023. This significant rise can be attributed to the growing institutional support for interdisciplinary initiatives, particularly during the COVID-19 pandemic. The following figure illustrates the upward trend in interdisciplinary research output from 2018 to 2023..

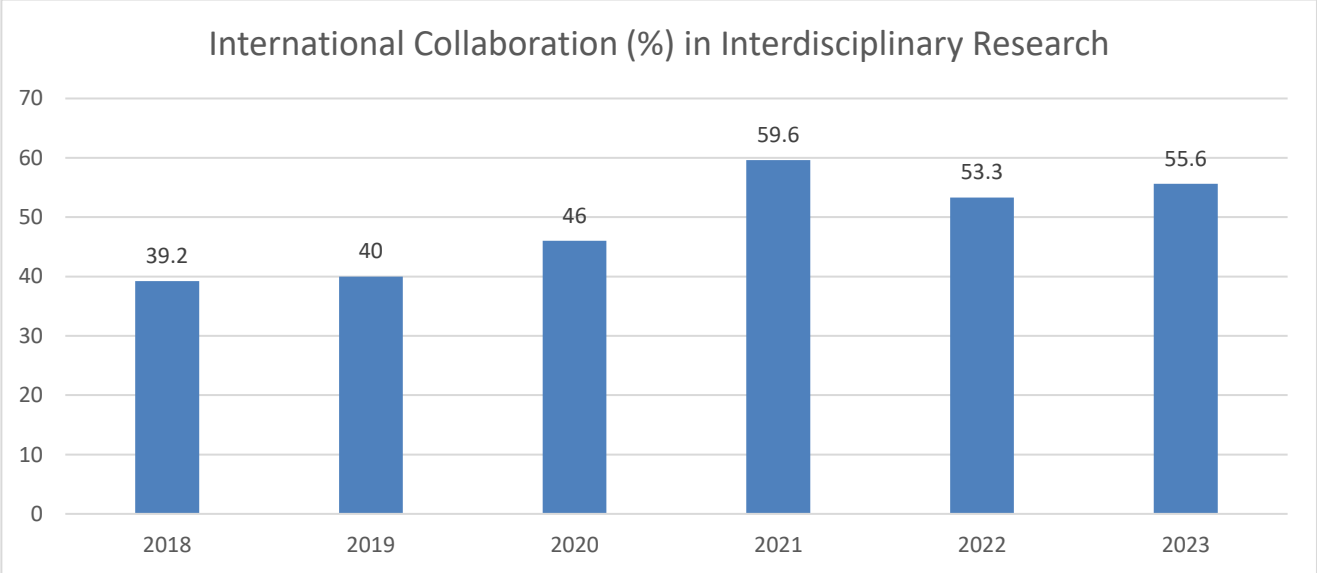
[4] Number of Citations of Interdisciplinary Reseach

In recent years, citations for interdisciplinary research have increased in parallel with the overall rise in the university's research output. Particularly noteworthy is the substantial growth in field-weighted citation impact, which underscores the increasing influence and quality of interdisciplinary studies. The figures below present a comparison between the citation trends and field-weighted citation impact of interdisciplinary research and those of the university's total research output.



[5] International Collaboration in Interdisciplinary Research

International collaboration in interdisciplinary research has seen substantial growth over the past five years. According to data from Scopus, the percentage of interdisciplinary publications involving international partners rose from 39.2% in 2018 to 55.6% in 2023. The following figure illustrates the increasing trend of international collaboration in interdisciplinary research between 2018 and 2023.



[6] Interdisciplinary Research as a Vital Player in SDGs

Interdisciplinary research plays a vital role in advancing the Sustainable Development Goals (SDGs) within the university's research landscape. An analysis of publications aligned with the SDGs reveals that the majority are focused on SDG 3 (Good Health and Well-being), SDG 7 (Affordable and Clean Energy), and SDG 6 (Clean Water and Sanitation). These priority areas align closely with the mission of the university's interdisciplinary faculties—particularly the Faculty of Postgraduate Studies for Applied Sciences, which encompasses departments such as Materials Science and Nanotechnology, as well as Renewable Energy Science and Engineering. As such, interdisciplinary research serves as a key driver of the university's overall research output. The following figure presents the distribution of research publications by SDG from 2018 to 2023, based on data from SciVal.

SDG	Scholarly Output	Field-Weighted Citation Impact	Citation Count
SDG 1: No Poverty	1	6.88	28
SDG 2: Zero Hunger	99	1.82	1,221
SDG 3: Good Health and Well-being	1,898	1.57	24,896
SDG 4: Quality Education	23	0.80	92
SDG 5: Gender Equality	26	1.11	157
SDG 6: Clean Water and Sanitation	352	1.84	5,343
SDG 7: Affordable and Clean Energy	450	1.92	7,473
SDG 8: Decent Work and Economic Growth	70	3.04	1,435
SDG 9: Industry, Innovation and Infrastructure	164	1.97	2,530
SDG 10: Reduced Inequality	18	0.84	113
SDG 11: Sustainable Cities and Communities	101	1.94	1,107
SDG 12: Responsible Consumption and Production	132	2.63	2,451
SDG 13: Climate Action	96	2.85	2,087
SDG 14: Life Below Water	74	1.32	873
SDG 15: Life on Land	65	1.49	739
SDG 16: Peace, Justice and Strong Institutions	24	0.57	56

[7] Funded Projects in Interdisciplinary Research

The university actively supports interdisciplinary research through funding provided by various agencies. One such contributor is the Scientific Research and Technology Academy, which has financed several interdisciplinary projects.

And here are list of funded projects in interdisciplinary fields in the year 2023 within various faculties and from various funding bodies.

Faculty of Postgraduate Studies for Adnvanced Sciences					
#	Author	Funding Body	Project Title	Project No.	Amount EGP
1	Prof. Ahmed Farghaly	STDF	Establishing an Economic Production Center for Nanomaterials to Meet Local Market Needs	31305	**2,660,000**
2	Prof. Laila Saad	STDF	Manufacturing Thin-Film Solar Cells Based on Abundant Earth Elements	33421	**676,600**
3	Prof. Laila Saad	Academy of Scientific Research and Technology (ASRT)	Energy Alliance - Made in Egypt	33422	**161,196**
4	Dr. Mai Farag	STDF	Synthesis and Characterization of Low-Cost Nanostructured Membranes	43211	**702,300**
5	Dr. Ahmed Khalil	STDF	Design of Clean, Economical, and Scalable Energy Storage Devices Using Hybrid Nanomaterials	33340	**683,000**
6	Hadeer Mansy	STDF	Applications of Palladium-Carbon Nanocomposites in Fuel Cells	45100	**63,350**
7	Hadeer Khalifa	STDF	Using Multifunctional Nanomaterials with Perovskite Structure for Water Molecule Splitting via Chemical and Photoelectrochemical Methods	45249	**70,490**
8	Esraa Farag	STDF	Carbon-Based Materials Loaded with Metal Oxide Nanomaterials for Supercapacitor Applications	44841	**89,055**
9	Marwa Hussein	STDF	Enhancement of the Physical and Magnetic Properties of Certain Two-Dimensional Layered Materials	45117	**74,980**
10	Dina Salah	STDF	Preparation of Modified Nanometric Carbon Materials and Their Use in Ultra-Fast Supercapacitor Applications	45282	**81,150**
11	Emtinan El-Manzalawi	STDF	Nanometric Materials Based on Molybdenum and Tungsten for Direct Methanol Fuel Cells	45257	**22,628.5**
12	Mai Sayed	STDF	Using Nano-Particles and Endophytic Bacteria to Enhance Artemisinin Production	45127	**22,563.5**
13	Naglaa Wasef	STDF	Evaluating the Therapeutic Effects of Melatonin-Activated Mesenchymal Stem Cell Exosomes and Colchicine/Stearylamine Nanoparticles on Liver and Kidney Injury and Fibrosis in Wistar Rats	48831	**172,600**
14	Rania Nasser	Academy of Scientific Research and Technology (ASRT)	Tuning the Surface and Structure of Multifunctional Titanate Nanostructures in Energy, Environmental, and Biomedical Applications	Next Generation Scientists Program – Phase 8	**20,000**
15	Amani Awad	STDF	The Effect of Genetic Changes in Interferon Lambda-4 and Leptin with COVID-19 and/or Liver Diseases, and the Impact of Phenotypic Modifications on Biochemical Changes	48658	**174,330**
16	Sara Abdel Aziz	STDF	Production and Evaluation of Food Flavorings via Microbial Fermentation from Some Food Manufacturing By-Products and Their Use as Natural Preservatives and Functional Foods	48873	**124,970**

Institute of Medicinal and Aromatic Plants					
#	Author	Funding Body	Project Title	Project No.	Amount EGP
1	Wagihah Sultan	Academy of Scientific Research and Technology (ASRT)	Coputationally Guided Promoting the Antioxidant Potential of Some Naturally Occurring proactive Secondary Metabolites Isolated From Egyptian Folk Medicinal Plants	31400	**50,000**

Institute of Laser Research and Applications					
#	Author	Funding Body	Project Title	Project No.	Amount EGP
1	Prof. Tarek Ali	STDF	Development of a femtosecond laser device to achieve a high frequency by reusing the femtosecond pulse	30147	**1,000,000**
2	Dina Atwa	Academy of Scientific Research and Technology (ASRT)	Archeometric study using X-ray diffraction of a group of ancient coins recovered from the Mediterranean Sea in northern Egypt	SESAME	**200,000**

Faculty of Science					
#	Author	Funding Body	Project Title	Project No.	Amount EGP
1	Prof. Arafa Hussein	Academy of Scientific Research and Technology (ASRT)	New types of photonic and phononic crystal materials as a new platform for promising applications	7859	**100,000**
2	Dina Atwa	Academy of Scientific Research and Technology (ASRT)	Detection and monitoring of soil salinity based on a known one-dimensional photonic crystal sensor	7860	**100,000**
3	Dr. Rabei Ibrahim	STDF	Study of the properties of some quantum systems and their impact on future quantum applications	44486	**66,666.67**
4	Dr. Hassan Sayed	STDF	Desalination of seawater using photonic crystals	44871	**100,000**
5	Dr. Mahmoud Sayed	STDF	Quadruple treatment for removing heavy metals and ammonia ions from wastewater using porous basalt ceramic membranes	43239	**749,615**
6	Dr. Yasser Mahmoud	STDF	Egypt Innovation Project: Yeast Industry Waste as a Super Biofertilizer Enhancing Crop Growth and Yield	18773-19	**300,000**
7	Dr. Ahmed Hamad El-Din	STDF	Environmental Care Team	18666-19	**300,000**
8	Asmaa Ragab Deryaz	STDF	Pharaohs Zeolite Team	18823-19	**300,000**
9	Dr. Mohamed Zayed	STDF	Advanced Nanostructured Materials for Renewable Energy Applications	44992	**163,635**
10	Rana Saad	STDF	Preparation and characterization of thin CUO membranes for sensing applications	44993	**99,973.5**
11	Amira Hamdi	STDF	Preparation and characterization of lead-free inorganic perovskite materials for solar energy applications	44809	**90,000**
12	Aya Ahmed	STDF	Preparation of perovskite oxide materials for solar cells and hydrogen production	44746	**101,250**

13	Amal El-Khader	Academy of Scientific Research and Technology (ASRT)	Utilization of eco-friendly Egyptian natural clay and its nanocomposites as potential catalysts for the transformation of waste cooking oil to biodiesel	Next Generation Scientists - Phase VIII	**40,000**
14	Doaa Ashraf	Academy of Scientific Research and Technology (ASRT)	Hyper cross-linked polymer and its composite for conversion of waste and non-edible oils to biodiesel	Next Generation Scientists - Phase VIII	**40,000**
15	Prof. Hamada Mohamed	United States Agency for International Development (USAID)	Enzymatic and nanotechnological treatment of wastewater for removal of heavy metal toxins and degradation of antibiotics	-	**3,750,000**
16	Dr. Rehab Khaled	United States Agency for International Development (USAID)	Manufacturing of a hybrid treatment system and desalination of oily sewage water using metal-organic frameworks: Experimental and computational studies	-	**1,500,000**
17	Prof. Mahmoud Sayed	United States Agency for International Development (USAID)	Development of an integrated system for desalination of saline water: Application of chemical incompatibility in the Siwa Oasis as an innovative strategy for producing low-cost irrigation water using the Nano-Filtration Self-Cleaning System	-	**1,500,000**
18	Dr. Mohamed Gamal El-Din	United States Agency for International Development (USAID)	Large-scale and sustainable synthesis of commercially feasible TiO2/GO nanostructured thin membranes based on forward osmosis membranes for water desalination (TG-PES-Memb)	-	**300,000**
19	Dr. Hassan Sayed	United States Agency for International Development (USAID)	Salinity sensor for desalination method using photonic crystals	-	**300,000**
20	Asmaa Mahmoud Mohamed	United States Agency for International Development (USAID)	Heavy metal detection in drinking water using a nanophonic structure	-	**300,000**
21	Dr. Mohamed Ibrahim	STDF	Synthesis and characterization of organic and inorganic nanocompounds on chitosan surface using aniline derivatives for environmental applications	48527	**175,000**
22	Prof. Zakaria Mohamed	STDF	Evaluation of oil shale deposits from the Cretaceous and Paleocene sequences for oil and gas extraction in the Kharga and Khila depressions, Western Desert, Egypt	47195	**998,140**
23	Hasnaa Hamdi Abdel-Halim	STDF	Effective UV photodetectors based on the preparation of ultra-thin ITO/NiO thin films doped with a transition metal	48094	**78,240**
24	Al-Huda Abdel-Monem	STDF	Manufacturing and characterization of (P-N) diode junctions as thin films of metal oxides with high efficiency for use in solar cells and green hydrogen production	48084	**103,450**
25	Iman Refaat	STDF	Evaluation of the effects of mesenchymal stem cell exosomes and amygdalin on hepatocellular carcinoma induced by diethyl nitrosamine in Wistar rats	48673	**107,100**
26	Nariman Ragab Abdel-Aal	STDF	Nucleic acid components isotopes: Construction of innovative thio-glycoside pyrimidine derivatives with predicted biological activity	48819	**25,000**

Faculty of Applied Health Sciences Technology					
#	Author	Funding Body	Project Title	Project No.	Amount EGP
1	Dr. Abeer Hamdi	Academy of Scientific Research and Technology (ASRT)	Scintillation Characteristics of Zone doped with Copper for Alpha Particle detection	Next Generation Scientists Program – Phase 8	**40,000**

Faculty of Earth Science					
#	Author	Funding Body	Project Title	Project No.	Amount EGP
1	Prof. Fathy Mohamed Mohamed	STDF	Towards an Integrated System for Agricultural Drainage Water Treatment	46896	**939,280**

Faculty of Agriculture					
#	Author	Funding Body	Project Title	Project No.	Amount EGP
1	Sherif Ragab	Academy of Scientific Research and Technology (ASRT)	Enhancing Diversity in Cereal Farming Systems in the Mediterranean Basin	-	**1,200,000**
2	Sherif Ragab	Academy of Scientific Research and Technology (ASRT)	Strategies for the Resilience of Grains and Their Derivatives in the Middle East and North Africa	-	**1,800,000**
3	Prof.Mostafa Qotb	Academy of Scientific Research and Technology (ASRT)	Soil Information System for Africa	-	**311,940**

Faculty of Dentistry					
#	Author	Funding Body	Project Title	Project No.	Amount EGP
1	-	COST (European collaboration for science and technology) program	Digital Manufacturing of Flour Medicine	-	**525,000**
2	-	Marie Skłodowska-Curie Actions (Staff Exchange)	Linking Additive Manufacturing Technology in Personalized Bone Cancer Treatment Across Europe and Africa	-	**937,500**

in total, Interdisciplinary research in Beni-Suef university received **total fund of 24,491,003 EGP which is equivalent to 816,366.767 Dollars** in 2023.

[8] Patents in Interdisciplinary Research

Interdisciplinary faculties in the university were awarded a number of patents. For example, faculty of postgraduate studies for applied sciences received three patents described according to the following table.

#	Certificate No.	Deposit No.	Patent Title
1	29894	EG/P2015/223	Fast purity and in large quantity for the suspension of granite oxide micro flakes and other belongings using a system containing fiber filters
2	30037	EG/P2014/577	A way to convert aluminum and salt water waste into fresh water and electricity
3	30456	EG/P2016/263	Preparation of iron oxide nanoparticles from animal blood waste containing hemoglobin

Additional evidence link (i.e., for videos, more images, or other files that are not included in this file):

International Publishing Unit (bsu.edu.eg)

Research success report (bsu.edu.eg)

مكتب دعم وتمويل المشروعات (bsu.edu.eg)

مشروع مركز التميز للمياه بالجامعة الأمريكية بالقاهرة يقدم منحا جديدة لطلاب الهندسة بالجامعات المصرية لدراسة هندسة المياه بجامعتي الإسكندرية وعين شمس | The American University in Cairo (aucegypt.edu)