

Inventions and discoveries are the key elements for national development, renaissance, and progress. Many of the breakthroughs are a result of intense research and such research of national importance must be nurtured. Qatar University (QU) also provides immense importance and funding to scientific research, therefore, Qatar University Young Scientists Center (QUYSC), in association with the Research Support for Grants and Contracts Department, has launched a research funding program entitled “National Science Promotion Program (NSPP)” for the promotion of scientific research among the Qatari youth community. The NSPP enabled national high school students to work under the supervision of skilled researchers on various research projects of national interest for a duration of 6 months. The initiative aligns with the goals to support the Qatar National Vision 2030.

The primary objectives of the program are to enhance the interests of national youth in the STEM (Science, Technology, Engineering, and Mathematics) stream. It thereby enables the high school students to augment their research capacity and knowledge through the “Learning by Experimenting” approach. Thus, the program brings an exceptional opportunity for high school students and Qatar University’s undergraduate students to conduct research under the mentorship of extremely qualified faculty members & researchers of Qatar University.

The 1<sup>st</sup> Cycle of NSPP program had been initially launched in December 2020, and the awardees of the research grants were declared in June 2021. Wherein, all the winning research projects have gone through an extensive review process to select six outstanding research proposals of national/scientific interest. Each project involved 2 Qatari high school students. The 12 nominated student participants of the NSPP-1<sup>st</sup> cycle were from 5 different public and private schools: Jassim bin Hamad Boys High School, Al Jazeera Academy, Qatar School of Banking and Business Administration for Boys, Zubara High School for Girls, and Al-Arqam Academy for Girls.

The NSPP-1<sup>st</sup> cycle participants (two high school students, a QU undergraduate student), and the winning project and awardee are in the order as follows: Saqer Hamad Al-Rumaihi, Essa Ahmad Al-Mohannadi from Jassim Bin Hamad Secondary School for Boys, & Khadija Muhammad Abdul Quddus worked on “Silver grafted  $Ti_3C_2$ -MXene nanocomposite as novel anode materials for lithium-ion-batteries” supervised by Abdul Shakoor, Centre for Advanced Materials. In the research project, the Silver grafted  $Ti_3C_2$  nanocomposites were

synthesized through microwave-assisted chemical precipitation technique and their physical, structural and mechanical properties were investigated.

Hajar Aljumaily and Maha Al-Meraghi from Al-Arqam Academy worked on “The Effect of the Aryl hydrocarbon receptor Inhibition on the CTLA-4 Immune System in Colon Cancer Stem Cells,” supervised by Dr. Hesham M. Korashy, College of Pharmacy. The project aimed at investigating the effect of aryl hydrocarbon receptors on immune checkpoints in colon cancer stem cells.

Mohammad Yousef Al-Jaber, Mohammed Khalid Al-Hajri from Qatar Banking Studies and Business Administration School, and Aldana Al-Dosari worked on “Toxicity evaluation of two surfactants with anti-corrosion properties on the embryonic development of zebrafish,” guided by Dr. Gheyath K. Nasrallah of Biomedical Research Center. The project focused on the evaluation of the general toxicity profile of Silicon-Q-22 and Poly-Q-47 using the zebrafish embryo model.

Mohammed Al-Khanji and Mohammed Radwani from Al-Jazeera Academy, and Insharah Ahsan worked on “Application of Carbon Quantum Dots (CQDs) and Ni-Co-S (NCS) – decorated nanosorbents for Wastewater Treatment” guided by Dr. Marwa El-Azazy. College of Arts and Science. The research was to unveil a sustainable material and technology for water treatment.

Sara Al-Sada, Noor Al-Badr from Zubaida Secondary School for Girls, & Salma Muhammed worked on “SIRT1, a novel potential target that underpin CD44-promoted breast tumor cell invasion” led by Prof. Allal Ouhtit, College of Arts and Science. The primary aim of the project was to confirm if SIRT1 is a true transcriptional target of HA CD44 signaling mechanisms by PCR and Western blot.

Sultan Al-Thani and Ali Shams from Al-Jazeera Academy worked on “Bio-sludge Atlas for Qatar: Characterization of bio-sludge from municipal and industrial sources” supervised by Fares Almomani, College of Chemical Engineering. Wherein, the primary objectives of the project included the characterization of municipal wastewater bio-sludge in Qatar, along with the investigation of the concepts of bio-sludge-to-energy conversion.

NSPP has been successful in bridging the Undergrad students and high school students to collaboratively perform scientific research. Thereby the pioneering program provided a valuable opportunity and platform to the Qatari youth to experience the sophisticated research for national interest and attain the skills to contribute to the progress of the country.