

## USERNiversity: A New Educational Innovation to Improve Young Scholars' Skills via Extracurricular Programs

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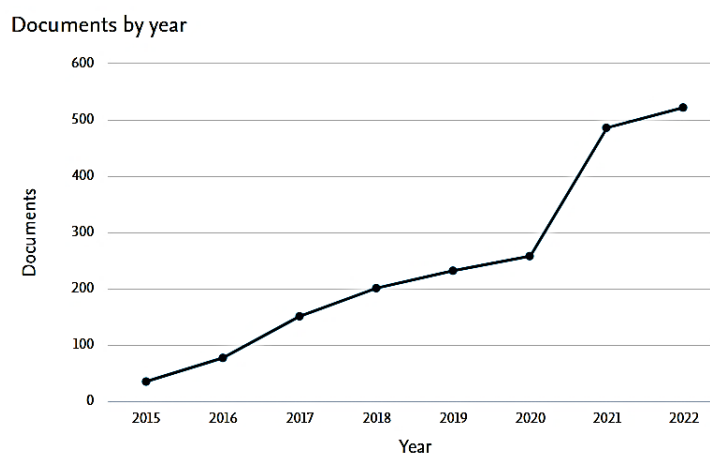
### USERN

The creation of science was to serve humanity and to apply it to improve all human life, with any nation, race, ethnicity, or religion. All people should be able to contribute to science development. A proper path from novel ideas to scientific output and the opportunity of networking with peers should be available for all junior and senior scientists. Novel ideas, research facilities, funding resources, and expert teams should connect via a suitable network. To tackle complex problems, the integration of sciences and the application of multidisciplinary, interdisciplinary, and transdisciplinary approaches are required. Indeed, in one word, all borders, either abstract or concrete, should be removed in the world of science.

Remarking “Envisioning a reliable network of

universally validated resources including ideas, facilities, human, financial and educational resources in order to launch and facilitate authentic, ethical and professional scientific research intended to improve human life.” as its main and only vision, Universal Scientific Education and Research Network (USERN) has made strong steps into removing borders in science, including geographical and ethnical borders, borders between senior and junior scientists, and borders between different fields of science (1,2).

USERN, with more than 21,000 members from more than 120 countries, has accomplished the publication of about two thousand scientific documents, which has resulted in an H-Index of 73 during 7 years of fruitful activity (Figure 1).



**Figure 1.** Trend of publication with USERN affiliation (2015-2022). Scopus, Dec 2022

By the end of 2022, USERN has 63 USERN Junior Ambassadors (UJAs), 72 USERN Interest Groups

(UIGs), 45 offices, and signed 79 Memoranda of Understandings (MOUs) (Figure 2).

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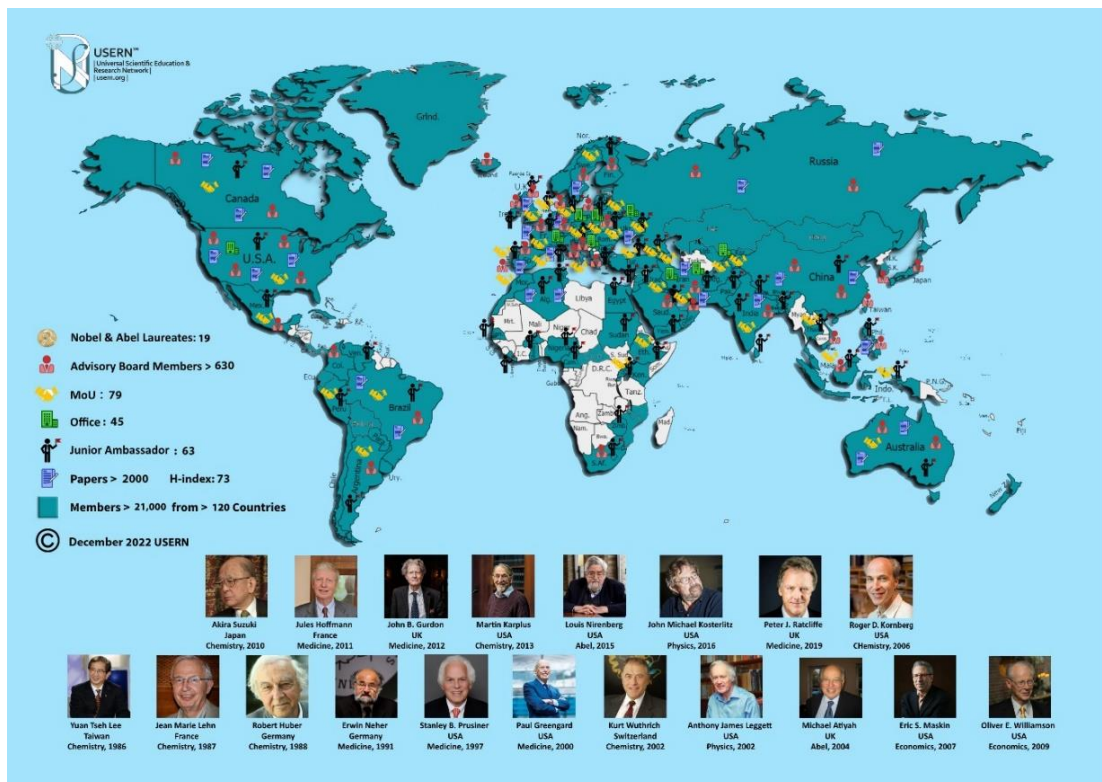


Figure 2. Updated statistics of USERN platform. Dec 2022

**Education and research: two wings of USERN**

USERN has organized more than 900 educational and inspirational events and helped many students to gain different skills, find their future path, and learn how to fly in the borderless sky of science. USERN has targeted borderless scientific collaborations by facilitating scientific exchange since its establishment (3); students and faculty members exchange program with Kharkiv National Medical University in Ukraine during 2017-2021, the Advanced Course of Primary Immunodeficiencies (PIDs) in collaboration with Università Mediterranea of Reggio Calabria in Italy in 2018, minor global health exchange program with Erasmus Medical Center, Rotterdam, the Netherlands in 2019, and the Global Health School in collaboration with Akkon University in Berlin, Germany, in 2022 are some examples of exchange programs initiated and organized by USERN (3-5). USERN developed the U100 platform, by which it linked 100 universities and scientific institutes to facilitate borderless scientific networking (6). During the COVID-19 pandemic, the universities' and educational institutes' activities were forced to be limited as per health protocols to prevent the spread of the disease. Hence, not only physical scientific exchange had to stop, but also the regular

educational programs were disturbed for many students all over the world; this was the most challenging in the earlier days of the pandemic, but soon got better with transforming educational curriculums into virtual programs. Meanwhile, USERN kept on moving toward developing borderless scientific activities regardless of all challenges during the pandemic. The 5<sup>th</sup> International USERN Congress and Prize Awarding Festival held on November 7<sup>th</sup>-10<sup>th</sup> in Tehran, Iran, was the first hybrid congress, which has introduced new standards in practice for organizing scientific events during the pandemics (7,8). Later in May 2021, in line to continue scientific exchange in the pandemic era, USERN in collaboration with Kharkiv National Medical University and Tehran University of Medical Sciences organized a virtual mobility program, entitled the 1<sup>st</sup> TUMS-KhNMU International USERN Spring e-Course, in which a one-month educational program was designed for students with different medical sub-fields, including medicine, dentistry, nursery, rehabilitation, and public health. Faculty members and scientists from more than 5 universities/institutes joined the program as lecturers and students from more than 10 countries participated in this one-month event. This was a great example of scientific exchange with

all limitations caused by the pandemic.

**Professionalism and business: two wings of sustainability in networking**

USERN was organized as a professional non-governmental, non-profit organization and network for non-military scientific investigation and policy-making to mean science without borders. It was organized for advancement of authentic, ethical and professional scientific research and education and consequently advancement of science for non-military purposes and public good. The vision was to have a reliable network of universally validated resources including ideas, facilities, human, financial and educational resources in

order to launch and facilitate authentic, ethical and professional scientific research intended to improve human life. Considering the fact that USERN should remain as a non-profit network, there was a need to have a business plan to continue the USERN activities (Figure 3) and establish foundation(s) to arrange fundraising for sustainability in organization of the USERN congress and USERN Prize Awarding Festival. Therefore, the idea of USERN Business was developed and Universal Scientific Education and Research Foundation (USERF) and Universal Borderless Science Foundation were established, respectively (Figure 4).

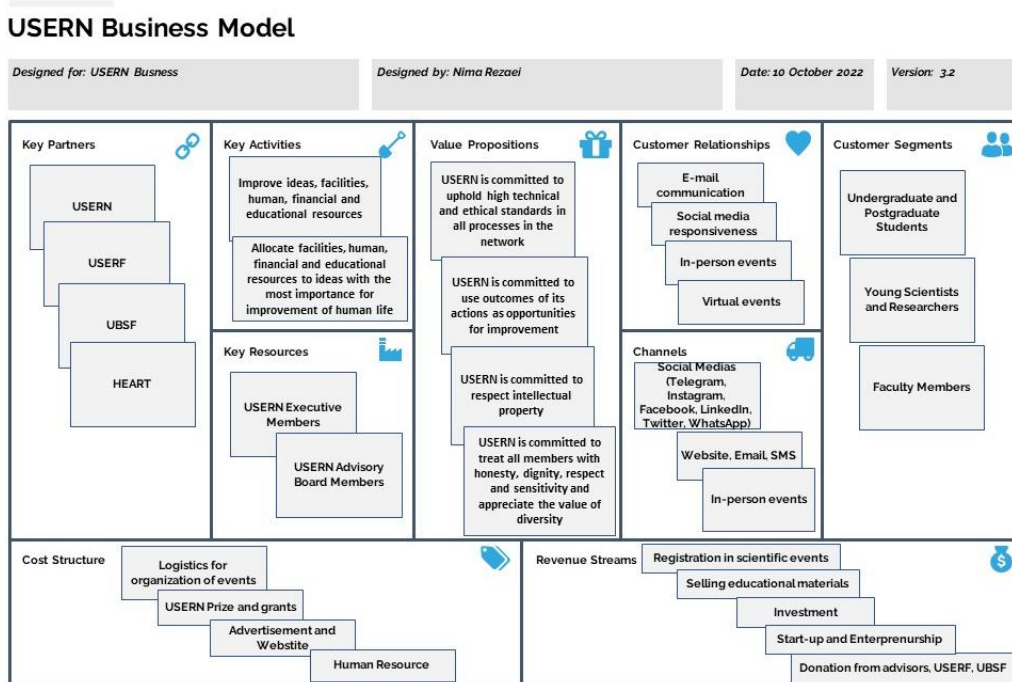


Figure 3. USERN business model

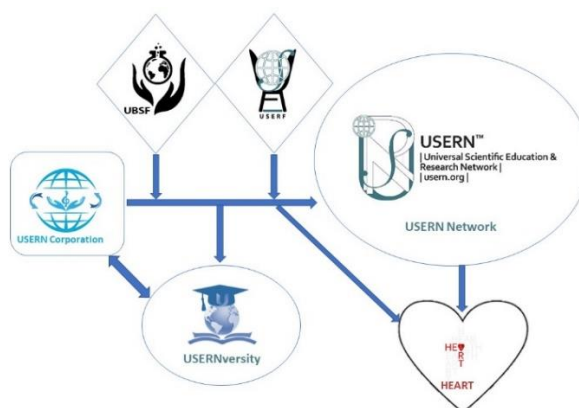


Figure 4. The connections of USEN corporation and USERN networking. Health and Art (HEART) act as corporate social responsibility (CSR) of USERN. USERF: Universal Scientific Education and Research Foundation. UBSF: Universal Borderless Science Foundation

### **USERNiversity**

USERN was always concerned about boosting the young scholars' skills, which are necessary to progress in the scientific community, via extracurricular programs/courses. Therefore, after organizing hundreds of educational events, it has been decided to design several courses with a defined curriculum to empower students and junior scholars with some skills, including scientific writing, basic research skills, laboratory techniques, academic presentation skills, and soft skills. In early 2022, the idea of USERNiversity was conceptualized as a part of the USERN business, in which non-degree programs were initiated; four internship programs were launched: Internship for Research Skills, Internship for Laboratory Techniques, Internship for Presentation Skills, and Internship at the USERN Executive activities. For participation in each of the internship courses, Universal Accreditation System (UAS) scores are defined, as a tool to quantify educational activities and professional development (9). In addition to the graduation certificate, trainees obtain UAS score, which is recorded on their profile on the USERN website.

### **Internship for research skills**

USERN has organized the USERN Research Week twice a year since 2018, consisting of research methodology and publication types, scientific writing, submission and peer reviewing, basic statistics, systematic review, meta-analysis, and editing books with international publishers. While the students were always satisfied with what they learned about basic research skills, scientific writing, and academic publications, many of them wanted to get involved more in research activities to use their learning in practice. Thus, the concept of the Research Internship was formed in USERNiversity. Students were trained under the supervision of a mentor and contributed to different research activities during a period of 10-month program. During this internship, participants attended monthly journal clubs and some workshops. More than 350 delegates participated in the Research Week in 2022, among them, 100 were accepted to start the USERN Internship program, of which 40 finally graduated at the end of the course.

### **Internship for laboratory techniques**

USERN has linked some research centers and started a collaboration with them to organize the

USERN Laboratory School twice a year since 2021. The school was so welcomed by a great number of students and junior researchers. As many of the trainees were interested to dive deeper into laboratory techniques and to achieve more experience in laboratory work, the idea of the USERN Internship for Laboratory Techniques was formed in USERNiversity. During a 10-month program, the trainees experience working in laboratory with different techniques, including DNA extraction and PCR, cell culture, flow cytometry, western blotting, and laboratory animal techniques. Also, visit from different centers related to laboratory work are another part of this course. In 2022, out of more than 300 participants in the school, 50 of them applied for the internship course; among them, 12 were accepted and graduated at the end of the program.

### **Internship for presentation skills**

USERN has been always trying to link science to society. An important concern is that many of the scientists, although with great experience in presenting their work in the academic community, do not have the skill to present scientific information to the general community. In the absence of science in society, pseudoscience spreads and shapes the general community's mind about important issues like health, treatment for diseases like cancer, pandemics, etc. Having this issue in mind, USERN developed the concept of Miniature Talk in 2017. In the Miniature Talk, junior scientists who are interested in presenting their work to both the academic and the general communities join to compete for being recognized as the Best Junior Talk Presenter. Miniature Talk is also a great example of the integration of science and art. Besides the presentations, junior artists who are also interested in science try to create scientific artwork at the same time. In 2022, after three consecutive periods of miniature talks, the Internship for Presentation Skills was developed in USERNiversity. Applicants were trained in several groups under the supervision of a mentor and then competed together in the context of Miniature Talk. In 2022, more than 270 delegates applied to join this contest; among them, 66 participants joined the internship program. Five best 5 presenters and the best 3 artists, which were selected by juries' votes and also public votes, started a 20-weeks training program to perform a Talk Theater, named "Forgetfulness" at the 7<sup>th</sup> USERN anniversary.

### **Internship for executive activities**

USERN executive committee has been always a friendly environment letting the juniors grow in an international scientific network. In USERN executive committee, interested young scholars improve their soft skills, improve teamworking, learn different skills in design, media, and organizing events, besides management and leadership skills. USERN has nurtured many young successful managers that are working all over the world. In 2022, for the first time, the Internship at the Executive Committee was launched. Out of 180 applicants, 45 were accepted according to their motivation letter to join the program. During the internship, different workshops, gatherings, and events were held, all aiming to empower the trainees in different skills, particularly soft skills. The trainees experience the process of organizing different events from conceptualization to holding. In this course, 35 trainees graduated.

### **Internship for innovation and entrepreneurship**

Creativity and innovation have always been inseparable factor for educational and career development. Having this important in mind, USERNiversity aims to launch the 5<sup>th</sup> internship course in 2023, entitled the Internship for Innovation and Entrepreneurship.

### **USERN policy-making council and presidential election**

On the first day of January 2016, the first USERN advisory board meeting was organized, attended by 30 top 1% scientists. On the first day of January 2023, this number reaches more than 630, including 19 Nobel and Abel Laureates, which is beyond our expectations (10).

A new chapter has been opened in USERN; after two successful consecutive three-year periods, the USERN president has changed according to the USERN statute. Professor Nima Rezaei, the USERN Founder, has been the President since 2016. Based on the USERN Statute, the election should be made to select the Policy-Making Council (PMC) and the President every three years; 21 members of the USERN PMC from different disciplines were selected according to the votes received from the Advisory Board members in September 2022; consequently, the newly elected PMC members voted to select the new President (2023-2025). Among the 8 candidates for the Presidential election, the majority (more than 50%) of votes went to Professor Tommaso Dorigo, a physicist

from the Italian National Institute of Nuclear Physics and a Professor at the Department of Statistical Sciences in Padova (10).

### **The 7<sup>th</sup> international USERN congress and prize awarding festival**

During the 7th International USERN Congress and Prize Awarding Festival, which was held in Muscat, Oman on November 8th-10th, the composition of the newly elected Policy Making Council (PMC) of the USERN for the next three years (2023-2025) was announced.

USERN targets world-scale collaborations and scientific excellence. In this path, great steps were made in 2022; publication of books and articles on interdisciplinary topics; establishment of different educational events and research activities; and the last but not least, organization of the 7<sup>th</sup> International USERN Congress and Prize Awarding Festival in Muscat, Oman, on November 8<sup>th</sup>-10<sup>th</sup>, 2022, which was a great picture of borderless international collaboration and scientific exchange. Participants from many countries and with different scientific fields joined the congress; USERN Prize laureates, keynote lecturers, junior researchers, faculty members, ambassadors, and students were all happy experiencing an international scientific environment. Purposed on acknowledging junior scientists for their scientific efforts and achievements, and empowering them to pursue their goals, the idea of the USERN Prize was formed. On the United Nations (UN) Day of Science for Peace and Development, November 10th, the USERN 2023 Prize laureates were officially announced. They received their award at the 7<sup>th</sup> USERN Congress for the amazing work they did to promote science. Different young scientists from 18 countries have been awarded the USERN Prize since 2016; this year's laureates were from France, Switzerland, USA, Italy, and UK (11,12).

### **USERN CSR**

As part of USERN social responsibility, the "Health and Art" or "HEART" group was established. In June 2022, the 4<sup>th</sup> Football Mini World Cup was held at Children's Medical Center, Tehran, Iran. In this event, the hospitalized pediatric patients at the Children's Medical Center (as Iran's team) compete against a group of attending physicians (as the hospital team, with the Wales team clothing), a group of actors (as the HEART team, with USA team clothing), and a group of Iran national football team players (as the USERN team, with England team clothing). The kid's

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team was the winner and they won medals and the trophy at the end of the contest. Annually, the HEART group organizes the International Festival of Paintings for Pediatric Patients (IFPPP). This year, we have received more than 700 paintings, of which after the evaluation by international juries, the top 250 paintings were published in the IFPPP booklet. The top 3 paintings in each age group were awarded the medal and trophy of the festival at the IFPPP closing ceremony. In November 2022, along with the first day of the USERN Congress, the closing ceremony of the 8th International Festival of Paintings for Pediatric Patients (IFPPP) was held (13).

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