

BGU President Personally Oversees: The Interdisciplinary Coronavirus Response Task Force

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The worldwide community is seeking ways to react to the ever-growing threat of the novel coronavirus outbreak (also referred to as COVID-19). Everyday, the news becomes more grave, while uncertainty and disruptions to everyday life become more severe.

Ben-Gurion University feels an acute sense of responsibility beginning with its own academic community, but extending outwards to the entire Negev region, the State of Israel, and the world, guided by an unofficial motto it has always adhered to: "*from the desert, for the world.*"

While Prof. Chamovitz stands at the helm of BGU, he is acutely aware that "Corona" has become an international crisis, disrupting the lives of individuals, families, communities, and countries worldwide. The World Health Organization (WHO) has officially declared Corona a global pandemic. The WHO notification emphasized the fact that the number of cases of COVID-19 outside China has increased 13-fold, and the number of affected countries has tripled, *all within the past two weeks.*

The impact and repercussions of this pandemic extend far beyond the medical and healthcare domains. Corona now affects (and impedes) all aspects of life – mental health and wellbeing, financial markets, employment, homeland security, hotel and tourism, education, transportation, and the basic functioning of society at-large.

BGU President, Prof. Daniel Chamovitz, is personally overseeing a Coronavirus Response Task Force to safeguard (to the maximum extent possible) the health, safety, and wellbeing of the entire BGU community, extending to all students, staff, faculty, campus visitors, and their families. Likewise, Prof. Chamovitz is convinced that BGU's brainpower and ingenuity can have far-reaching benefit, well beyond the confines of the campus, or even the whole of Israel.

BGU has scientific experts, accomplished researchers, and accumulated institutional expertise, which are spread across the University, housed in various departments. The Task Force will consolidate the manifold resources the University has, and will leverage its excellent and close collaborative ties with key stakeholders from realm of public health (e.g. the Soroka Medical Center, the Israeli Ministry of Health, etc.).

The Task Force has now hosted an open forum for all BGU researchers for "*promising projects and swift implementation.*" Over 50 BGU researchers attended in person, and another two dozen attended via video conferencing. Ideas and ingenuity were plentiful, and many existent projects are ideally suited for repurposing, this in order to meet the varied challenges of the Corona crisis.

This is a call for you to join us in partnership, and provide financial support to the Coronavirus Response Task Force here at BGU. Together, we can leverage the talents, inventiveness, and resourcefulness at BGU to make meaningful contributions to the worldwide campaign underway to significantly mitigate and contain "Corona" allowing life to return to normal.

Your support and partnership is critical at this time of crisis as we seek to advance an array of *project ideas and proposed initiatives* currently in the formative stages of development.

BGU is home to:

The PREPARED Center for Emergency Response Research / Prof. Limor Aharonson-Daniel
'PREPARED' was established in 2009 as a BGU research center with the aim to develop and foster applied research activity in the field of disaster and emergency preparedness and response. The Center is comprehensive and interdisciplinary, and health-related emergency situations are one of its major areas of expertise. Prof. Aharonson-Daniel is an acknowledged expert on injury epidemiology and community resilience. She is a full professor in the School of Public Health and Vice President for Global Engagement at BGU.

A sample of new ideas and projects:

Identifying Antibodies and Inhibiting Viral Entry into Cells (Prof. Angel Porgador, Dr. Tomer Hertz, Dr. Ran Taube, Prof. Yonat Shemer-Avni, Dr. Lior Neshet)

Top researchers in the Shraga Segal Department of Microbiology, Immunology and Genetics in the Faculty of Health Sciences together with partners from Soroka Medical Center are collaborating in the worldwide efforts towards developing an accurate assessment of corona risk to infected individuals and efficient therapeutics. They aim to 1.) develop a novel approach which will identify neutralizing monoclonal antibodies capable of inhibiting viral entry into target cells; 2.) develop techniques based on 'ADE' (antibody dependent enhancement) to predict the severity of COVID-19 and the resultant need for ICU treatment. An advanced research lab has been made available to the consortium. This research facility is restricted and controlled at all times and workers are under medical surveillance. As a result, experimentation can take place based on live SARS-CoV-2 virus samples.

Distress, Compliance, and COVID-19 (Prof. Golan Shahar)

A team of researchers spearheaded by Prof. Golan Shahar from the Dept. of Psychology of BGU is studying the behavioral unfolding of COVID-19 in Israel. In addition to Prof. Shahar, who serves as Zlotowsky Chair of Neuropsychology and Director of Clinical Psychology at BGU, the team consists of: Prof. Limor Aharonson-Daniel, Professor of Community Health and Vice President for International Affairs, Prof. Nadav Davidovitch, M.D., Head of the School of Public Health at BGU, Prof. David Greenberg, M.D., Head of Pediatrics at Soroka Hospital and an expert on infectious diseases, and Prof. Itamar Grotto, Vice-CEO of Israel Ministry of Health. The team has contacted a representative sample of Jewish Israeli adults prior to the entry of COVID-19 to Israel, and is assessing them every week, focusing on their anxiety, perception of the crisis, attitudes towards the Ministry of Health, and compliance with the Ministry of Health's instructions. Four assessments have already been conducted, and many more are planned during this unparalleled, sophisticated study. Results will inform policy makers on emotional responses of the Israeli public in the face of the ongoing medical crisis.

Risk Perception and Impacts on Tourism & Travel (Dr. Galia Fuchs and Prof. Yaniv Poria)

Dr. Galia Fuchs conducts research which examines tourism, tourist behavior, travel, and vacation consumption patterns in light of risk perception. Her work incorporates the process of forming risk perception, risk reduction strategies, rationalization, and tactics to minimize danger when visiting highly volatile destination points. Her research is relevant to travel and tourism in times of threat, including security-related situations, natural disasters, and epidemics. Prof. Poria is researching ways in which the tourism industry can overcome major upheavals such as the coronavirus crisis, including exploring solutions to address the economic and social impact of massive employee layoffs. Both researchers are members of the Guilford Glazer Faculty of Business and Management.

An Emphasis on the Elderly (Prof. Mark Clarfield, Dr. Stav Shapira and team)

Prof. Clarfield, M.D., is an expert in care of the aged and gerontology. He was formerly the Head of the Division of Geriatrics at the Ministry of Health, before joining the Faculty of Health Sciences (BGU) and Soroka Medical Center. Dr. Stav Shapira is on the faculty of the School of Public Health. She conducts research in the areas of preparedness and response to emergency and disaster situations. Her focus is on

vulnerable populations (e.g. the elderly, chronically ill, etc.), and she also investigates the integration of different technologies in the emergency arena. She seeks to identify resilience factors that can be used to strengthen the population and to reduce the negative impact of emergencies. With a deep concern for the elderly who are especially vulnerable, this team (with Prof. Limor Aharonson-Daniel and Dr. Paula Feder Bubis) had already begun to establish a system to identify, map, and assist elderly people in need of care in the event of a natural disaster (such as earthquake). This initiative will be repurposed for the current Coronavirus crisis, and will incorporate innovative technological applications to customize an effective system.

A 5-Minute Definitive Test: Lab-on-a-Chip Technology for Coronavirus (Dr. Hadar Ben-Yoav)

Dr. Ben-Yoav is a member of the Dept. of Biomedical Engineering. He works in a well-define specialty area, Lab-on-a-Chip Device Integration. His work incorporates and integrates biology, electrochemistry, engineering, and materials science. He has expertise in the fields of biosensors and bioelectronics. Dr. Ben-Yoav has achieved success with Analytical Micro-Systems for Personalized Health Monitoring. He is confident in his ability to work towards a device which will allow self-testing with definitive results – all within five minutes! He will collaborate with medical researchers with access to, and expertise in, naturally produced antibodies.

New Media and Healthcare Professionals' Experience During the Coronavirus Crisis (Dr. Odeya Cohen)

Dr. Odeya Cohen is a member of the faculty in the Dept. of Nursing and serves as the head of the Masters' Program in Emergency Medicine at the Faculty of Health Sciences. Her research focuses on emergency preparedness and response and on the wellbeing of medical personnel in emergencies. Her proposal is for two collaborative projects with communication experts and researchers from the Department of Software and Information Systems Engineering: (1) to crosscheck formal publications and conversions in the social media on a timeline related to crisis phases; (2) to understand the experience and difficulties of professional health teams worldwide by analyzing the narrative that is reflected in social media.

Bioinformatics and Algorithms Designed for Corona (Dr. Nir Nissim)

Dr. Nissim is a faculty member in the Dept. of Industrial Engineering and Management and conducts his research under the auspices of the Cyber Security Research Center at BGU. Dr. Nissim is extremely knowledgeable in multiple facets of computers, information systems security, and machine learning. He applies his knowledge and expertise in these fields to bioinformatics and can customize computer algorithms for Corona by incorporating medical data (gender, age, blood stats, etc.) and time stamps. Dr. Nissim will collaborate with medical researchers with access to the appropriate data sets.

Medical Emergency Drones (Dr. Stav Shapira, Dr. Jessica Cauchard)

Dr. Stav Shapira is a faculty member in the School of Public Health. She conducts research in the areas of preparedness and response to emergency and disaster situations. Dr. Jessica Cauchard is a member of the Dept. of Industrial Engineering and Management, an expert in human-drone interaction. They are currently conducting research that focuses on integrating Unmanned Aerial Vehicles, known as drones, for increasing access to emergency healthcare and delivering relief supplies such as food, water and medications to vulnerable populations during large-scale public health emergencies such as the current COVID-19 eruption. The study conducts a socially-sensitive exploration of the acceptance of medical relief drones among different vulnerable population groups in Israeli society such as older persons and ethnic minorities. Their ultimate goal is to develop effective strategies aimed to minimize exposure among at-risk populations as well as to prevent the potential deterioration of patients with chronic illness during acute events such as a viral pandemic.

Filtering Out the Virus: The Adaptation of Membrane Science for Virus-Free Air (Dr. Chris Arnusch)

Dr. Arnusch works for the Dept. of Desalination and Water Treatment, focusing his efforts on the design of ultra-effective membranes via the development of polymer compositions. While he currently works on

water purification by developing membrane with anti-bacterial and anti-viral properties, he is convinced that he can concurrently work on air filters with enhanced anti-viral properties. The air filters could then be incorporated into individual face masks, building ventilation systems, and private and public vehicles (e.g. cars and buses). Dr. Arnusch will team-up with medical researchers (immunology experts) to test the air filters and their anti-viral effectiveness.

Additional BGU experts and contributors to the Task Force:

Clinical Microbiology and Public Health / Prof. Jacob Moran-Gilad M.D.

Prof. Moran-Gilad is a clinical microbiologist and public health specialist with broad experience in medical administration and emergency management (he is a member of the Dept. of Health Systems Management). He has key positions with the Israeli Ministry of Health, including being a member of the National Advisory Committee for Outbreak Management. Prof. Moran-Gilad also has unique experience in terms of multi-country disease surveillance.

Soroka Clinical Research Center / Prof. Victor Novack M.D., Ph.D.

Prof. Novack is the founding director of Soroka Clinical Research Center, affiliated to BGU. He is a Professor of Medicine at the Faculty of Health Sciences, an attending physician in the Division of Medicine at the Soroka Medical Center, and a Senior Scientist at Beth Israel Deaconess Medical Center, Harvard Medical School. Prof. Novack is an Associate and Statistical Editor of the European Journal of Internal Medicine.

School of Public Health / Prof. Nadav Davidovitch M.D., Ph.D.

Prof. Davidovitch is the Director of the newly established School of Public Health at BGU. His expertise encompasses both social and environmental epidemiology. He further specializes in health policy, public health, public health ethics, and preventive measures in epidemiological scenarios.

Communication Studies / Prof. Zvi Reich

Prof. Reich is an expert on several interrelated topics in the fields of mass communication, the media, journalism, and news practices. At various times, he was an expert, external consultant for media strategies, and he advised various Israeli government ministries. He has lectured extensively and his topics include, formation patterns of news and crisis communication, and won an award for a co-authored work, "Emergency Communication Guide for Public Entities."

Health Systems Management / Prof. Avishay Goldberg

Prof. Goldberg is the Chair of the Dept. of Health Systems Management. He is also the current Director of the PREPARED Center for Emergency Response Research, and a member of the National Council for Logistics in Health Care (the Israel Ministry of Health). He is an active member of several committees dedicated to promote emergency preparedness in Israel.

Medical Anthropology / Dr. Anat Rosenthal

Dr. Anat Rosenthal is a Medical Anthropologist and a member of the Dept. of Health Systems Management. Her research focuses on healthcare delivery in resource-limited environments in the developing world. She was a Fulbright Fellow at the Dept. of Global Health and Social Medicine at Harvard Medical School. With funding from the Bill and Melinda Gates Foundation, she participated in a project studying the impact of polio eradication campaigns on primary healthcare services in developing countries.