Experimental Israeli Covid-19 Treatments Under Development

Prediction:
- AI-based geographic heat maps (Diagnostics Robotics write-up below)
- Population genetic susceptibility testing (GeneYX & Weizmann Institute write-ups below)
- Epidemiological AI-based remote detection of respiratory pathogens (See Here & Ministry of Defense write-up below)

Detection
- Chest CTs
- Scent recognition sensors (Technion write-up below)
- Smart questionnaires
- Virtual triage tool
- Personalized conjunctivitis classification tool,
- Robots for the microbiology lab
- Lab testing - Ido Amit from Weizmann (See Here)

Treatment
- Cell therapy
- Zinc supplements
- AI-based drug discovery
- Open source ventilators
  - A new app was launched to help teams operate different systems quickly (See Here)
  - Impromptu devices: Unit 81 (See Here) & MDSG (See Here)
- Semi-autonomous disinfection systems (MedCu write-up below)
- Drug discovery
  - Using sophisticated algorithms that seek insights in diversified databases of clinical trials from the past (See Here).
- Telemedicine (Clew Medical Ltd write-up below)
  - Smart call buttons (See Here)
  - Mental wellness for the elderly
  - Modular isolation rooms
  - Home hospitalization, remote monitoring of events; homecare medication tracking (See Here)
- Remote surveillance
  - Military radar from IAI/ELTA with Vayyar and Technion researchers (See Here)

Vaccines
- Vaxil Bio – Identification of a potential coronavirus vaccine candidate (See Here).
- IIBR – A novelcoronavirus vaccine being tested on rodents (See Here).

Risk Assessment and Predictive Spreading Models: Diagnostics Robotics

The Israel-based artificial intelligence company, Diagnostic Robotics, offers a unique solution which leverages data provided by the public remotely, helping individuals determine the right course of action while minimizing direct contact with medical teams and easing the burden on healthcare staff. Healthcare providers engage their clients with a simple symptom's questionnaire via a text message. This remote screening process, visualized via a high-resolution epidemiologic heat-map, enables health officials to gain an ongoing, large-scale assessment of the virus' spreading rate and locations that warrant immediate attention. The AI analytics components of the solution add another layer, providing officials with spreading trends and predictive analysis, which allow them to build models and quickly intervene before communities and health facilities are overwhelmed with infected individuals. The Diagnostic Robotics solution is currently being implemented in Israel in cooperation with the Israeli Ministry of Health, HMOs, Magen David Adom and other emergency services.

Population Genetic Susceptibility Testing: GeneYX

Tel Aviv-based Geneyx Genomex Ltd. developed a cloud-based genetic data bank that is used by universities and research institutes to identify genetic risk or resistance factors for various medical conditions. The company is now conducting a study that will compare severe and mild coronavirus cases to find out whether certain genetic mutations increase or decrease response to the virus. Currently, hospitals in Israel, China, and Italy have signed on as participants in the study, and Geneyx intends to partner with other hospitals that are currently treating coronavirus cases, providing them with a collaborative data management system. After enough samples have been gathered, cases will be categorized—for example, according to the severity of symptoms—and the DNA sequencing process will start. The company also intends to create a database that will map sensitivity to the virus, to give caregivers a predictive advantage

Anti-Virus Glue: Weizmann Institute of Science

The Weizmann Institute of Science located in Rehovot, Israel, stands at the forefront of the endeavors against the spread of the COVID-19 virus. To enter our cells, a virus clings to a specific receptor on the cell surface, and in the case of the COVID-19 this receptor is called ACE2. One of their groundbreaking developments is an anti-virus glue which is comprised of antibodies that attach to the same viral protein associated with ACE2, thus preventing the virus from entering the cell. Antibodies attach very effectively to foreign substances, such as virus proteins, and with their "leg" (the non-target portion) they signal to other arms of the immune system to attack the marked target.

What COVID-19 Sounds Like: Ministry of Defense

Israel's Ministry of Defense is currently developing a groundbreaking technology through Israeli voice analyses startup Vocalis Health, where confirmed COVID-19 patients can check if the virus has a unique vocal fingerprint that can help with diagnosis. As part of the ongoing testing, confirmed coronavirus patients are asked to give voice samples that are compared to those of a control group from the general population. The testing is being conducted at several hospitals throughout the country, with results expected in four to six weeks, according to the company's statement.

Smelling the Disease: Technion - Israel Institute of Technology

Another key player in Israel which works tirelessly in this front is the Technion, based in Haifa, Israel, which has developed the "electronic nose", which allows the diagnosis of diseases through the analysis of the air composition that the subject emits in exhalation. Just as every person has a unique

fingerprint, so every disease has a chemical fingerprint and can be identified with a combination of a chemical and artificial sensor system. The system absorbs exhalation into an instrument and analyzes the air components. It requires a training process, in which it learns to recognize the odor imprint of certain diseases, as dogs train to detect a particular odor. The system has already been taught to detect the breathing of COVID-19 patients through the exhalations of hundreds of patients with a precision of 95% accuracy.

Remote surveillance & Telemedicine: Clew Medical Ltd.

Predictive care startup Clew Medical Ltd. developed an algorithm that collects data from emergency care monitoring devices and alerts the medical team to any deterioration in a patient's condition. As the healthcare system becomes more and more burdened, Clew's technology could point out a patient in danger 6-12 hours before their condition starts to worsen, enabling caregivers to prepare in advance. The system can also monitor patients in remote wards, transmitting information to a central control room staffed by experts who can then provide guidance to endpoint teams. In this way, small hospitals and makeshift care units can benefit from the support of experts. Clew's system is currently in investigative use in Israeli and U.S. hospitals

Special Masks Immune to COVID-19: MedCu

The Israel-based MedCu company has developed a new mask made of copper, which is significantly more resistant to the COVID-19 virus in comparison to any other material. The viruses that come into contact with copper are usually destroyed in just 30 minutes, so will be the case with the COVID-19 virus. While being oxidized, the copper mineral naturally releases ions known as virus and bacteria killers. This innovation is critical as it will no longer be necessary to change the equipment in factories in order to work with the polymeric materials with which the copper is embedded, a fact that ensures very fast production without prior preparation. This is a very important fact when a global epidemic erupts.