

PREDICTING EFFICIENT PERSONALIZED DRUG TREATMENT FOR CANCER ACCORDING TO THE MAPPING OF THEIR PROTEIN BARCODE

Company Name: MED PNC LTD. (MEDPNC).

Country of Registration: Israel.

Key Stake Holders: Goldman Bio; Yissum Technology Transfer Company of the Hebrew University Ltd.

Fields of Activity: Life Sciences/Diagnostics/
Precision Cancer Treatment.

Investment Opportunity:

Website	www.medpnc.com
Included in the prospectus of Goldman Bio Limited Partnership	✓
Estimated Valuation (External, July 2020)	US\$ 10 Million
Planned Investment Multiple	30
Planned ROI	3 Years
Estimated Risk	Medium-High
LinkedIn	www.linkedin.com/company/medpnc
Twitter	twitter.com/medpnc

The Product: A diagnostic test that predicts the optimal personalized treatment combination for cancer patients, according to patient-specific alterations in the structure of their protein network **barcode**.

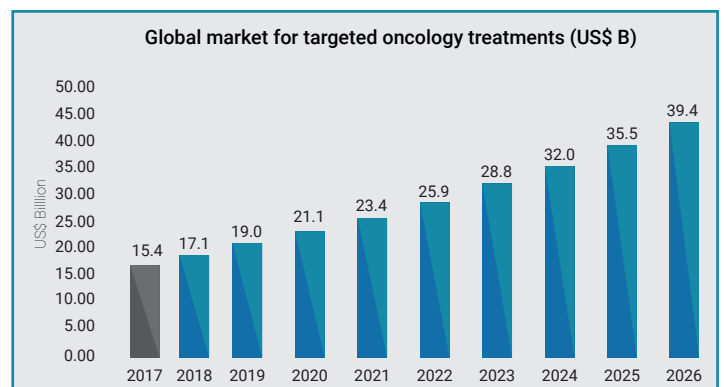
Business Opportunity: The Global Cancer Diagnostics Market size was valued at USD 144.4 billion in 2018 and is expected to register a CAGR of 7.0% over the period 2019 to 2026.

The Global Precision Medicine (Diagnostics/Therapeutics) Market size was valued at USD 40.0 billion in 2017 and is expected to exhibit a CAGR of 9.9% over the period 2018 to 2025.

There were 17 million new cases of cancer worldwide in 2018, and there were 9.6 million deaths from cancer in the same year.

From the beginning of 2019 until end-June 2020, there have been 97 successful IPOs from the biotech sector on the Nasdaq, out of a total of 254 IPOs (approximately 38%). A company in the same field as MEDPNC went public (IPO) in October 2019, and its shares are currently trading at more than 4 times their issue price.

According to studies, targeted treatments for the oncology segment are expected to show significant growth in the coming years. This growth is attributed to the increasing incidence of cancer in both the developed and the developing countries. The growth in the incidence of cancer, as well as only partial effectiveness in dealing with the disease, are expected to cause an increase in the general demand for effective treatments, and for targeted treatments in particular. In addition, the development of research into the genetics and DNA of cancer is expected to improve targeted precision medicine.



The factors that influence the growth of this market are: improvements in private medical systems, new technologies that enable the development of precision medicine and an increase in genetic diseases due to mutations. In addition, the market is being driven by an increase in new drugs being approved by the FDA, and a reduction in cost of genetic diagnostics. The major players in this market are Abbott Laboratories, GE Healthcare, Pfizer, and GlaxoSmithKline.

MEDPNC was selected as one of the 32 "one to watch" companies in the prestigious 2020 Spinoff Prize, organized by Nature Research and Merck.



The Need: Cancer is a devastating disease that takes the lives of hundreds of thousands of people every year. Patients tumor heterogeneity has been established, and it is now known that if two patients suffer from cancer at the same anatomical site, from the molecular point of view these two tumors may be different. Due to disease heterogeneity, standard treatments, such as chemotherapy or radiation, are effective in only a subset of the patient population. Tumors can have different underlying genetic causes and may express different proteins in one patient versus another. This inherent variability of cancer lends itself to the growing field of precision and personalized medicine (PPM), in order to be able to link these differences to effective therapies. It is clear that PPM cancer treatments can result in immense benefits to individual patients, as well as to healthcare systems. Some individuals will only require one type of drug, but most often, a combination of drugs have to be used to tackle the resistant nature of cancer. It is necessary to identify the specific characteristics of each individual tumor in order to be able to predict optimal treatment. Genomic data is inadequate for this purpose, as it does not fully reflect and provide the actual active information that can be obtained from investigating and analyzing the role of proteins (the functional molecules within the cells), and their network relationships.

The Solution: Tumors are biological systems in which the balanced state has been disturbed due to genomic and environmental constraints. MEDPNC has developed an algorithm based on the information-theoretic approach, that facilitates the detection of unbalanced protein networks and creates a personalized "barcode" for every patient, capable of predicting the efficacy of various optional treatments and their optimal combination. The technology integrates cancer biology into a thermodynamic-based information theoretic strategy that, rather than searching for what makes tumors similar, addresses each tumor individually. The algorithm maps every malignancy precisely and unbiasedly according to the protein network reorganization in each tumor. This high-resolution map contains essential information for predicting the response of the tumor-specific network to different therapeutic modalities. MEDPNC's evaluation of the altered protein network structures in each tumor is crucial in order to significantly improve the accuracy of the design of patient-specific combination treatments, and will result in increased patient survival. Dr. Nataly Kravchenko-Balasha and her team from the Hebrew University of Jerusalem are the developers of the technology.

Status:

- **Present Status:** Preclinical POC studies - showing that predicted drug combinations show improved results in treating Triple Negative Breast Cancer (TNBC). Further ongoing studies in melanoma, lung and ER Positive breast cancer are showing encouraging results.
- **Forthcoming Milestones:** Preclinical studies and barcode match investigation; Helsinki approval and samples collection; clinical trials and regulatory approval.
- **IP:** A Method for Selecting Patient's Specific Therapy PCT/IL2019/050474 - Filed License Agreement with Yissum Technology Company of the Hebrew University.

Business Model:

- **Sales Strategy:** Sales planned through distributors, medical insurance companies and health maintenance organizations.
- **Exit:** IPO/M&A.

The Team:



Dr. Nataly Kravchenko-Balasha, CEO, CTO;

Dr. Kravchenko-Balasha took up her position as an assistant professor for Biophysics and Cancer Research at the Hebrew University of Jerusalem (HUJI) in 2015, after her post-doctoral studies in Biophysics and Physical Chemistry at Caltech, USA. (2011-2015). Previously she received a B.Sc. with excellence in Biology and Mathematics as part of the Honors Program "AMIRIM" for outstanding students at the HUJI, and a Ph.D. in Biochemistry, also at the HUJI. She has received several prestigious awards, such as Info-Metrics Prize, USA, in 2015, and EMBO Fellowship, Europe in 2012, as well as several research grants including from the National Institutes of Health, NIH, USA.



Prof. Raphael D. Levine, Member of Medical Advisory Board;

Prof. Levine is the Max Born Professor of Natural Philosophy at the Hebrew University of Jerusalem. He is a theorist, and one of the pioneers and a leader of worldwide recognition in the modern theory of chemically reactive collisions and unimolecular reactions. He has played a central role in the application of the principles of quantum mechanics to the description of physical change in a reaction from a microscopic point of view, introducing many new concepts and terms which have become standard to this area.



Prof. Tamar Peretz, Medical Director;

Prof. Peretz is a distinguished oncologist and researcher at the Hadassah Medical Center, Jerusalem, specializing in breast cancer, cancer genetics and personalized medicine. She is the Head of the Sharet Institute of Oncology at the Hadassah Medical Center and a professor at the Hebrew University-Hadassah Medical School. Prof. Peretz has published over 140 articles in prestigious scientific journals.



Dr. Gil S. Pogozelech, Chairman;

Dr. Pogozelech is highly experienced, and for 20 years has been leading successful technology startups. Now specializes in the development, integration and commercialization of Life Science technologies, with emphasis on the field of personalized medicine. Previously specialized in the management of complex development teams in algorithms and engineering and has registered and co-registered a number of patents.

