



# TARGETED CHEMOTHERAPEUTIC TREATMENT FOR OVARIAN CANCER

**Company Name:** Diagyn Ltd.

**Country of Registration:** Israel.

**Key Stake Holders:** Goldman Bio; Dr. Raphael Nir; Mr. Shamir Kaminsky; Mr. Avner Shahar; Dr. Roy Farfara.

**Fields of Activity:** Oncology/Drug Delivery.

**The Product:** A nanoparticle-based compound for targeted chemotherapy in women diagnosed with ovarian cancer.

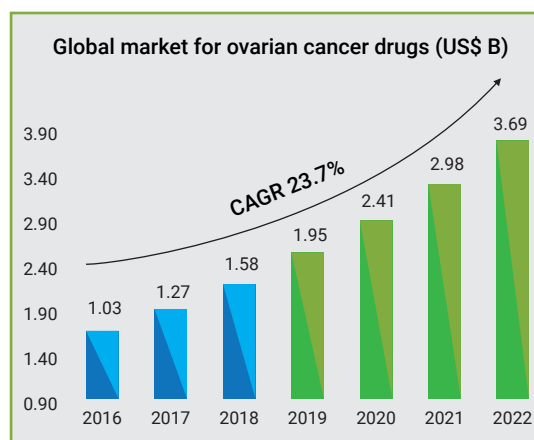
**Business Opportunity:** The ovarian cancer market was valued at US\$ 1.8 Billion in 2018 in 7 major markets (US, France, Germany, Italy, Spain, UK and Japan), and is expected to grow to US\$ 6.7 Billion over the next 10 years. From the beginning of 2019 until mid-June 2020, there have been 97 successful IPOs from the biotech sector on the Nasdaq, out of a total of 254 IPOs (approximately 38%). A company in the same field as Diagyn went public (IPO) in May 2020, and its shares are currently trading at 2.7 times their issue price.

According to a report by Grand View Research, in 2016 the ovarian cancer drugs market amounted to about \$ 1.03 Billion and in 2022 it is expected to amount to about \$ 3.69 Billion. Accordingly, the CAGR for the years 2016-2022 is expected to amount to about 23.7%. Rising incidence of ovarian cancer, owing to growing geriatric population and unhealthy lifestyles, is one of the key trends escalating market growth. Besides this, increasing adoption of novel drugs and the presence of strong developmental pipelines are estimated to positively reinforce ovarian cancer treatment market. According to the WHO, 300,000 new cases of ovarian cancer were reported worldwide in 2018. In addition to the findings that this cancer is more common in the elderly population, it is also related to high body fat percentage. According to the company's management, epithelial ovarian cancer is the most aggressive form, effecting about 200,000 women a year. North America is the region with highest incidence of ovarian cancer, followed by Europe. There are about 24 drugs that are given in response to ovarian cancer, and their usage varies from country to country. The major players in the global market for ovarian cancer drugs are AstraZeneca, Roche, Tesaro, and Clovis Oncology.

**The Need:** Ovarian Cancer is the seventh most common cancer in women, with approximately 200,000 new cases are diagnosed each year. The incidence rate of ovarian cancer is higher in peri-post menopausal women. There are different types of ovarian cancer, which include epithelial tumors, germ cell carcinoma tumors, stromal tumors and small cell carcinoma of the ovary. In 2018, 184,799 deaths occurred due to ovarian cancer, accounting for 4.4% of the entire cancer-related mortality among women. Epithelial Ovarian Cancer (EOC) is the most aggressive forms of ovarian cancer, with recurrence in more than 70% of the patients initially achieving response to treatment. The disease develops insidiously with few symptoms until the tumor has become large or even until the cancer cells have disseminated to other organs which is responsible for the high mortality rate. Another factor that delays the diagnosis is the fact that the ovaries are deep within the pelvic cavity and difficult to palpate. At present there is no effective treatment available for Stage IV (advanced stage) of EOC, and the five-year survival rates are below 20%.

## Investment Opportunity:

Website	www.diagyn.com
Included in the prospectus of Goldman Bio Limited Partnership	✓
Estimated Valuation (External, July 2020)	USD 7.2 Million
Planned Investment Multiple	25
Planned ROI	5 Years
Estimated Risk	High
LinkedIn	www.linkedin.com/company/diagyn



**The Solution:** Diagyn has developed DIG790, an innovative drug delivery aimed at improving the efficacy of ovarian cancer treatment, comprising of mesoporous silica nanoparticles (MSNP), loaded with Docetaxel and capped with Cyclodextrin, DIG790 exerts targeted chemotherapeutic action only when exposed to high levels of  $\beta$ -galactosidase in a low pH environment, as found in Epithelial Ovarian Cancer cells. This targeted treatment may increase survival of women suffering from ovarian cancer whilst minimising adverse side effects. Docetaxel is an antineoplastic agent approved as a first line treatment for several types of cancers, including ovarian cancer. The unique design of DIG790 developed by DiaGyn increases the Docetaxel concentration in the cancer cells due to its slow release, active and passive targeting mechanism.

Some of the clinical symptoms associated with the spread of the disease include gastrointestinal discomfort or bloating together with early satiety, as well as vaginal bleeding, which sometimes can be mistaken for other gastrointestinal diseases. In cases of advanced EOC, intraperitoneal (IP) infusion of DIG790 nanoparticles should increase patients' overall survival when compared to standard chemotherapy. Over the last decade a shift towards neoadjuvant therapy in various types of cancer, including breast cancer, has shown a decrease in morbidity and mortality. Neoadjuvant therapy should be considered as an option in women that are not candidates for debulking surgery. Use of DIG790 as neoadjuvant therapy may reduce tumor size and allow for less extensive surgery for tumor removal.

**Status:**

- **Present Status:** POC using TNBC Cells.
- **Forthcoming Milestones:** Drug design, preclinical studies, clinical trials and regulatory approval.
- **IP:** Multi Drug Composite, Preparation Methods and Uses Thereof PCT/IL2017-050269 – National Phase

**Business Model:**

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

**The Team:**



**Dr. Diana Ickowicz, Co-CEO & CTO;**

With a MSc and PhD in Medicinal Chemistry from the Hebrew University of Jerusalem, Diana has accumulated more than a decade of experience in the field of pharmaceutical research and management. Diana has a wealth of expertise in the field biodegradable polymers for drug delivery and proficiency in project management.



**Prof. Raphael Catane, Medical Director;**

Prof. Catane is a world renowned clinical oncology and radiotherapy specialist. He has held a number of distinguished positions, including having previously served as president and director of the Oncology Institute at Sheba Medical Center, acting head of the Sharett Institute of Oncology, and director of the Institute of Oncology at Shaare Zedek Medical Center. His previous positions also include senior postings at several US research and medical institutions, such as the National Institutes of Health. Prof. Catane has actively planned and managed numerous clinical studies and has been published in many peer-reviewed journals and professional textbooks.



**Dr. Roy Farfara, CO-Founder;**

Dr. Farfara received his MD degree in Medicine from the Technion, and has practiced as a physician and a urologist surgeon for 15 years, during which he was involved in proteomics research of renal cancer, urinary exosomes and was the principal/co-investigator in clinical and medical device trials. Roy has 10 years of experience in the pharmaceutical industry, founding and co-founding several biotech and pharma companies, leading the projects in various stages from inception, patent and grant writing to preclinical and clinical trials.



**Dr. Raphael Nir, Partner;**

Received his PhD in Biotechnology at Tel-Aviv University. A scientist, entrepreneur and angel investor with over 27 years of experience commercializing recombinant cytokines and pre-clinical contract research services. He is the co-founder of two pre-clinical contract research organizations: SBH Sciences and Woodland Biosciences; and three biotechnology companies: Karyopharm Therapeutics (NASDAQ: KPTI), Galectin Sciences and Alma Bio Therapeutics.

