

# Healthcare **Tech** OUTLOOK

GENETIC DIAGNOSTICS EDITION

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EUROPE SPECIAL



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# BIOPTICKA LABORATORY

Fighting Cancer with  
Industry-Leading Molecular  
Diagnostic Tools

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By Alex D'souza

**M**olecular diagnostics is emerging as one of the key drivers of precision medicine in the healthcare sector. A step up from conventional testing methods, molecular diagnostics is increasing the sensitivity and specificity by detecting target molecules present at very low concentrations, therefore enabling faster and more accurate detection of diseases at earlier stages. It is unravelling the more nuanced aspects of cancer biology and facilitating personalised treatment. But the utilisation of molecular techniques in everyday cytology and biopsy practice is still limited—whether due to the need for advanced sequencing technology or the high costs involved in molecular testing.

Tackling these challenges head-on and making molecular diagnostics accessible to physicians across Europe is Biopticka Laboratory. By leveraging the latest next-generation sequencing (NGS) systems that can rapidly analyse the entire genome or targeted regions of DNA and RNA, the laboratory conducts a vast range of tests. Biopticka regularly updates its NGS systems with the newest oncological discoveries to improve the accuracy of these tests. Moreover, being able to regularly accumulate a large volume of samples for molecular testing enables Biopticka to perform these analyses for a highly competitive price. For all these reasons, several large multinational pharma companies have chosen Biopticka as their reference laboratory in their effort to find patients eligible for various targeted treatments these companies offer.

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**We combine the power of high-tech testing infrastructure and highly skilled pathologists and molecular biologists to facilitate molecular diagnostics at cost-effective rates for physicians, pharma companies, and their patients**

**Healthcare**  
**Tech OUTLOOK** TOP 10  
**GENETIC DIAGNOSTICS**  
SOLUTIONS PROVIDERS IN EUROPE - 2022



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molecular biologists to facilitate molecular diagnostics at cost-effective rates for physicians, pharma companies, and their patients,” says Michal Michal, founder and owner of Biopticka.

Besides molecular genetics, Biopticka’s offerings include gynaecological and non-gynaecological cytology and biopsy along with immunohistochemical testing for all surgical, dermatological, gastroenterological, ENT, gynaecologic and other practices and hospitals. To make that happen, the laboratory leverages its bespoke automation software to streamline all the manual processes from sample arrival to report generation. Complementing that is the in-house analytics software that sifts through the vast repositories of data to optimise its everyday workflows, cut down costs, and increase efficiencies. Even the reporting is digitalised for the convenience of clients. While one copy of the report is paper mailed to the client’s address, additional copies can be quickly accessed from the laboratory website. The clients can also request the report in the form of electronic data to be transferred directly to their healthcare information systems. Using these capabilities, Biopticka is successfully bringing greater accessibility, accuracy, speed, and cost-effectiveness to molecular diagnostics in cytology and biopsies.

Biopticka has followed a path of constant innovation and unwavering commitment to reach this point of becoming a go-to laboratory for physicians and pharma companies. From three pathologists conducting biopsies with a single microscope in a small apartment to a laboratory that spans 8,500 square meters across several buildings, Biopticka has traversed a long way to foster the shift from ‘reactive’ to ‘proactive’ in healthcare and assist countless physicians to save lives through precision treatments.

### Facilitating Accurate Diagnosis for Cancer Treatment

Biopticka has brought significant contributions and progress to oncology especially in the Central and Eastern Europe. The laboratory’s testing services enable physicians all across this region to get a more holistic and deeper view of tumours, and therefore to better treat their patients. Apart from offering diverse molecular tests for diagnostics and precision medicine, the physicians can also test for germline mutations such as in Lynch syndrome, familial adenomatous polyposis, Brooke Spiegler syndrome, and many others. To greatly enhance the diagnostic accuracy in certain areas such as neuropathology and sarcoma pathology, this year Biopticka will introduce genome-wide methylation profiling into its repertoire of



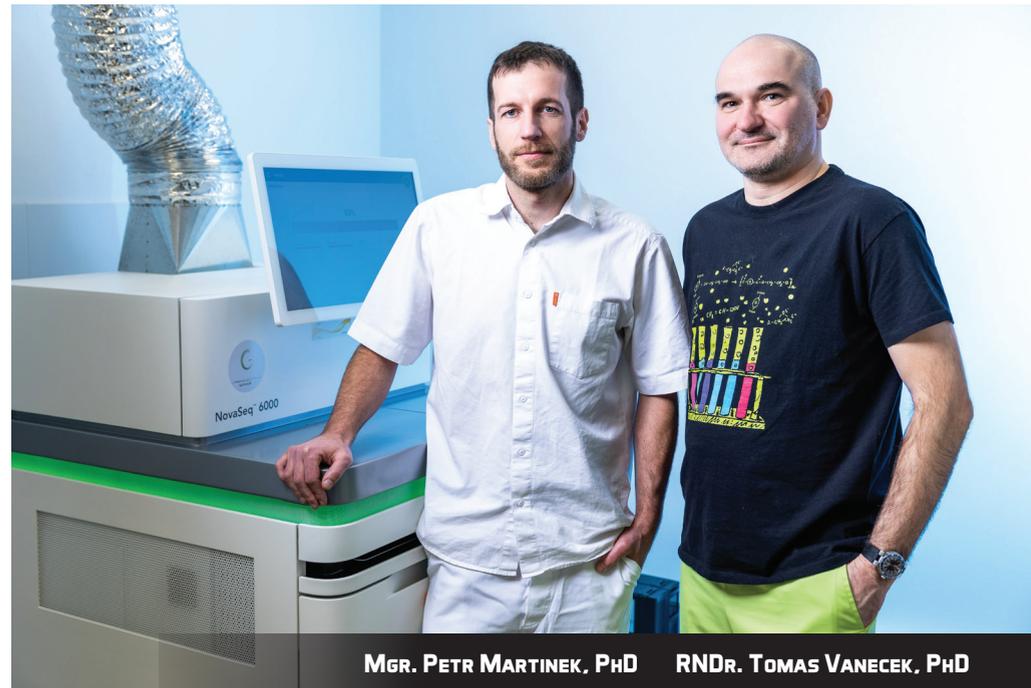
MUDr. IVA KINKOROVÁ LUNACKOVA, MIAC

molecular tests. “Currently, we process over 160,000 biopsies and 900,000 cytologies, conduct 80,000 immunohistochemical stainings, and perform over 60,000 molecular genetic analyses including around 4000 NGS tests,” says Michal. In addition, over 10,000 consultation biopsies are sent to Biopticka by pathologists from around the world every year, helping them to diagnose the most challenging tumours.

Especially in the field of gynaecology, the laboratory proves to be a boon for physicians treating cervical cancer patients. It has brought forth a new range of cervical screening and gynaecological cytology approaches. Among Biopticka’s offerings for cervical cancer diagnosis, the liquid-based cytology (LBC) ThinPrep Pap test is becoming a popular option among women seeking a less invasive alternative to the conventional Pap smear test. Unlike Pap smears, which can give false negatives and false positives due to inadequate sampling and slide preparation, LBC facilitates more comprehensive testing. The rinsing of cervical cells in the liquid removes blood and other potentially obscuring material, thus facilitating a clearer analysis of the cells. To further lower the chances of inaccuracies, Biopticka also conducts DNA and mRNA HPV

tests to further analyse the sample and detect the cervical cancer-causing human papillomavirus. In addition, the laboratory also offers tumour suppressor genes methylation status analysis in patients with high-risk HPV to select those with a higher likelihood of early progression to invasive cancer. Owing to such comprehensive and meticulous cervical cancer screening methods offered by the laboratory, today, gynaecologists are able to efficiently treat female patients (especially young women) and provide them with the treatment they need to achieve early recovery.

The latest feather in the cap for Biopticka is its contribution in alleviating the adversities faced by healthcare workers during the pandemic. By leveraging its 28 years of testing experience, Biopticka swiftly built its own COVID-19 sampling



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site and processed more than 420,000 of samples from hospitals and other medical facilities across the Czech Republic. Going a step further, it also dodged the global shortage of testing materials during the pandemic by facilitating the validation of multiple tests from various vendors across the market.

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### A Beacon of Hope for Cancer Patients

The credit for such accomplishments goes to the combined knowledge and expertise of the laboratory’s workforce. Biopticka has a team of experienced administration workers, skilled lab technicians, molecular biologists, and pathologists that hold sub-specialisations in all aspects of diagnostic surgical pathology. Six of Biopticka’s pathologists participate in the writing of WHO classifications of tumours, which is the go-to literature when diagnosing tumours worldwide. The company’s team also cooperates with clinics, large faculty hospitals, and multiple pathology departments from all over the world on research projects, which result in over 70 research articles per year in the most prestigious journals in the field. Biopticka’s access to such a large volume of biopsies has resulted in accumulation of over 3,000,000 tumours in its tumour registry, including the rarest tumours ever described in surgical pathology.

With an aim to further fuel its innovation, lower the costs and stay ahead in the molecular diagnostics space, Biopticka has acquired large shares in Slovak laboratory Cytopathos and a giant Ukrainian medical laboratory CSD. By collaborating with prestigious research centres, Biopticka will pave the way for new cancer detection models. These developments certainly bode well for the cancer diagnostics space and will play a crucial role in reducing the number of cancer victims across Europe. **HT**