
eurofins
Biomnis
Press
kit
2021

Contents

Eurofins Biomnis, driving innovation in specialised clinical pathology

Screening, diagnosis, predicting response to treatment, monitoring patients... clinical pathology is central to making treatment decisions. Eurofins Biomnis, active in the healthcare sector, offers an arsenal of biological tests, with over 3,000 different examinations to meet the needs of healthcare professionals and ensure better care for patients. Eurofins Biomnis is also committed to equal access to innovative tests that fulfil an ever-increasing number of medical needs.

Originating from the laboratory founded by Marcel Mérieux in 1897, the Eurofins Biomnis laboratory, the European leader in specialised laboratory medicine, performs specialised or complex tests requiring highly qualified experts and sophisticated equipment that local or hospital laboratories are unable to perform in France and abroad.

This mission entails a heavy responsibility towards doctors and patients: absolute reliability, impeccable traceability, equal access to the most innovative tests in France and internationally, and constant scientific monitoring. As such, written into the very DNA of Eurofins Biomnis are the following two focuses: **industrialisation of processes** to ensure shorter turnaround times for results, using the best methods and under the best economic conditions, and **innovation to shape the clinical pathology of tomorrow** and offer high added value to prescribers and patients.

Through our values of commitment, excellence and innovation, Eurofins Biomnis is recognised as the partner for healthcare professionals for improving the patient treatment.

Eurofins Biomnis' **expertise** is based on a mastery of advanced techniques and the excellence of our scientific teams, with clinical biologists specialising in every field. This allows us to offer **tests covering over 30 different specialities** such as oncology, prenatal medicine and preventive health testing, as well as infectiology, toxicology, immunity, haematology and genetics. With this expertise and our organisation, the laboratory is also able to develop biological diagnostic techniques rapidly, to adapt to any emergency situation, such as the schistosomiasis epidemic in Corsica in 2014, the Zika pandemic and, most recently, the Covid-19 pandemic (see Covid Mobilisation press release).

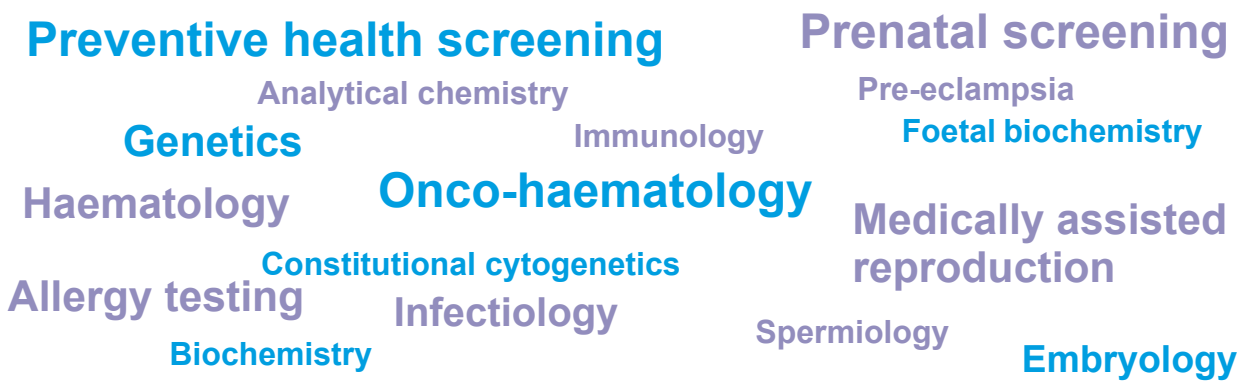
Innovation is the driver of Eurofins Biomnis' growth. A third of investment is channelled into the development of even more tests with very high medical added value. Eurofins Biomnis conducts rigorous scientific monitoring and works in close collaboration with healthcare professionals who are experts in their fields and with specialist groups, in order to learn about the new medical needs of prescribers.

Finally, **healthcare equity** is a value that is close to Eurofins Biomnis' heart. Anyone living in a rural area with less access to medical facilities or whose resources are more limited should be able to access the most innovative tests to ensure better treatment. This commitment is expressed in at least three ways: perfectly coordinated logistics, the development of efficient computer systems, and efforts to ensure that tests can be reimbursed. The logistics provided by **Eurofins Biomnis allows samples to be collected across the whole of France under secure conditions and for tests to be conducted within optimal turnaround times.** The development of innovative IT solutions ensures the traceability of the growing number of samples processed and complete confidentiality when transmitting results. This organisation allows the laboratory to analyse over 39,000 patient samples per day. Finally, in order to facilitate reimbursement and thus maximise access to new innovative tests, Eurofins Biomnis is constantly consulting with public authorities, which ultimately have the sole power to decide whether these services should be classified as reimbursable by *Assurance Maladie*.

"Clinical pathology only makes up 2.5% of healthcare spending despite being involved in 70% of diagnoses. Eurofins Biomnis is shaping the medicine of tomorrow. Enhancing future patient care, that is what drives us".

FRANÇOIS CORNU, PRESIDENT OF EUROFINS BIOMNIS

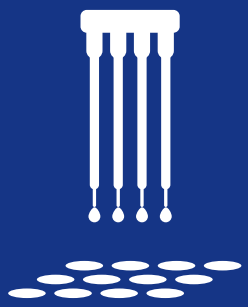
Fields of expertise



Facts and figures

Over 120 years
of expertise

3,000 tests
available

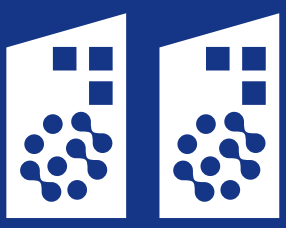


39,000 analyses
performed per day

662 employees including
41 biologists
and a technical team of
nearly **355** individuals
(technicians and technical
coordinators)

5,000 local partner
laboratories in France
(medical laboratories or
hospitals)

International partners in
over 45 countries
worldwide



2 specialist sites

Ivry-sur-Seine (94) for high volumes of analyses with short turnaround times

Lyon (69) for highly specialised analyses, in particular in genetics, oncology and infectiology

Tailored services for partner laboratories

Eurofins Biomnis is committed to assisting local partner and hospital laboratories by offering them innovative services, tailored to make their day-to-day work easier.

Assistance from expert teams

Eurofins Biomnis has **specialist clinical pathologists** available to provide information to laboratories and doctors, right from the prescription of analyses to the interpretation of results. They also reach out to healthcare professionals, offering them **medical training** and scientific information meetings. In addition, dedicated consultants assist partner laboratories with their quality measures by providing advice on how to comply with ISO 15189 accreditation. As such, Eurofins Biomnis regularly offers innovative services, such as its latest, **free mobile app** allowing pathologists, phlebotomists, nurses and midwives to simply and intuitively access, online or offline, the necessary information to take samples more reliably.

Simplified exchanges

Eurofins Biomnis provides its partners with **Eurofins Biomnis Connect**, a dedicated, customisable portal that is accessible online and intended to facilitate day-to-day exchanges. This space gives direct and secure access to test results and the catalogue of medical analyses offered by the laboratory. Via Eurofins Biomnis Connect, it is also possible to **order sampling material and view your invoices.**

Moreover, Eurofins Biomnis supports local clinical pathology through its **F@st-Lab** solution, an exclusive programme transforming its analysis management process based on **paperless transactions**. With F@st-Lab, the pathway for tubes is **digitalised**. Scanned by the partner laboratories (local medical analysis laboratories and hospitals), all tubes with the same temperature requirement can be placed in a single bag, without the need for an associated document. This simplifies the preparation of shipments for the laboratories, while also improving the reliability of all patient dossier data and the technical processing of samples.

Adapted logistics

Rapidity, quality and traceability are core pre-analytical requirements for specialised pathology. Moreover, the **transport of biological samples at controlled temperatures** must comply with the applicable standards, such as NF EN ISO 15189, the standard on road (ADR) or air (IATA) transport of hazardous materials. In order to fulfil these specific requirements, Eurofins Biomnis has formed a partnership with **Star Service Healthcare**, a pioneer in ISO 9001 certification and Certipharm.

3 questions for François Cornu, President of Eurofins Biomnis

You are at the helm of a major player in clinical pathology. How is the market organised currently and where does Eurofins Biomnis stand?

The position of clinical pathology in the healthcare pathway has changed massively in recently years and the sector has undergone significant restructuring. It is important to remember that this discipline as a whole came about in 1975 in France with the creation of local laboratories. While the number of sites open to the public has remained stable over the last 20 years (around 4,000 laboratories), the number of technical platforms performing the analyses has reduced significantly, currently standing at around 500. Eurofins Biomnis **acts as a partner to these laboratories but also public institutions such as hospitals, for all specialised, complex and rare examinations that require special skills or equipment.** We set the standard for the market in France and are the leader in Europe.

What do you think is the main challenge facing the sector?

Without a doubt, it is supporting the development of precision medicine. For precision medicine, it is no longer enough to simply treat the disease; we must also predict and prevent diseases. From internal, general medicine, medical specialities have become hyperspecialised and at the cutting-edge of current knowledge and technology. Take orthopaedic surgery as an example: you have specialists for hands, knees, feet, etc. This is true for all fields of medicine and in recent years there has been considerable progress in biology and imaging.

Diagnoses are made earlier and are more accurate, allowing much more specific classification of diseases so that treatment can be improved. Semiology[1] has given way to diagnostic technologies and clinical pathology has become widespread, contributing to 70% of diagnoses and medical decisions. **Eurofins Biomnis' goal is to support this specialisation by offering innovative tests, some of which have been developed within the Eurofins Group itself.** Clinical pathology only happens with a doctor's prescription, with the doctor needing to remain informed on the latest biological tools available to them and understand them in order to provide optimal care for their patients. Our mission then goes beyond simply the results of analyses, to constantly being up to date on scientific information via conferences, publications, publishing scientific resources or even videos by experts.

How do you see the market developing in the coming years?

The scope of development is enormous, especially for predictive and personalised medicine. **Mastery of decrypting genomic data offers massive potential for diagnostics,** however its use is a concern for society in terms of the use and purpose of this new information. Within Eurofins Biomnis, we want to include these new tools in our portfolio so that we are ready and can assist authorities with making decisions. For example, we have been offering prenatal screening of foetal DNA circulating freely in the maternal blood for five years now and have recently published a study* showing the benefits of the test, which is now reimbursable under the French Health System. Prenatal diagnostic screening tests are governed by strict regulations in France; however, our role is to support healthcare professionals in demonstrating the benefits that certain tests can have.

In **oncology**, the emergence of new techniques **means the possibility of earlier detection** and, in cases of cancer diagnosis, **personalised treatment and monitoring of its effectiveness.** Demand has become so high that the limitations of the publicly funded organisations are being demonstrated and resulting in extended diagnostic turnaround times, clearly harming patients' chances. Here too, we have to demonstrate that a player like Eurofins Biomnis absolutely has a place in healthcare provision.

Alongside traditional medicine, focused around pathology, **there are calls for individuals to be active participants in their own health,** in their lifestyles and in the ageing process. Because of this, **we offer a range of preventive health laboratory tests** to meet this new need. My bet is that predictive and personalised clinical pathology will only continue to grow in the coming years.

Eurofins Biomnis/Malakoff Médéric study on the use of NIPT (non-invasive prenatal testing) for aneuploidy in free mediums. Communication No. 3. 42nd National Conference. CNGOF Strasbourg, 4 to 7 December 2018

"Mastery of decrypting genomic data offers massive potential for diagnostics..."

[1] *Semiology is the study of subjective (symptoms) and objective (signs) disease phenomena that characterise a disease.*

Prenatal expertise

Eurofins Biomnis, active in the field of medically assisted reproduction and prenatal screening.

Medically assisted reproduction (MAR)

One of the latest innovative tests developed in the field of MAR is a result of a collaboration between Eurofins Biomnis and infertility specialists at Grenoble CHU: **exome sequencing for the genetic diagnosis of male infertility.** This test is based on next-generation sequencing of all human genome exons, which is used to identify the causal mutation(s) behind severe male infertility. The results of this test allow a genetic diagnosis to be made and, in certain cases, establish a prognosis of success for a testicular biopsy and *in vitro* fertilisation, or whether to direct the couple towards other alternatives (sperm donation, adoption, etc.). With this novel approach, advances in genetic science can be actively taken into account. All relevant genes are analysed and results can be interpreted while also factoring in the latest discoveries.

Moreover, Eurofins Biomnis, in collaboration with Eurofins Fertilité, has developed genuine expertise in profiling female fertility via three blood tests measuring the patient's hormone cycle, ovarian reserve and menopausal status. These tests allow an assessment of their stage of fertility and, where appropriate, allows the couple to be directed towards other alternatives, such as adoption.

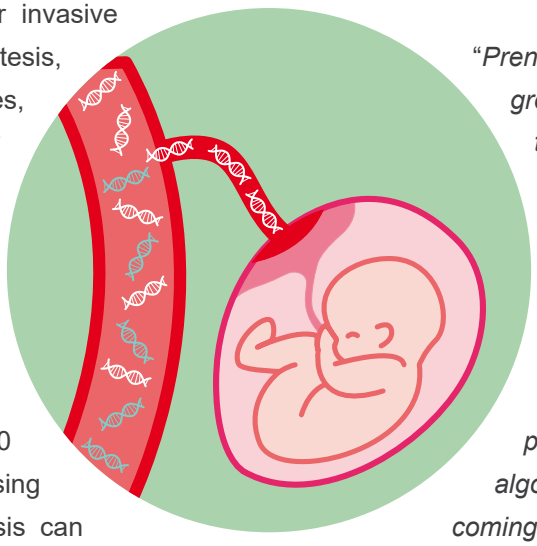
An experienced laboratory at the cutting edge of prenatal screening and diagnosis

Eurofins Biomnis has considerable experience in prenatal screening and diagnosis, with dedicated tests for the pregnant woman and foetus. Beyond more routine tests, the laboratory offers two innovative tests.

The ADNIcT21 test (free circulating DNA, testing for trisomy 21 or non-invasive prenatal testing) is a major advantage for pregnant women presenting with a risk of trisomy in the foetus. Without risk to the foetus, NIPT can allow the detection of the main forms of trisomy, 13, 18 and 21, from a single sample of maternal blood.

The test is based on the presence of foetal DNA circulating freely in the maternal blood, which, combined with next-generation sequencing allows any over-representation of copies of chromosomes 13, 18 and 21 in the foetus to be detected. Its specificity and sensitivity are above 99%, avoiding the need for invasive procedures, such amniocentesis, in the majority of cases, which in some cases may result in foetal death. Nevertheless, in the event of a positive NIPT result, this test will be necessary to confirm the diagnosis. As such, in 2019, Eurofins Biomnis performed 200 foetal karyotyping tests using amniocentesis. This diagnosis can also be made via chorionic villus sampling, a trophoblast (placenta) biopsy. These two tests are especially recommended in pregnancies where one of the parents carries a chromosomal abnormality, or when there is a hereditary family illness for which prenatal screening is possible.

The use of freely circulating foetal DNA also allows Eurofins Biomnis to offer the **foetal rhesus D genotyping test,** which can identify the risk of rhesus incompatibility between the mother and foetus. This test can be performed from the first trimester of pregnancy for any rhesus D-negative pregnant women. It allows the rhesus genotype of the foetus to be detected from a blood sample taken from the mother. In the event of the foetus being rhesus negative, there is no risk of incompatibility and this test allows injections of anti-D immunoglobulin during pregnancy to be avoided. Conversely, if the foetus is rhesus positive, the prescription of immunoglobulin is warranted to avoid complications if the patient was not already immunised during a previous pregnancy.

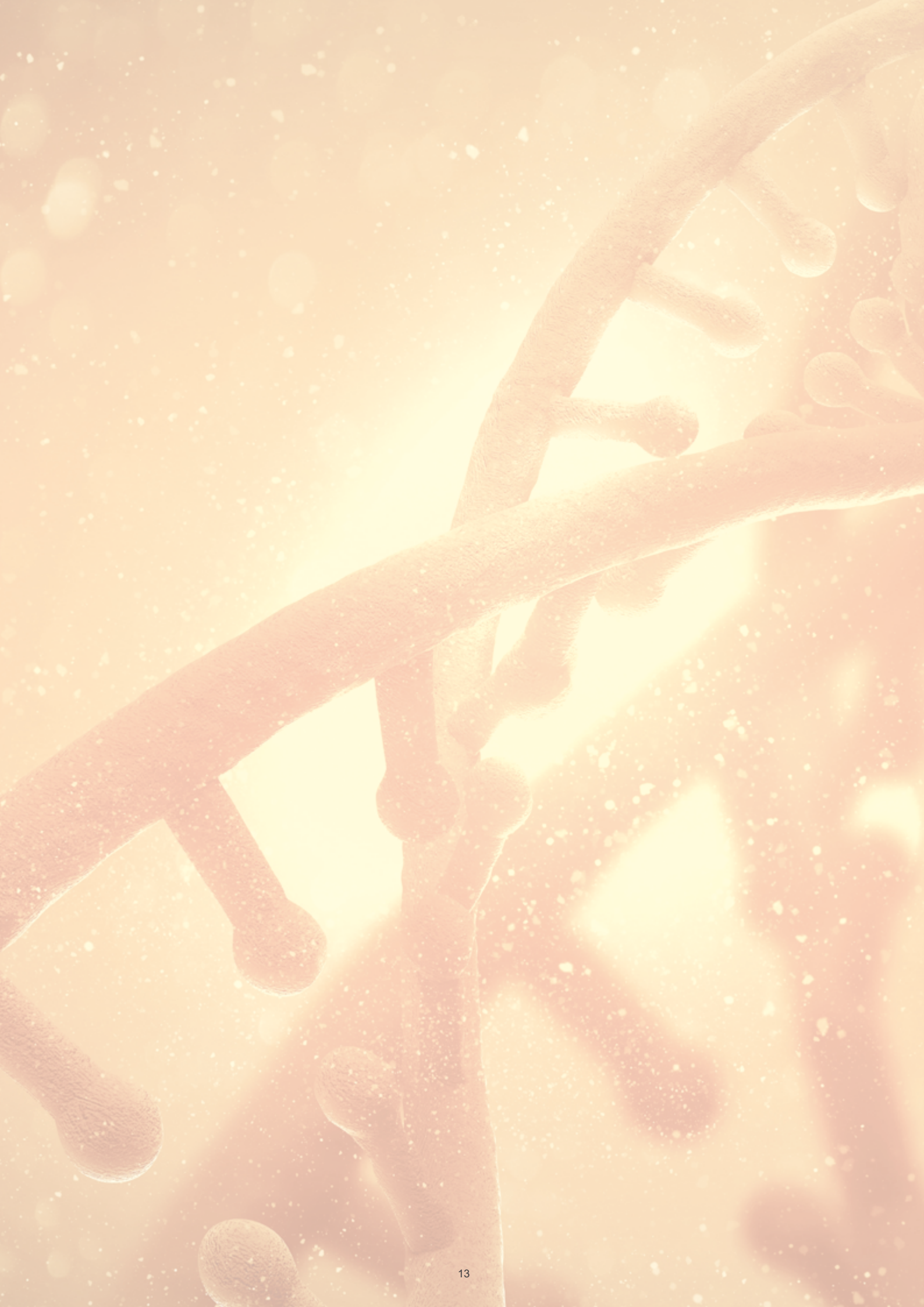


"Prenatal pathology has a great future ahead of it, as the technical expertise is very advanced. Next-generation sequencing, the use of freely circulating DNA, the discovery of molecular markers and the development of high-performance predictive algorithms should allow, in the coming years, screening of more risks and illnesses and with greater precision: risk of premature birth, intrauterine growth retardation, pre-eclampsia,

genetic diseases, etc., provided that regulations are appropriate for the technical possibilities. To this end, Eurofins Biomnis is ready to support regulatory development for pre-conception genetic screening, which is not permitted in France but is already carried out in other countries. This screening involves testing a couple who wish to conceive for genetic abnormalities that may result in a severe disease in the child, such as cystic fibrosis", explains Luc Druart, a clinical biologist specialising in prenatal diagnosis at Eurofins Biomnis.

"Prenatal biology has a great future ahead of it, as the technical expertise is very advanced. Next-generation sequencing, the use of freely circulating DNA, the discovery of molecular markers and the development of high-performance predictive algorithms should allow, in the coming years, screening of more risks and illnesses and with greater precision".

LUC DRUART
CLINICAL BIOLOGIST AT EUROFINS BIOMNIS



Oncology expertise

Eurofins Biomnis, clinical pathology for targeted therapies

Eurofins Biomnis has a great deal of expertise in the field of clinical oncology. Through major discoveries in basic research and the introduction of new analytical methods, the laboratory is making huge strides towards truly personalised medicine.

As little as 5 or 10 years ago, chemotherapy was standardised for all patients. Today, therapies are targeted according to both the patient and the tumour, and this transition will continue to accelerate, thanks to next-generation sequencing (NGS). This technique allows the analysis of hundreds of genes at the same time, in turn allowing the creation of a genetic profile for each disease and the administration of adapted treatments. Since April 2019, the laboratory has been offering NGS panels targeted for malignant haemopathies (chronic myeloproliferative syndromes, myelodysplastic syndromes, acute myeloid leukaemia and chronic myelomonocytic leukaemia), following the 2017 recommendations from the WHO.

The laboratory also has a comprehensive range of tests for **diagnosis, prognosis and to support the therapeutic management** of a wide range of solid tumours (breast, lung, colorectal and gastric cancers, melanomas, sarcomas, etc.).

"The future of the biology of malignant haemopathies and solid tumours is guided by the technological development happening in the field of molecular biology", explains Benoit Quilichini, doctor and clinical pathologist specialising in oncology at Eurofins Biomnis.

Malignant haemopathies

Within Eurofins Biomnis, several disciplines collaborate for cases of malignant haemopathies: blood and medullary cytology for cell observation, immunophenotyping, acquired cytogenetics and haematological molecular biology. Immunophenotyping allows the characterisation of cells via their surface antigens and the identification of pathological cells. This test is essential for the classification of lymphoproliferative syndromes. Acquired cytogenetics relies on karyotyping and the use of FISH probes with specific DNA sequences to identify chromosomal abnormalities, either in terms of number or structure. This is the case, for example, with chronic myeloid leukaemia to identify translocation t (9;22) or Philadelphia chromosome.

Solid tumours

For the treatment of solid tumours, the same disciplines and additional ones are called upon, in particular anatomical pathology, acquired cytogenetics with FISH probes and molecular biology of solid tumours. Eurofins Biomnis has a great deal of experience in the use of **pathological anatomy** to analyse pathological tissues in order to assist with the screening of precancerous lesions, diagnose and characterise cancers and the use of target therapies.

The assay of certain tumour markers helps to identify early-stage cancers and enables the rapid treatment of patients. An example of this is the assay of glycoprotein HE4 in screening for ovarian cancer. Similarly, it can reduce the number of biopsy indications for the detection of certain cancers, such as prostate cancer.

Neuroendocrine tumours

Eurofins Biomnis also offers serum CgA assays, thanks to its expertise in radioimmunology (RIA). This assay provides genuine added value for the diagnosing diagnosis and therapeutic monitoring of neuroendocrine tumours and is helpful in cases where there is medicine-based or food-based interference in urine assays.

FOCUS ON RADIOIMMUNOLOGY (RIA)

RIA has long been one of Eurofins Biomnis' fields of expertise. Many hospitals are now neglecting this speciality, even though it is essential in the treatment of patients with certain forms of cancer. The Eurofins Biomnis Ivry site is one of the few clinical pathologist laboratories to perform assays using isotropic tracers in France.

Major advances in molecular biology

However, the revolution that is ongoing towards personalised medicine comes as a result of **somatic genetics,** which uses next-generation sequencing or measuring of gene expression. This allows the identification of genetic alterations within cancer cells, whether they be malignant haemopathies or solid tumours. These parameters are now essential for making diagnoses, classifications and prognoses, as well as for treatment decisions and monitoring. For example: - testing for the JAK2V617F, CALR or MPL mutation to diagnose a myeloproliferative syndrome, - testing for an anomaly in the KRAS genes for colorectal cancer or EGFR for lung cancer, determining access to target therapies or involved in orienting treatment, such as the prognostic test of Prosigna®-PAM50 gene expression in breast cancer.

Further developments will follow with the addition of fluid biopsies to the characterisation of cancers. With a single blood sample, it will be possible to **identify genetic anomalies in circulating blood** (mutations, translocations, etc.) that are associated with tumour growth. The natural degradation of tumour cells in the body releases small fragments of their genetic material (tumour DNA strands) that circulate in the blood. A liquid biopsy in a laboratory is a promising alternative for selecting appropriate targeted treatments for each patient. Standard biopsies are invasive medical procedures, and while useful, a liquid biopsy is the go-to option in vulnerable or elderly patients, or in tumours that are difficult to reach.

"Our NGS profiles are constantly developing in the face of new scientific discoveries. They include new genes of interest if their analysis proves to be essential for making a prognosis or for a targeted treatment. With them, doctors will likely soon be able to provide specific treatments to every patient".

BENOIT QUILICHINI,
CLINICAL BIOLOGIST WORKING IN ONCOLOGY AT EUROFINS BIOMNIS

Wellness and preventive health expertise

Juvenalis
WELLNESS TESTING
BY EUROFINS BIOMNIS

Eurofins Biomnis and preventive health laboratory testing

Identifying possible alterations in the body's biological and physiological mechanisms over time to monitor them and, if possible, correct them, ultimately contributes to maintaining an optimum state of health and personal well-being.

"For a long time, medicine only focused on the disease. Nowadays, it looks at overall health in general and maintaining good health for as long as possible. The assay of biological parameters is a useful guide for adjusting individual behaviours and improving health in the long term".

EMMANUELLE CART-TANNEUR,
CLINICAL PATHOLOGIST AT EUROFINS BIOMNIS.

The Juvenalis® range supports a global or targeted approach to preventive medicine adapted to each individual patient

Since October 2019, Eurofins Biomnis has been developing the Juvenalis® range in response to the needs of patients and healthcare professionals. This new range consists of biological panels and analyses to assess the metabolic, hormonal, micronutritional or digestive profiles of individuals.

It has been developed by the expert clinical pathologists of Eurofins Biomnis, who, through complementary degrees and collaborations with specialists on ageing, have acquired the expertise needed to develop and interpret these panels.

Juvenalis® is aimed towards individuals who are responding negatively to treatment (digestive symptoms, skin problems, food intolerances, etc.) as well as people who wish to have a child, those who are mindful of how they will age or for those who wish to monitor their levels of micronutrients.

"These biological panels are used as a starting point for instituting corrective actions (diet, physical activity, sleep, etc.) and beginning adapted medical treatment if appropriate", stresses Emmanuelle Cart-Tanneur, clinical pathologist at Eurofins Biomnis.

They provide additional information that is essential for a section of the population that is increasingly concerned and informed about their health and who wish to actively maintain it, with the aim of maintaining well-being and ageing well.

While a normal result is more of a reassurance when it comes to certain symptoms, an abnormal result does not allow for the identification of a specific disease. However, it may call an imbalance into question and lead to additional tests as part of medical care.

Nine syndrome-focused panels: skin, anti-ageing, fertility, digestion, etc.

BasicCheck is the general first-line panel in preventive pathology in order to identify harmful dysfunctions in the body. It consists of markers of oxidative stress, low-grade inflammation and nutritional status.

AgeCheck Man is intended for men who want to review their state of health as the starting point for a conscious “anti-ageing” strategy. It consists of a hormone and metabolism panel along with cardiovascular and prostate markers in order to prevent the development of diabetes, decreased libido or prostate disorders.

AgeCheck Woman is intended for women as part of an “anti-ageing” strategy. This nutrition, hormone and metabolism panel can identify disturbances and their potential impact on fatigue or weight gain.

NutriCheck is an extensive nutrition panel (vitamins, minerals, micro-nutrients, fatty acids and amino acids) that gives information on the quality and variety of the patient’s diet. It can indicate any deficiencies and/or excesses that could have harmful effects.

DermaCheck is a skin health panel used in cases of recurrent skin problems, blemished skin, or simply to maintain healthy skin. It mainly tests vitamin, micro-nutrient and iodine markers, imbalances of which are associated with ageing and skin problems.

DigestCheck is a digestive health panel. It is intended for patients suffering from functional bowel disorders, often of unexplained origin, and may be used as part of medical care. For example, it can screen for intestinal hyperpermeability that could be relieved by measures aimed at rebalancing intestinal flora.

VeggieCheck, which aims to monitor the (micro)nutritional status of individuals adopting vegetarian or vegan diets. The associated dietary deficiencies can generally be easily managed if they are prevented by the appropriate supplements; however, it is important to conduct regular monitoring.

FertiCheck Woman is a panel that examines (micro)nutriment intake. Their variety is key factor in optimising fertility and ensuring healthy development of the foetus.

FertiCheck Man is intended for men who want to create optimal conditions for the creation of high-quality sperm and hence impregnation of their partner within a short time period.

Intestinal microbiome is a survey of the intestinal flora via stool samples using next-generation sequencing (NGS). This test is intended for individuals being monitored by healthcare professionals and for individuals who are simply wish to maintain their well-being. Personalised therapeutic advice is included in the report from the healthcare professional in order to guide decisions on adjusting the patient’s diet or taking probiotics.

In the Juvenalis® range, Eurofins Biomnis also offers **Vitamin and Mineral panels** which can identify certain deficiencies of micro-elements or vitamins and remedy certain metabolic disorders via supplements.

Another test, **Nutritol™**, investigates food intolerances. Five levels of analysis, testing between 25 and 270 foodstuffs (dairy products, eggs, gluten, etc.) and additives. Food intolerances are commonly associated with chronic disorders such as migraines, unexplained weight gain, skin or joint problems. Nutritol™ can identify potential contributing factors.

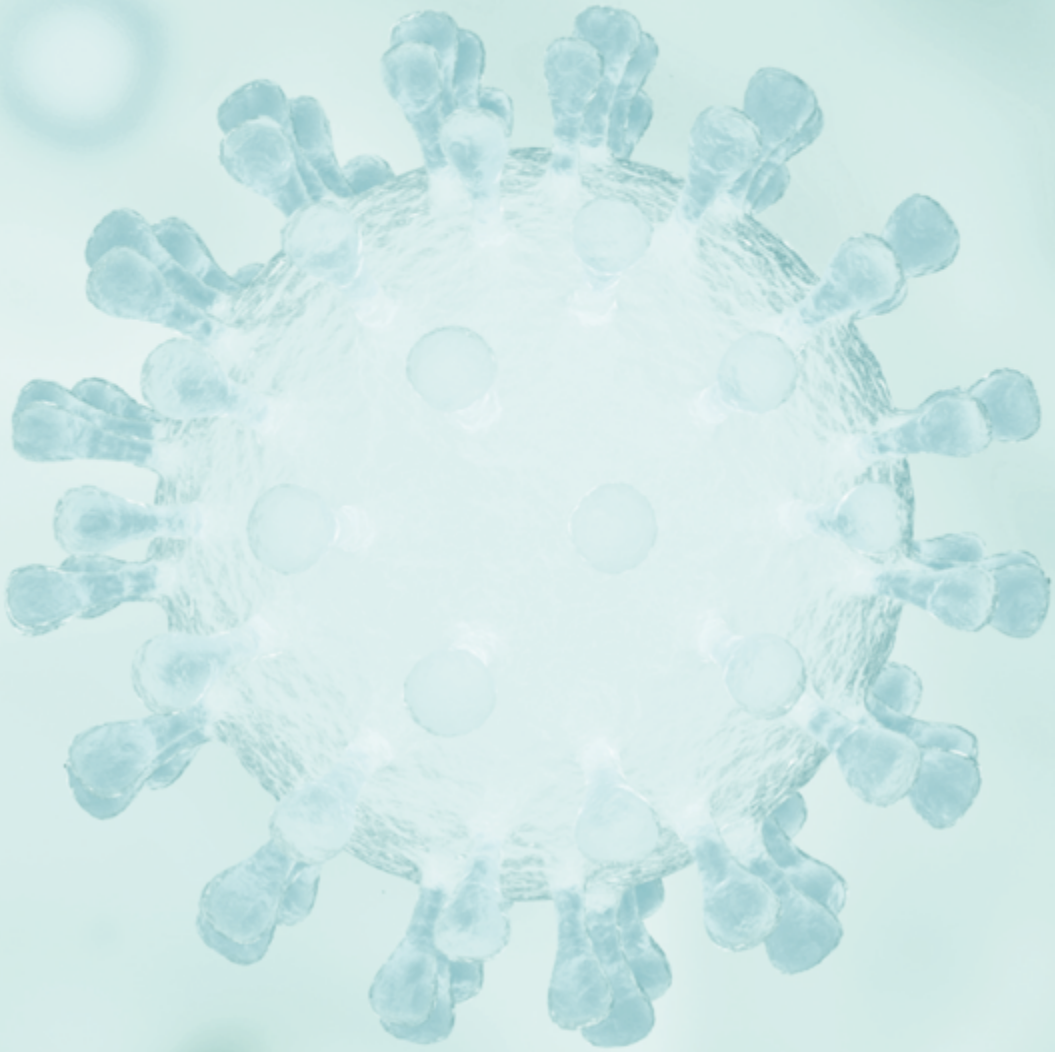
It is also possible for healthcare professionals to choose from **among nearly 50 laboratory analyses** to create specific panels, add to existing panels or monitor specific levels following a panel.

Eurofins Biomnis strongly recommends that this strategy is conducted with the guidance of a healthcare professional (general practitioner, dermatologist, naturopath, etc.). Medical expertise is helpful for instituting personalised support for remedying disorders identified following a panel.

These panels are part of preventive health testing and are not covered by social security health insurance in France.

“These biological panels are used as a starting point for instituting corrective actions (diet, physical activity, sleep, etc.) and beginning adapted medical treatment if appropriate”.

EMMANUELLE CART TANNEUR,
CLINICAL PATHOLOGIST AT EUROFINS BIOMNIS



Infectiology expertise

Eurofins Biomnis: born from the Mérieux family's commitment to research and the fight against infectious diseases

Eurofins Biomnis' expertise in infectiology began with the creation of the laboratory in 1897 by Marcel Mérieux, who was committed to researching and fighting against infectious diseases. Managed by Dr Véronique JACOMO since 2008, this department is a beacon of excellence for the laboratory, and one of the largest within a private laboratory structure in France.

Human expertise meets cutting-edge technology

The Infectiology department of Eurofins Biomnis has cutting-edge equipment that is essential for adapting to epidemiological developments and responding to medical emergencies. The department also has a P3 biosafety laboratory, with isolated areas which are essential for researching and analysing certain pathogenic agents that constitute a health risk for staff and a genuine risk for the general population (e.g. tuberculosis).

With 2 clinical pathologists and 40 laboratory technicians, the department is currently able to perform over 1,000 tests per day (excluding Covid-19 tests), and this number is constantly rising. "*Our real asset is our ability to develop our own PCRs, to allow us to adapt to epidemics and emerging pathogenic agents*", says Véronique JACOMO, head of the department.

A department divided into four areas of expertise

The bacteriology-parasitology and viral culture area

This area features experienced technicians and two microbiologists. It offers standard techniques such as culture and *in vitro* assessments of sensitivity to antibiotics via antibiogram. In addition, the laboratory also has a viral culture area, which allows us to perform tests that require prior virus cultivation. Our expertise in viral culture allows us to verify the immune status of a patient for a given virus. For example, this is done when testing for vaccination against poliomyelitis. More innovative approaches are also provided, such as RT-PCR (Reverse Transcriptase-Polymerase Chain Reaction) tests which allow the detection and identification of genes that provide resistance in difficult-to cultivate bacteria such as *Helicobacter pylori.*

The mycobacteria area

The leading private mycobacteria laboratory in France and Europe in terms of volume (450 analyses per day) and expertise, this area is a major one in the infectiology department. For tuberculosis for example, Eurofins Biomnis carried out 95,000 tests in 2020 using molecular biology techniques. The resurgence of this fatal disease and the emergence of pathologies caused by non-tuberculous mycobacteria meant that diagnostic techniques for the suspected pathology needed to be adapted in order to provide reliable tests.

The laboratory's expertise is internationally recognised. Our clinical pathologists are members of the ASM (American Society for Mycobiology).

Molecular biology applied to infectious diseases

Molecular biology for the diagnosis of viral, bacterial and parasitic infections is also a major area of the infectiology department, where real-time PCR methods are required due to their high levels of performance and short turnaround time. As such, they are provided for research on microorganisms that are difficult or impossible to cultivate such as malaria, Whipple's disease, cat-scratch fever or chancroid.

The development of our own PCRs also allows us to reactively adapt to emerging pathogenic agents: H1N1 influenza virus in 2009, Chikungunya in 2005, Zika in 2016 and most recently, SARs-CoV-2 causal agent of Covid-19.

As for the so-called "universal PCR", PCR 16S, it allows sequencing of the 16S gene, and to determine the type and/or species of bacteria detected in the sample. This result is a major help for doctors, who can offer treatment adapted to the bacteria responsible. The PCR can even identify the presence of a bacteria if the patient was treated using antibiotics, inhibiting culture.

The serology area

This sector handles all blood analyses, allowing detection and quantification of the specific antibodies of agents responsible for infectious diseases. In practice, this allows indirect diagnosis of an infection (viral, bacterial, parasitic or fungal) and the determination of immunity status. The serology can allow the impact on a population to be monitored by evaluating the seroprevalence of an infectious pathogen.

The tests offered by Eurofins Biomnis are selected for their high levels of performance. They can test for IgM, IgG and IgA produced in response to a viral (influenza virus, SARS-CoV-2, etc.), bacterial (whooping cough, leptospirosis, etc.), parasitic (toxocariasis) and fungal (Candida albicans) infection.

"The agility, responsiveness and experience of our teams allows both cutting-edge screening of known and feared diseases such as tuberculosis... and the creation of innovative tests to fight against new viruses such as Covid-19".

VÉRONIQUE JACOMO
CLINICAL PATHOLOGIST AT EUROFINS BIOMNIS

FOCUS ON COVID-19

Eurofins Biomnis' expertise put to use in the pandemic

Since March 2020, Eurofins Biomnis has been fully committed to the fight against Covid-19 alongside the health authorities, hospitals and private laboratories. To respond to the increase in tests linked to the resurgence of the epidemic in autumn, the laboratory decided to boost its two technical platforms at Ivry-sur-Seine and Lyon, which have been active since the start of the pandemic. This took the form of 1000 m^2 of laboratory space with over 100 devices and pieces of equipment which have been set up to conduct analyses as quickly as possible.

Since March, Eurofins Biomnis' analysis capacity has gradually increased, to the point that it now has extra available capacity of 50,000 tests per day with a turnaround time of less than 24 hours in 99.8% of cases. In order to allow this rapid turnaround time, the teams of technicians and biologists work in shifts, 24 hours a day, 7 days a week.

The responsiveness of Eurofins Biomnis relies on the expertise of its laboratory teams and the Eurofins group, which has developed its own internal solutions and CE marked kits for conducting RT-PCR tests, all validated by the Pasteur Institute. They allow clinical pathologists and technicians to not be reliant on a single type of reagent and Eurofins Biomnis can continue its public health mission to serve patients and healthcare professionals.

Since January 2021, Eurofins Biomnis has been offering a screening test using RT-PCR for the detection of variants of concern of SARS-CoV-2.

FOCUS ON TROPICAL DISEASES

Eurofins Biomnis' expertise applied to the Dengue, Zika and Chikungunya epidemics

Each year, hundreds of samples are analysed for the diagnosis of endemic and epidemic infectious diseases. The responsive teams of the infectiology department are able to quickly set up molecular biology diagnostic techniques to adapt to epidemics.

Eurofins Biomnis is active in the prevention and evaluation of the risk of these viruses spreading in France and the early detection of cases.

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