

Guide the path
her cancer takes

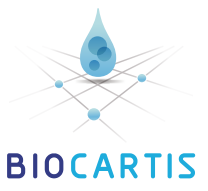


Direct access to
same-day-results



Fully Automated
Molecular Diagnostics

FAST ACCURATE EASY ACCESSIBLE





“We at Biocartis aim to provide direct access to personalized medicine for patients worldwide by developing fully integrated and broadly applicable molecular diagnostics. Our platform can be used in a wide variety of healthcare settings to enable rapid and high-quality care close to patients”

Rudi Pauwels, *Founder Biocartis*



The need for improved, standardized and fast diagnostics

Cancer can hit anyone at any time and treatment remains a real challenge. Because cancer doesn't follow rules. It fights back against therapies. It adapts. It changes its path. It does whatever it can to stay ahead of us.

At the advanced edge of oncology, **rapid access** to **accurate data** about relevant cancer mutations and treatment resistance is vital and creates the opportunity for early disease interception^{4,5}, reducing the anxiety while waiting for results and the time before starting the best possible treatment.

Current technologies in molecular oncology are complex, require a lot of hands-on time and are often difficult to implement in the local laboratory. As a consequence, most laboratories do not perform molecular tests in-house, but send them out to specialized centers, where samples are batched in order to optimize costs.¹⁻³

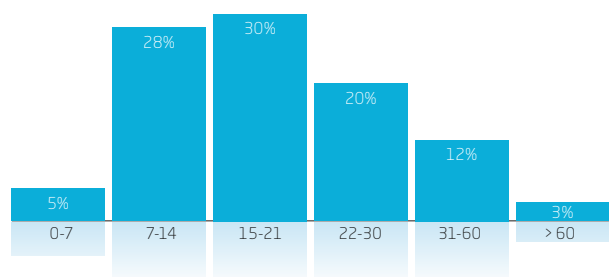
This causes delay to the fast delivery of results, preventing rapid initiation of correct therapy. In the meantime the tumor grows, which is detrimental in case of aggressively growing cancers.

The need for a rapid treatment initiation response towards patients

Fast initiation of immunotherapy or targeted therapy as first-line treatment is crucial for cancer patients, as it increases overall survival rates.^{9,10,11,17,22} Timely detection of biomarkers therefore is very important.

Today, turnaround times of reference technologies are on average 18 days, with 14% of patients waiting longer than a month to be able to start treatment. Ninety-five percent of the patients have to wait more than a week in order to receive the biomarker results.⁶

Total turnaround time of reference technologies



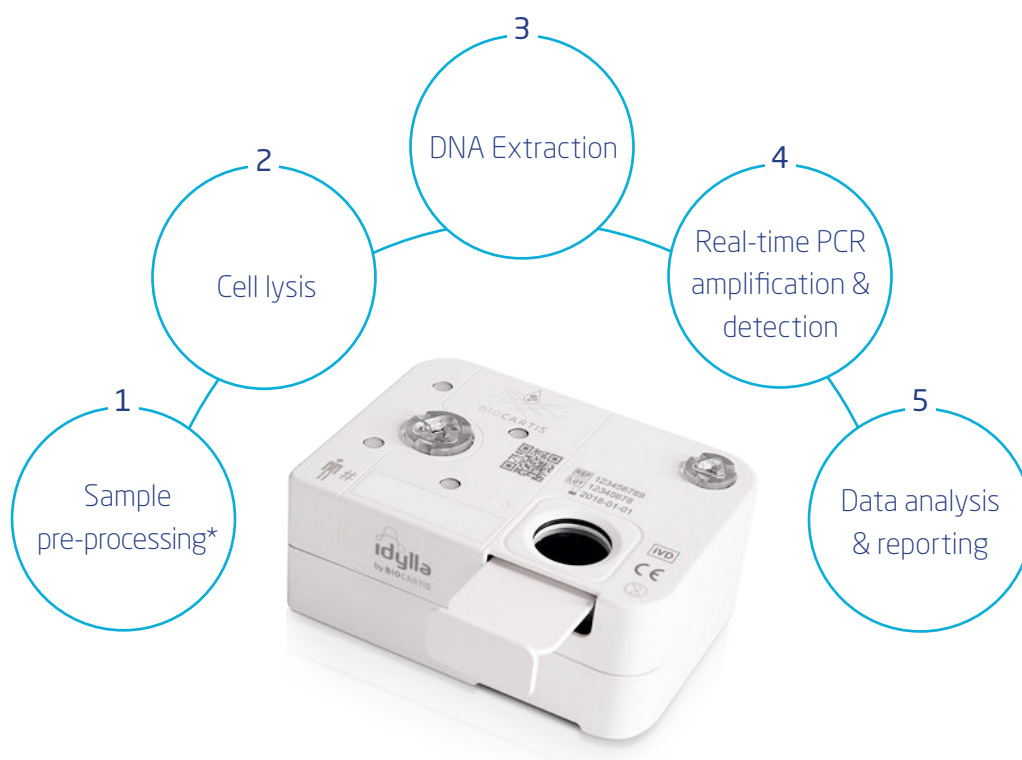
This means that precious time is lost whereas treatment initiation could have been started and unnecessary use of chemotherapy with its side effects could have been avoided.

Idylla™, the next level in disease interception

Idylla™, a **fully automated**, sample-to-result PCR based **molecular diagnostics** system, provides **same-day** results enabling physicians to make **timely decisions** on patients' therapy.

Idylla™, with its **compact scalable design** and **outstanding ease-of-use**, overcomes the traditional barriers of molecular diagnostics, allowing it to be used in virtually **any laboratory setting**.

Idylla™, can be used with **multiple sample types**, including **solid** and **liquid** biopsies. This flexibility allows use of the system for respectively **diagnosis**, and **research** or possibly future **monitoring** applications.



* e.g. deparaffinization for FFPE tissue samples

Idylla™ is the **first** and **only** molecular diagnostic system that combines



FAST RESULTS

- Less than 2 minutes hands-on time
- Short turnaround time - 85 to 150 minutes



ACCURATE RESULTS

- High sensitivity
- Highly standardized technology
- Contamination-controlled design



EASE-OF-USE

- Fully automated sample-to-result process
- Walk-away system (no need for any intervention during the automatic process)
- All reagents integrated in a single cartridge
- Only 1 manual step
- Storage and shipment at room temperature



ACCESSIBLE

- Access on demand - no need for pre-processing or batching



SAMPLE VERSATILITY

- For solid and liquid biopsy



MULTIPLEXING CAPABILITY

- Detection of up to 51 relevant mutations in one cartridge
- Multiple genes and loci detection in one cartridge



CONNECTIVITY

- Remote assistance, monitoring and upgrading
- Bi-directional LIS



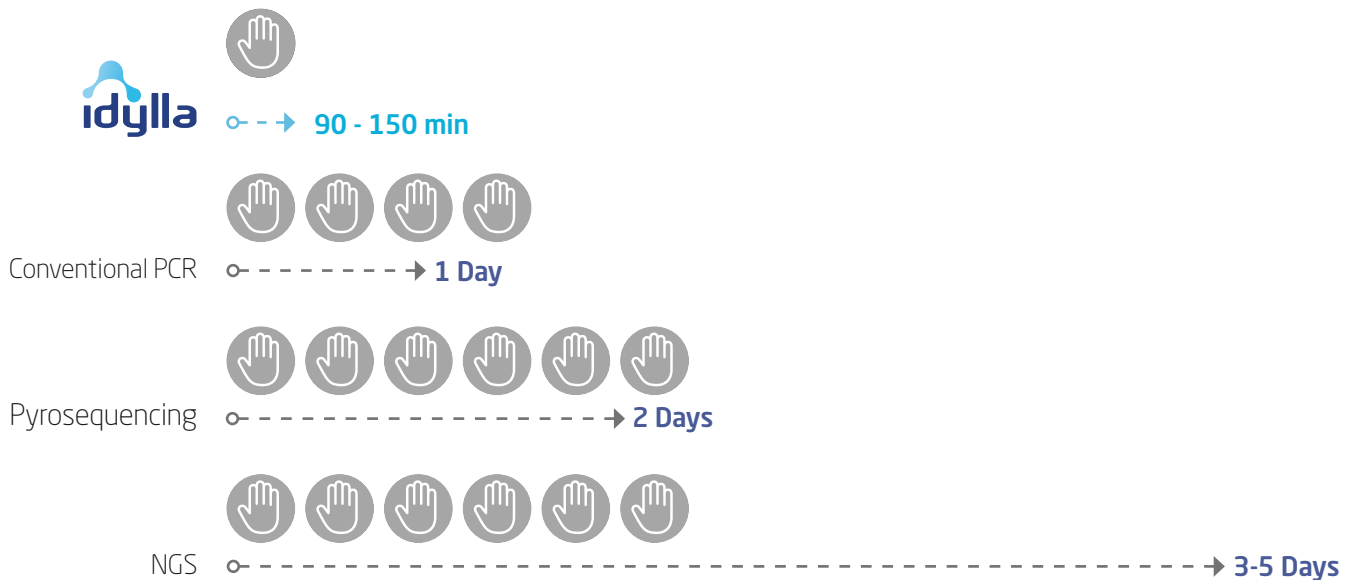
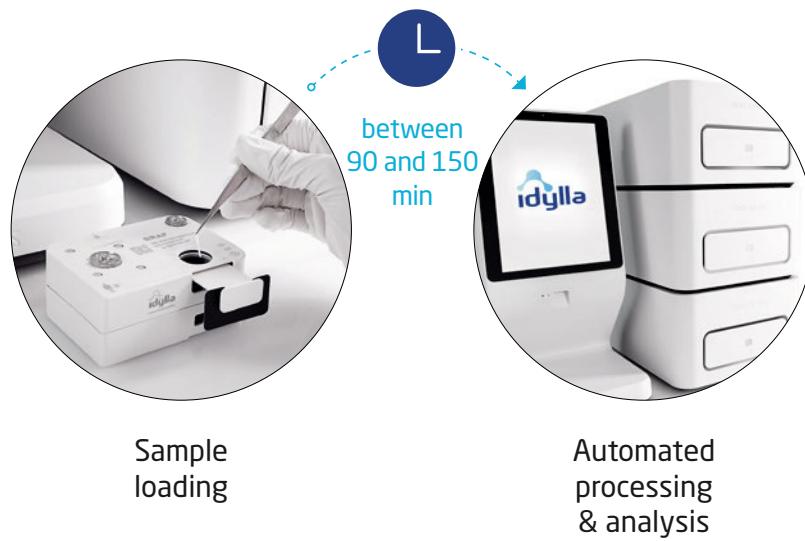
Fully Automated
Molecular Diagnostics



The revolutionary Idylla™ workflow

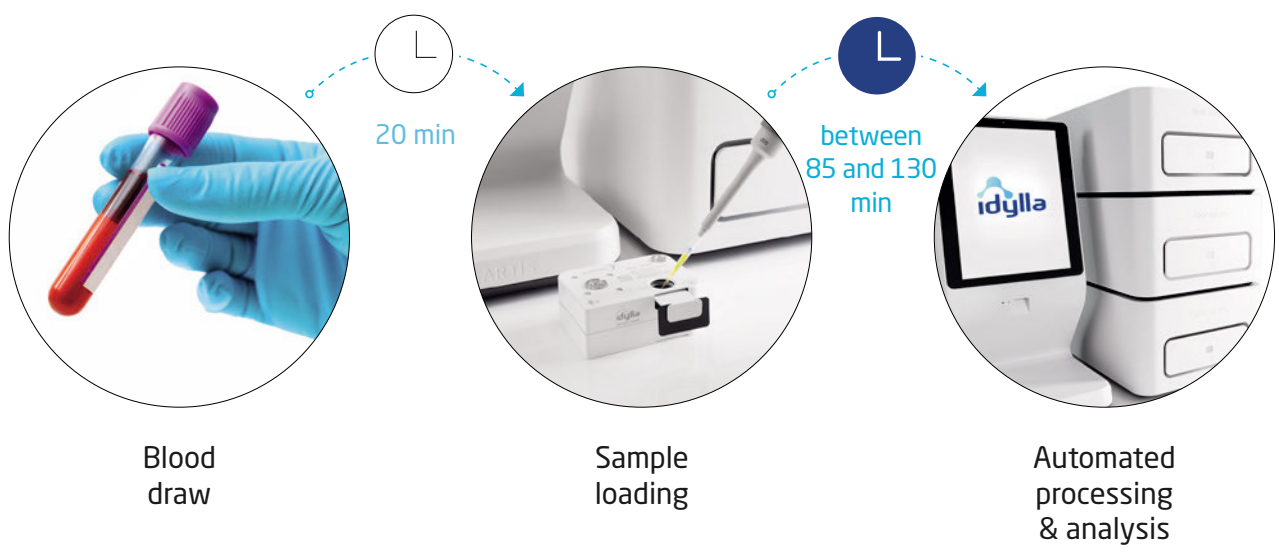
The Idylla™ system in combination with the Idylla™ Molecular Oncology Assays differs from other technologies in its outstanding **ease-of-use**, leading to an unsurpassed level of **standardization**, and its **short turnaround time**, allowing immediate access to therapy.

FFPE workflow





Liquid biopsy workflow



   **85 - 130 min**

Conventional PCR   **1 Day**

ddPCR   **1 Day**

Beaming   **3 Days**

NGS   **3-5 Days**

Instruments and consumables



Instruments



Consumables



Lab infrastructure (# of rooms) 1

Other RT-PCR

Instruments



Consumables



Lab infrastructure (# of rooms) 3

Pyrosequencing

Instruments



Consumables



Lab infrastructure (# of rooms) 4

Next generation sequencing

Instruments



Consumables



Lab infrastructure (# of rooms) 4



Current oncology assays



FFPE in - report out

Diagnostic products (CE IVD)

Idylla™ BRAF Mutation Test

Idylla™ KRAS Mutation Test

Idylla™ NRAS-BRAF Mutation Test

Idylla™ NRAS Mutation Test

Idylla™ EGFR Mutation Test

Research products (RUO)

Idylla™ BRAF Mutation Assay

Idylla™ KRAS Mutation Assay

Idylla™ EGFR Mutation Assay

Idylla™ NRAS-BRAF-EGFR S492R
Mutation Assay



Plasma in - report out

Diagnostic products (CE IVD)

Idylla™ ctKRAS Mutation Test

Idylla™ ctNRAS-BRAF Mutation Test

Research products (RUO)

Idylla™ ctBRAF Mutation Assay

Idylla™ ctKRAS Mutation Assay

Idylla™ ctNRAS-BRAF-EGFR S492R
Mutation Assay

Future oncology assay targets



FFPE in - report out

MSI



Plasma in - report out

ctEGFR

BRAF **ctBRAF**

Idylla™ BRAF mutation detection on solid and liquid biopsies



Activating mutations in the *BRAF* gene are observed in about 8% of all cancers⁷ and have been associated with sensitivity and resistance to a number of targeted anti-cancer therapeutics.

Cancers in which *BRAF* mutations are observed include: melanoma, colorectal cancer, thyroid cancer, lung cancer, hairy cell leukemia and ovarian cancer.

BRAF testing is recommended in all patients with metastatic melanoma and metastatic colorectal

cancer (mCRC). About 50% of all metastatic melanoma patients harbor mutations in the *BRAF* gene, making them eligible for BRAF or BRAF/MEK inhibitor therapy.⁸ In mCRC, BRAF mutation status should be assessed alongside the assessment of tumor *RAS* mutational status for prognostic assessment (the presence of a *BRAF* mutation indicates poor prognosis). The prevalence of *BRAF* in mCRC is about 8-15%.⁹

DIAGNOSTIC PRODUCT

Idylla™ BRAF Mutation Test (CE IVD)

BRAF

Diagnostic use

- approx. 90 min. Sample-to-result
- < 2 min. hands-on time
- 7 mutations in codon 600

FFPE
Directly on FFPE tissue sections (5-10µm) from **metastatic melanoma**

Qualitative genotype call

Mutation detection for **baseline treatment**

RESEARCH PRODUCT

Idylla™ ctBRAF Mutation Assay (RUO)

ctBRAF

Research Use Only, not for diagnostic use

- approx. 85 min. Sample-to-result
- < 1 min. hands-on time
- 7 mutations in codon 600

plasma
Directly on 1 ml plasma

Semi-quantitative genotype call + Cq values

Applicable in multiple cancers harboring BRAF mutations

Prof. B. Neyns, M.D., Ph.D
 Medical Oncology, UZ Brussels, Belgium

“The Idylla™ system has the potential to allow the start of targeted therapy within a time window of less than 24 hours following the diagnosis of metastasis, thereby saving precious time”

EGFR

Idylla™ EGFR mutation detection on solid biopsy

Lung cancer is the most common cancer worldwide, contributing for 13% of all cancer types. 85% of lung cancers are non-small cell lung cancers (NSCLC), of which histologically adenocarcinoma is the most prevalent.

EGFR mutations are mainly observed in lung cancer.

EGFR mutation testing in exons¹⁸⁻²¹ is recommended in all patients with advanced NSCLC of a non-squamous subtype. Activating mutations in the *EGFR* gene have been associated with sensitivity and resistance to a number of targeted anti-cancer therapeutics.^{11,17}



Exon 19 deletion and exon 21 (L858R, L861I), exon 18 (G719X), and exon 20 (S768I) mutations are associated with sensitivity to TKI's. Exon 20 insertion mutation may predict resistance to TKI's. *EGFR* T790M mutation is the main cause of acquired resistance to TKI therapy and has been reported in about 55% of patients with disease progression after initial response to 1st or 2nd generation TKI's.^{11,17}

The prevalence of *EGFR* mutations in NSCLC adenocarcinomas is 10-15% of Western and up to 50% of Asian patients. Sensitizing *EGFR* mutations are predictive for response to *EGFR* tyrosine kinase inhibitors.^{11,17,21}

DIAGNOSTIC PRODUCT

Idylla™ EGFR Mutation Test (CE-IVD)

EGFR

Diagnostic use

51 in exons 18, 19, 20, 21 mutations

approx. 150 min. Sample-to-result

< 2 min. hands-on time

FFPE

Directly on 1 FFPE tissue section (5µm) from metastatic non-small-cell lung cancer

Qualitative genotype call + Cq values

Mutation detection for treatment assessment

Prof Giancarlo Troncone

University of Napoli Federico II, Naples

"Today, *EGFR* testing is a cumbersome process and it often takes several weeks before results are analyzed. This may lead to the administration of anti-*EGFR* therapy as second-line agents, which is less efficient than their use in first-line therapy. The Idylla™ *EGFR* Mutation assay technology has the potential to change that: it is a cost-effective solution, ensuring reliable and fast detection of all relevant mutations"

KRAS ctKRAS

Idylla™ KRAS mutation detection on solid and liquid biopsies



Activating mutations in the *RAS* genes are observed in 9-30% of all cancers and have been associated with sensitivity and resistance to a number of targeted anti-cancer therapeutics.¹² Cancers in which *KRAS* mutations are observed include: colorectal cancer, lung cancer and pancreatic cancer.

According to ESMO⁹, NCCN¹⁴, ASCO¹⁶ and CAP/AMP/ASCO guidelines¹⁵, genotyping of clinically actionable mutations at a sensitivity of 5% in *RAS* genes exon 2 (codons 12 and 13), exon 3 (codons 59 and 61) and exon 4 (codons 117 and 146) is now mandatory on tumor tissue (either primary or metastasis) of all metastatic colorectal cancers, since the presence of these mutations correlate with the lack of response to certain anti-EGFR antibody therapies⁹. About 46% of all

metastatic colorectal tumors harbor mutations in exons 2, 3 and 4 of the *KRAS* gene.¹³

Several studies are ongoing to define the predictive impact of *KRAS* mutations on therapy decision for non-small-cell lung cancer (NSCLC) patients^{18,19,20}. Currently there is evidence that *KRAS* in lung cancer has a prognostic value, indicating poor survival for patients with NSCLC, compared to the absence of *KRAS* mutations.¹¹

Using liquid biopsies for *KRAS* testing is minimally invasive, fast and easy to perform and can be used as an alternative or complement to tissue testing to determine the *RAS* mutation status at diagnosis.

DIAGNOSTIC PRODUCT

Idylla™ KRAS Mutation Test (CE IVD)

KRAS

Diagnostic use



DIAGNOSTIC PRODUCT

Idylla™ ctKRAS Mutation Test (CE IVD)

ctKRAS

Diagnostic use



- FFPE**: **Directly** on FFPE tissue sections (5-10µm) from **metastatic colorectal cancer**
- Qualitative genotype call**
- Mutation detection for **baseline treatment**

- plasma**: **Directly** on 1 ml plasma from **mCRC patients**
- Qualitative genotype call + Cq values**
- Mutation detection for **baseline treatment**

Beatriz Bellosillo

Laboratori de Biologia Molecular,
Hospital del Mar, Barcelona

"Idylla™ allows very quick results with little hands-on time"

NRAS **NRAS - BRAF** **ctNRAS-BRAF**

Idylla™ NRAS mutation detection on solid and liquid biopsies



Activating mutations in the *RAS* genes are observed in 9-30% of all cancers and have been associated with sensitivity and resistance to a number of targeted anti-cancer therapeutics.¹² Cancers in which *NRAS* mutations are observed include colorectal, lung, thyroid cancers and melanoma. According to ESMO⁹, NCCN¹⁴, ASCO¹⁶ and the CAP/AMP/ASCO guidelines¹⁵, genotyping of clinically actionable mutations at a sensitivity of 5% in *RAS* genes exon 2 (codons 12 and 13), exon 3 (codons 59 and 61) and exon 4 (codons 117 and 146) is now mandatory on tumor tissue (either primary or metastasis) of all metastatic colorectal cancers, since the presence of these mutations correlate with the lack of response to certain anti-EGFR antibody therapies⁹.

About 5% of all metastatic colorectal tumors harbor mutations in exons 2, 3 and 4 of the *NRAS* gene.¹³

In metastatic colorectal cancer *BRAF* mutation status should be assessed alongside the assessment of tumor *RAS* mutational status for prognostic assessment (the presence of a *BRAF* mutation indicates poor prognosis).

Using liquid biopsies for *NRAS-BRAF* testing is minimally invasive, fast and easy to perform and can be used as an alternative or complement to tissue testing to determine the *RAS* mutation status at diagnosis.

DIAGNOSTIC PRODUCT

NRAS - BRAF

Idylla™ NRAS-BRAF Mutation Test (CE IVD)
Idylla™ NRAS Mutation Test (CE IVD)

NRAS

Diagnostic use

- approx. 120 min. Sample-to-result
- < 2 min. hands-on time
- 5 in BRAF codon 600* mutations
*Only available in Idylla™ NRAS-BRAF Mutation Test
- 18 in NRAS codons 12, 13, 59, 61, 117, 146 mutations
- FFPE
- Directly on FFPE tissue sections (5-10µm) from metastatic colorectal cancer
- Qualitative genotype call + Cq values
- Mutation detection for baseline treatment

DIAGNOSTIC PRODUCT

ctNRAS-BRAF

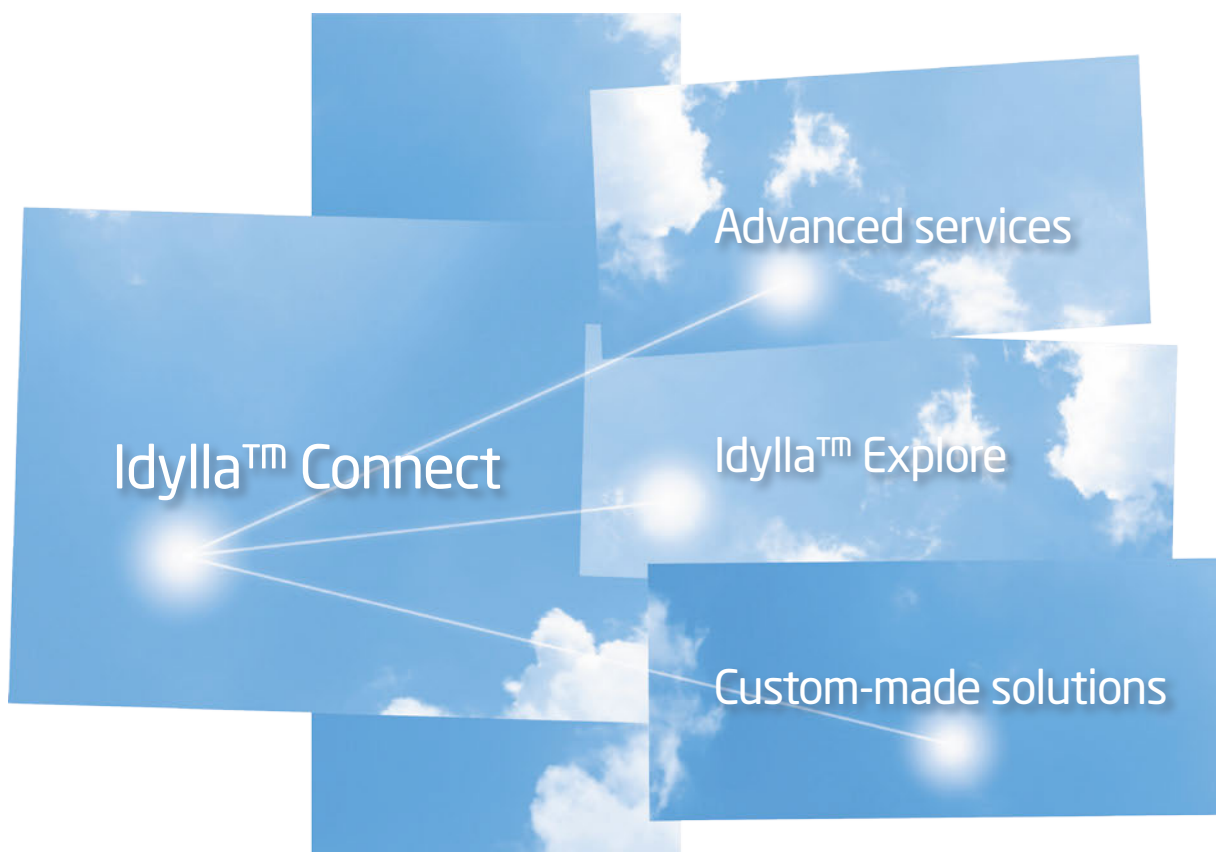
Idylla™ ctNRAS-BRAF Mutation Test (CE IVD)

Diagnostic use

- approx. 110 min. Sample-to-result
- < 1 min. hands-on time
- 5 in BRAF codon 600 mutations
- 18 in NRAS codons 12, 13, 59, 61, 117, 146 mutations
- Directly on 1 ml plasma from mCRC patients
- Qualitative genotype call + Cq values
- Mutation detection for baseline treatment

Idylla™ Connect


Engage in the future



 Advanced services to ensure continuity in your laboratory workflow

 Automatic software updates

New releases of assay and console software are sent to your Idylla™ console and can be installed with a single touch on the screen.

 Immediate and remote service and support

Idylla™ system parameters and error logs can be analyzed at anytime and anywhere to ensure swift actions and solutions.

More insight into your data with Idylla™ Explore

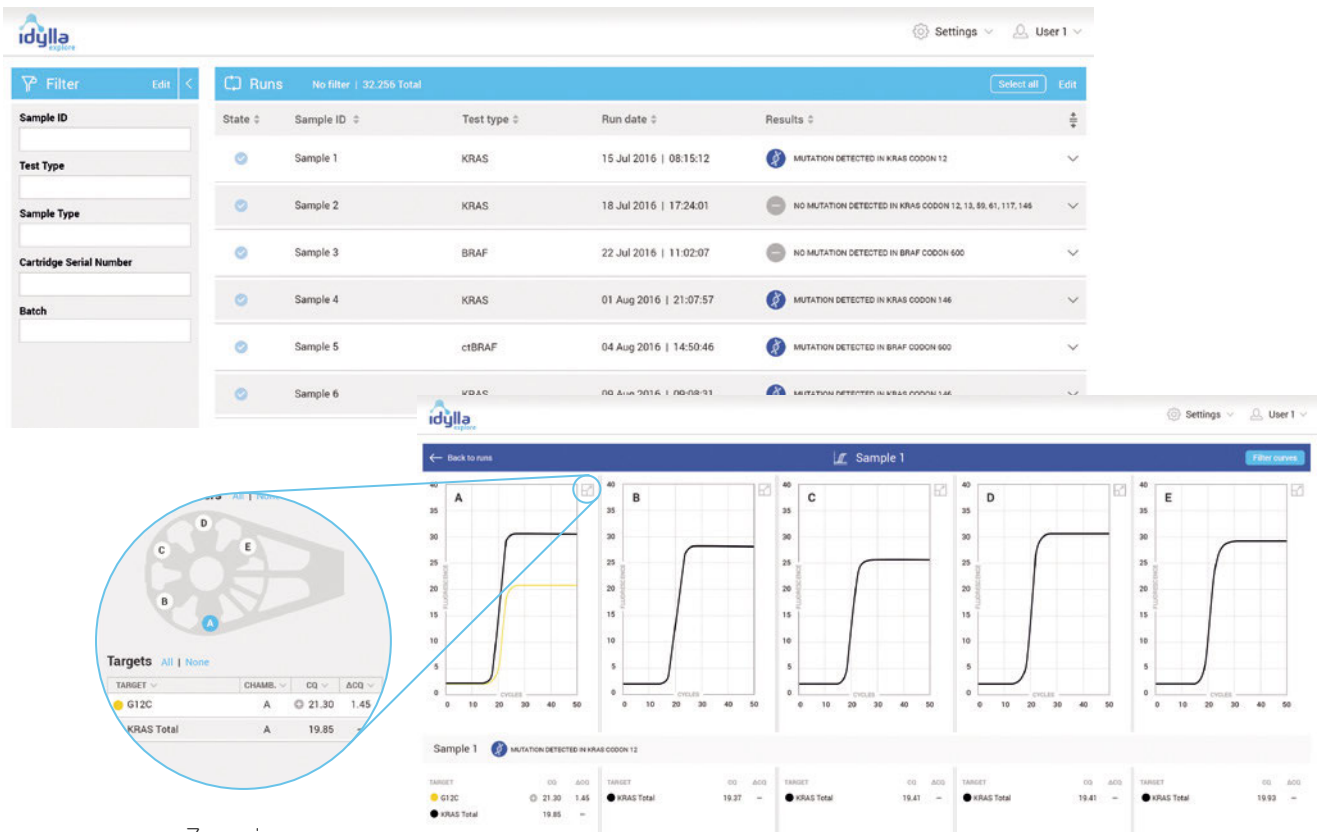
Get connected and enjoy **the advantages of Idylla™ Explore**, a web-based application that allows you to analyze your data by providing

- Visualization of PCR curves from Idylla™ Test Results
- Cq values per target
- Direct Access to Console result reports



Idylla™ Explore can be accessed anywhere and anytime from your PC or tablet through the following link: <https://idyllaexplore.biocartis.com>

Subscribe today and **join the Idylla™ Explore community** by sending an email to explore@biocartis.com





Custom-made solutions

Biocartis offers personalized solutions that fit your individual needs

- Create a network between different Idylla™ User sites and share data and knowledge
- Direct access to your data for building your own solution
- Statistical analysis on your obtained data
- Monitoring: Follow-up of your data over time
- Disease surveillance or diagnostic grid: linking of real-time molecular diagnostic test data to geo-location and sample data



