



OncoDNA[®]
THE CANCER THERANOSTIC COMPANY

International User Group Meeting

22nd and 23rd of April 2026

Navigating Validation Challenges at OncoDNA: From Reagents and Bioinformatics to Reporting in a Rapidly Evolving Environment Toward a Robust CE-IVDR-Validated Solution

Cédric BALSAT – Product Development Specialist

End-to-end solution



Validation Challenges

- ✓ Rapidly evolving environment
- ✓ Evolving regulatory context (IVDR)



- ✓ Rapidly evolving environment



- ✓ Evolving regulatory context (IVDR)

OncoDNA solutions: Workflow



DNA/RNA/cfDNA extraction

Extract and quantify nucleic acids



Library preparation

Prepare libraries with adapters



Target enrichment

Hybrid capture of cancer relevant regions



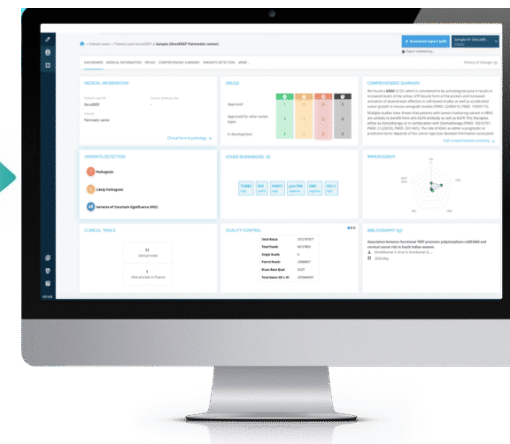
Sequencing

High-throughput sequencing to generate data

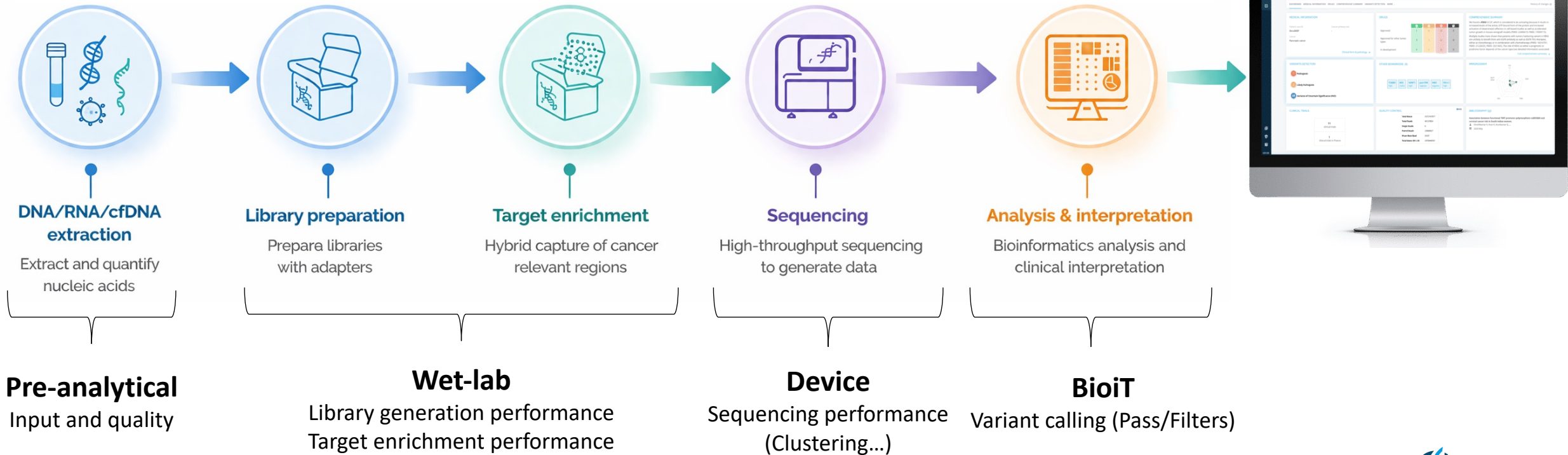


Analysis & interpretation

Bioinformatics analysis and clinical interpretation



OncoDNA validation: optimisation phase



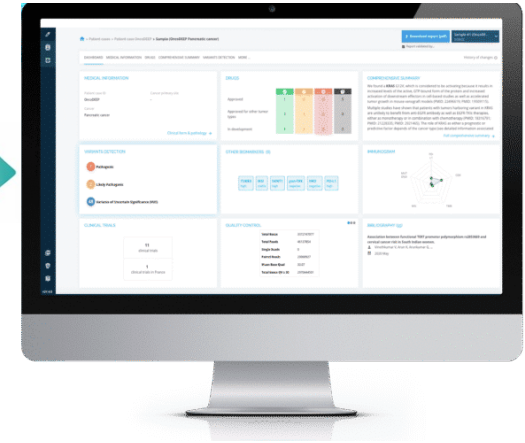
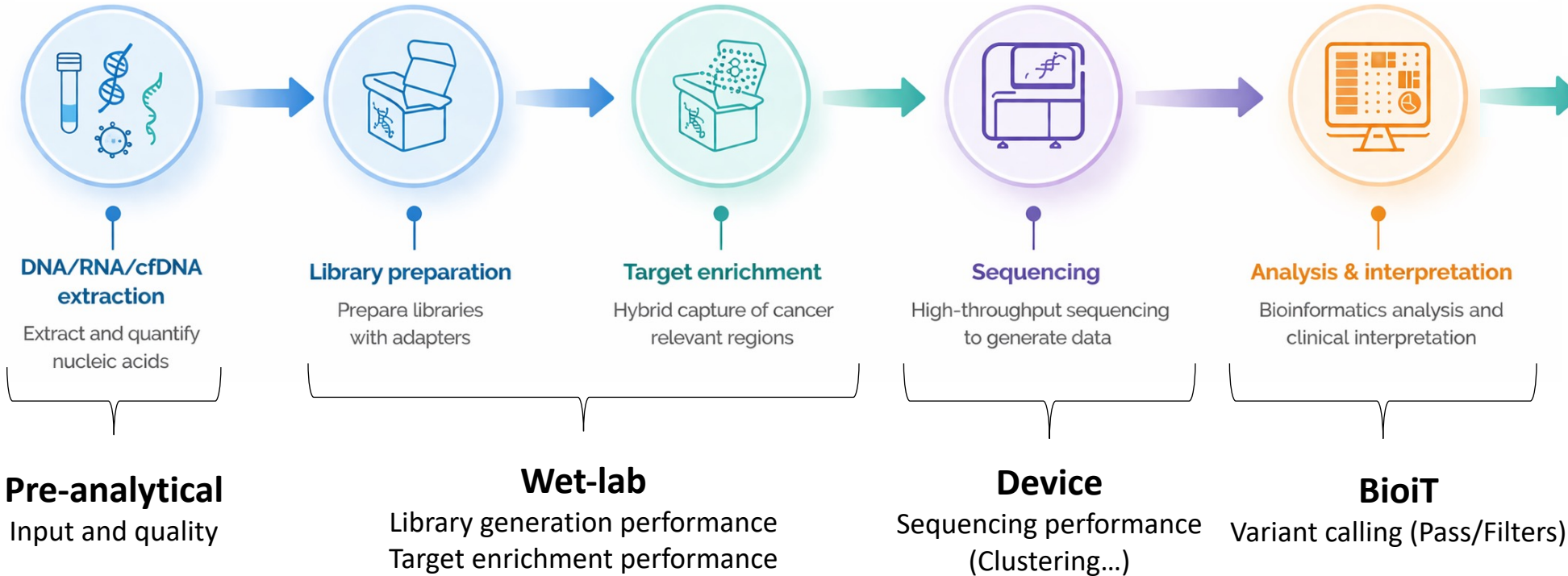
OncoDNA validation: validation phase

End-to-end validation

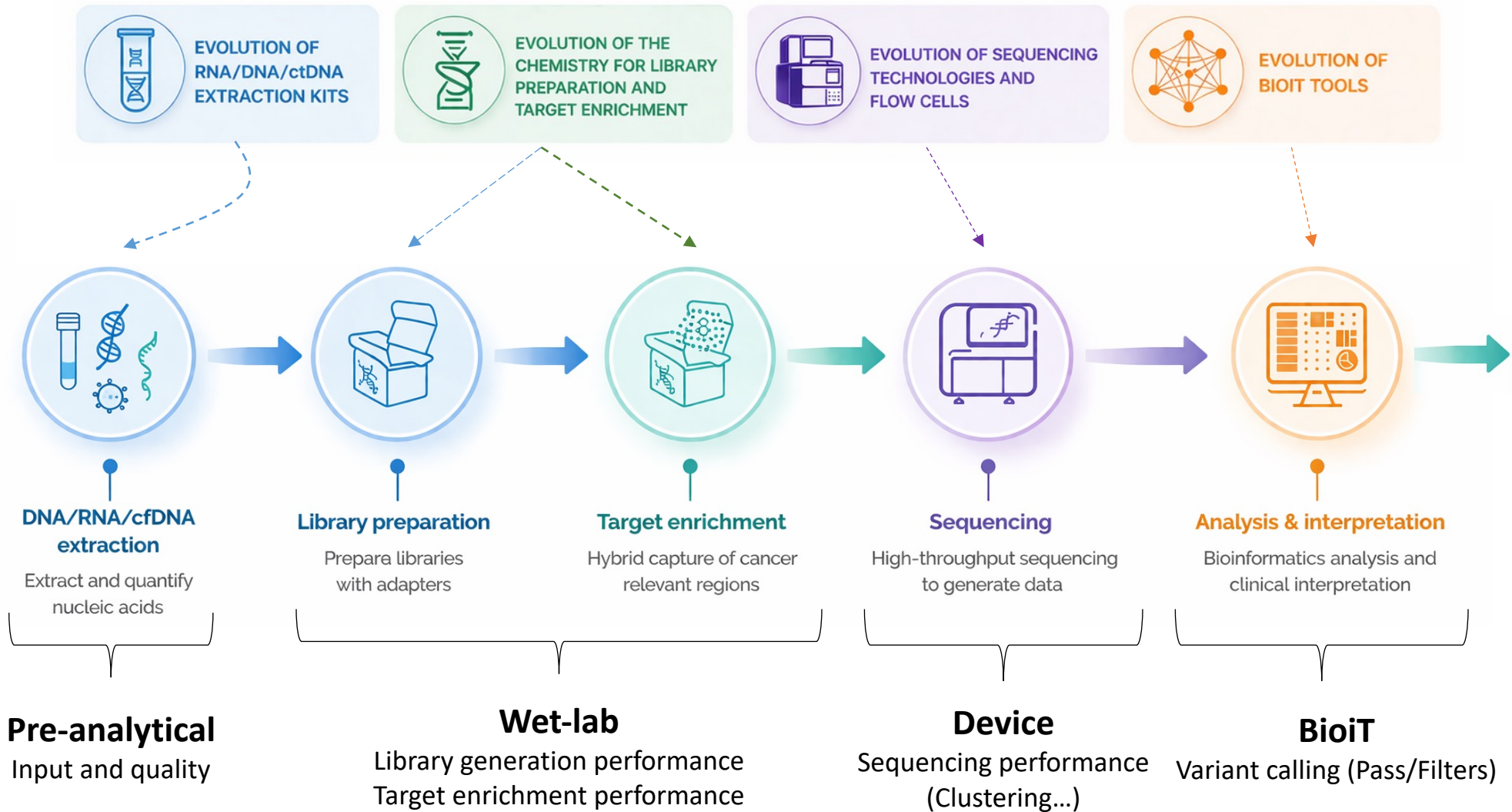
FULL PIPELINE VALIDATION

- ✓ Limit of detection
- ✓ Sensitivity
- ✓ Specificity
- ✓ Accuracy
- ✓ Repeatability
- ✓ Reproducibility
- ✓ Robustness

VALIDATED



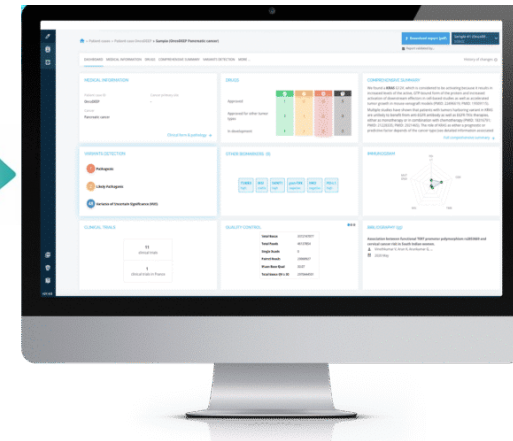
OncoDNA solution: evolving environment



FULL PIPELINE VALIDATION


- ✓ Limit of detection
- ✓ Sensitivity
- ✓ Specificity
- ✓ Accuracy
- ✓ Repeatability
- ✓ Reproducibility
- ✓ Robustness

VALIDATED




Evolving environment - Promega XtractAll

Testing Maxwell® RSC
XtractAll FFPE DNA/RNA Kit



- One streamlined workflow
- DNA & RNA extracted sequentially in less time with minimal hands-on effort

 Save Time, Increase Efficiency

- **Clinical FFPE samples** previously processed using our current DNA/RNA extraction kits and analyzed with the **OncoDEEP kit**.
- Selection of samples harboring **clinically relevant alterations** or interesting **genomic signature** (e.g. hotspot mutations, fusions, TMB-high).
- Comparison of **DNA and RNA yield and quality** to assess extraction efficiency.
- Comprehensive comparison of **downstream results**, including variant detection, concordance and background noise evaluation.

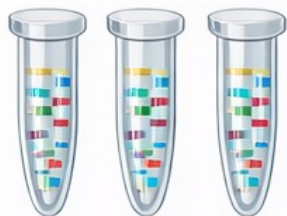
Evolving environment - Twist library prep evolution

Evolution of Twist Library Preparation Protocols



- **Residual DNA samples** previously processed with **OncoDEEP kit**.
- Selection of samples harboring **clinically relevant alterations** or interesting **genomic signature** (e.g. hotspot mutations, fusions, TMB-high).
- Comparison of **library and yield and quality** to assess library preparation efficiency.
- Comprehensive comparison of **downstream results**, including variant detection, concordance and background noise evaluation.

Evolving environment – Sequencer compatibility

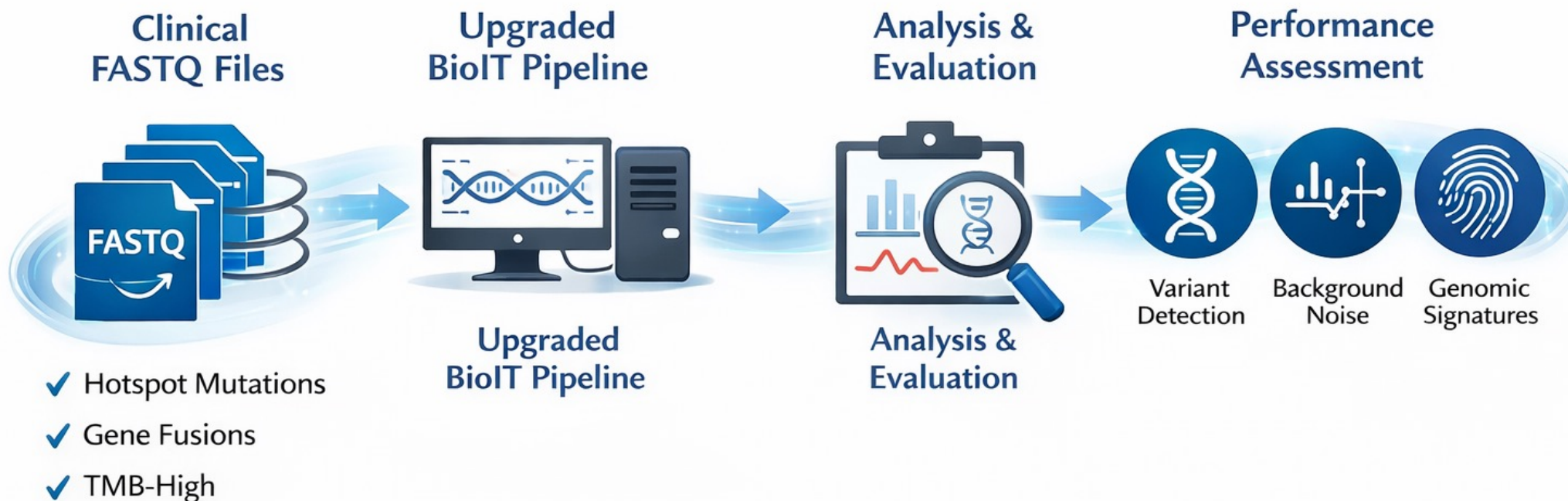


Validated Library Pools

Same libraries used across platforms



Evolving environment – BioIT tool upgrades



Evolving environment – Residual material and files at OncoDNA



Control / Clinical Samples

FFPE / Plasma

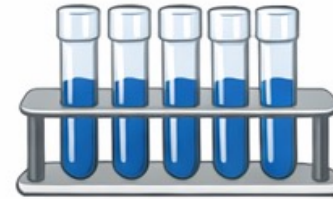
Extraction Kits



Residual Material

DNA / RNA / cfDNA

Library Preparation



Single / Pool of Libraries

Prepared Libraries

Sequencing Platforms



FASTQ Files

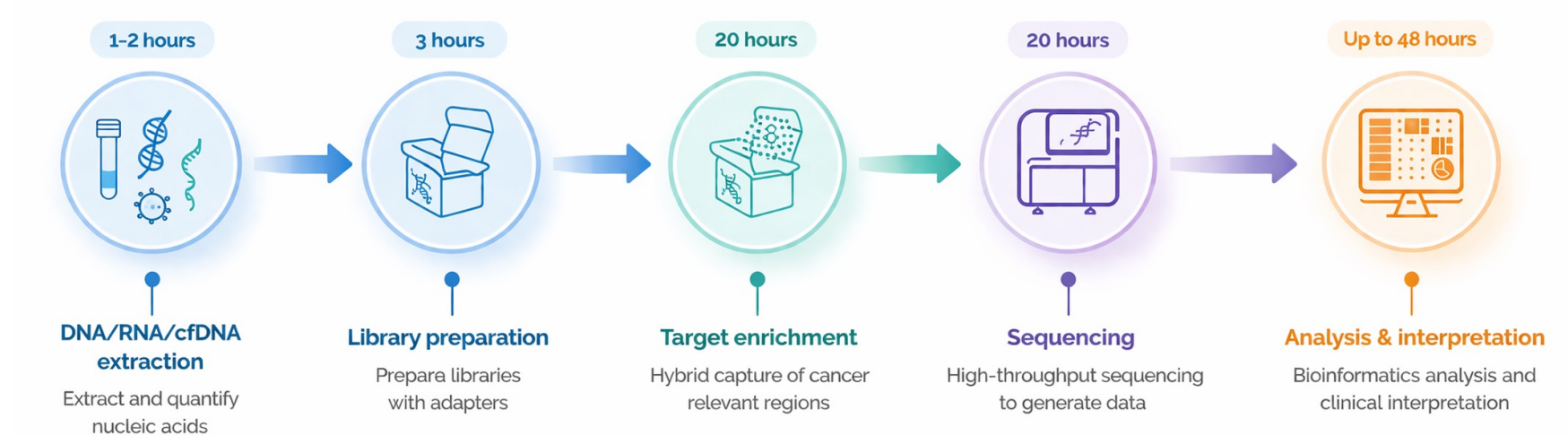
Sequencing Data

BioIT Analysis

Testing & Validation Across the Workflow

OncoDNA CGP solutions: Challenge

1 Implementation of innovations across the entire workflow
Each step impacts final results



➔ Validation must be continuous, not static

➔ Apply an end-to-end validation framework

End-to-end solution



Validation Challenges

- ✓ Rapidly evolving environment
- ✓ Evolving regulatory context (IVDR)



- ✓ Rapidly evolving environment








- ✓ Evolving regulatory context (IVDR)

in vitro diagnostic medical device regulation (IVDR)

- European regulatory framework governing **in vitro diagnostic medical devices** (IVDs) for medical purposes
- It replaces the previous Directive 98/79/EC (**IVDD**)
- Aims:
 - **Harmonize regulations** across EU member states
 - Enhance oversight through increased involvement of **notified bodies**
 - Improve **patient safety** by ensuring accurate and reliable diagnostic results
 - Increase transparency and **traceability** of IVDs across the EU

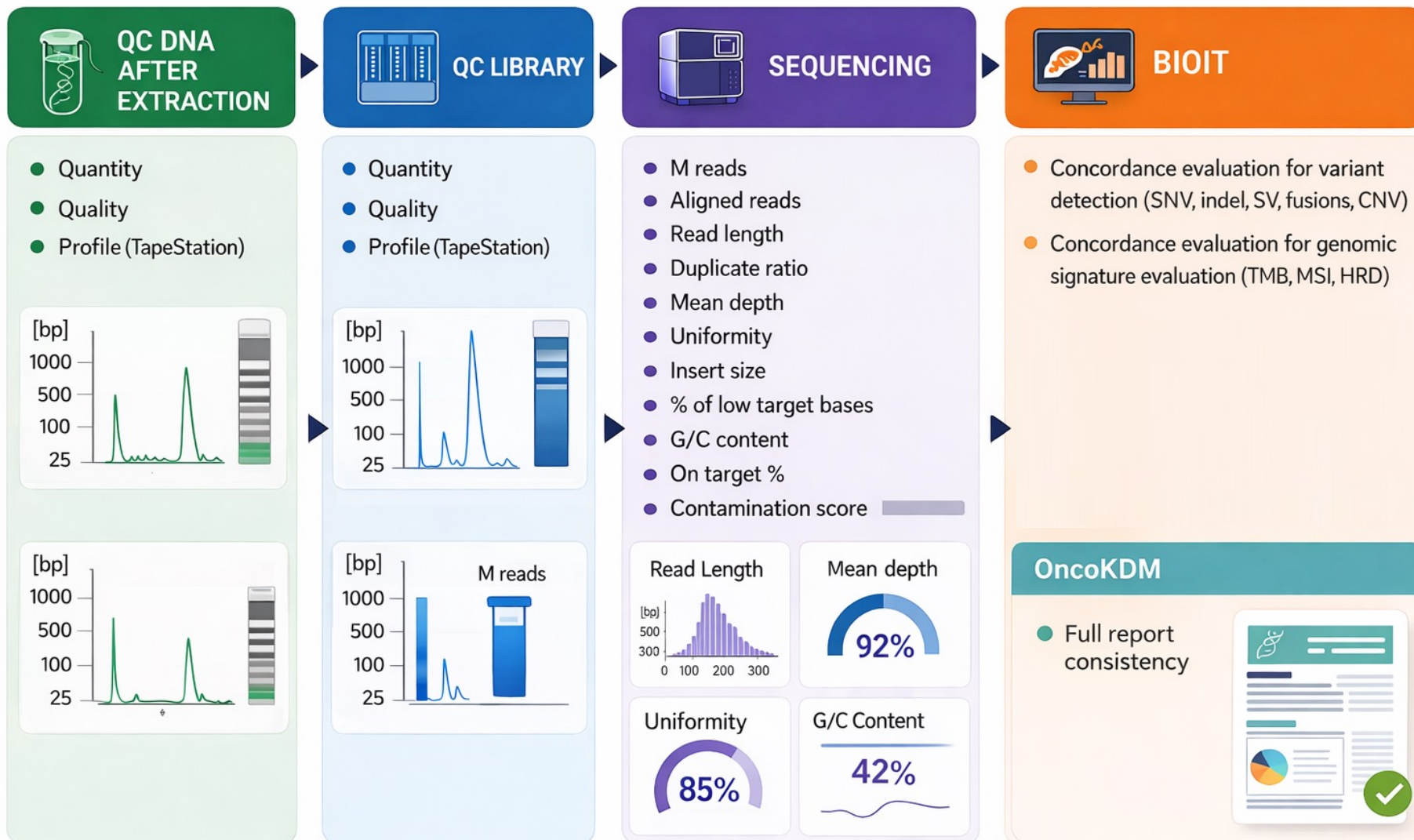


Risk-analysis based approach

COMPONENT CHANGED	PUTATIVE IMPACT
 EXTRACTION KIT (DNA / RNA / ctDNA)	<ul style="list-style-type: none"> • Yield • Amplifiability • Fragmentation / integrity • Contaminants / inhibitors
 LIBRARY PREPARATION / TARGET ENRICHMENT CHEMISTRY	<ul style="list-style-type: none"> • Preparation efficiency • Library complexity • Strand balance • UMI behavior
 SEQUENCING PLATFORM / FLOW CELLS	<ul style="list-style-type: none"> • Data output • Data quality • Signal-to-noise
 BIOIT PIPELINE	<ul style="list-style-type: none"> • Variant detection • Artifact profile • Genomic scar calculation
 OncoKDM[®]	<ul style="list-style-type: none"> • Clinical interpretation • Report consistency



Well defined acceptance criteria

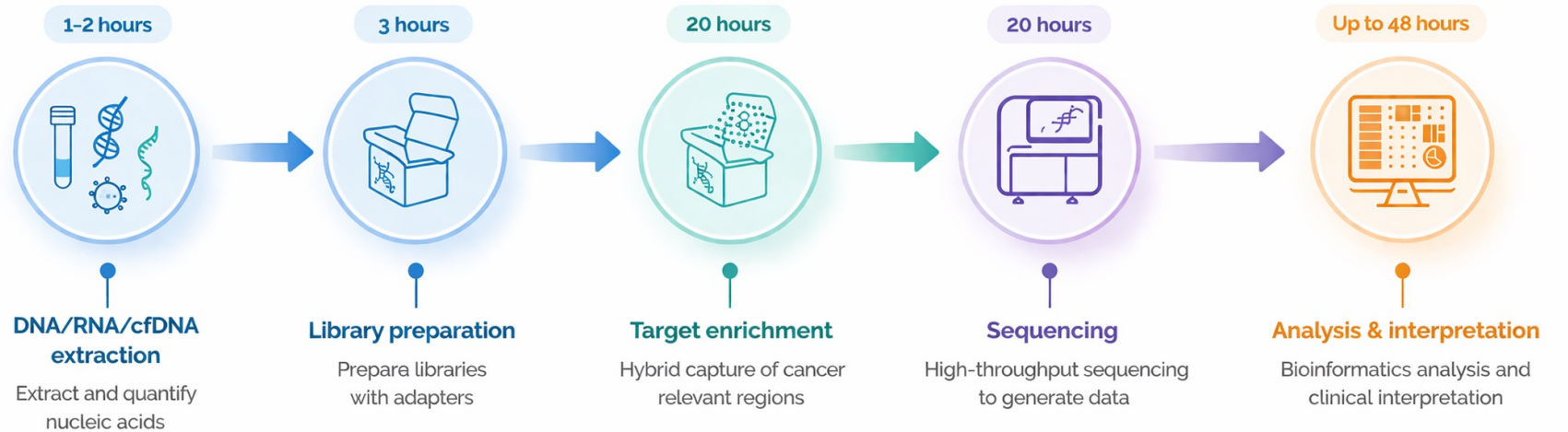


OncoDNA CGP solutions: challenges

2

EVOLVING REGULATORY CONTEXT

Rising standards, greater responsibility



➔ **Validation must be continuous, not static**

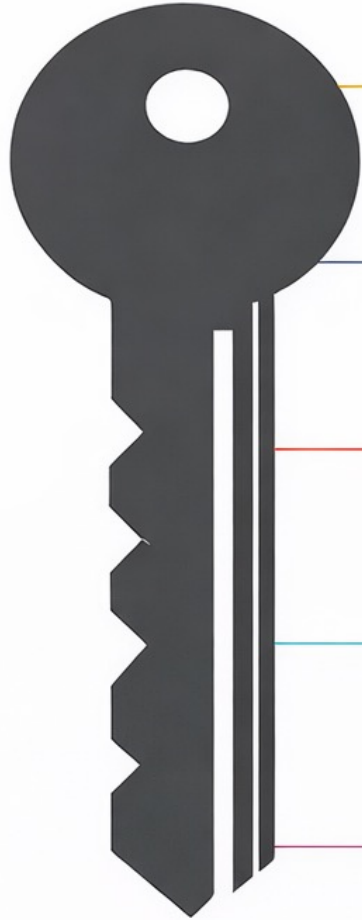
➔ Apply an end-to-end validation framework

➔ Regulatory requirement across the entire workflow

➔ Strict documentation



Take home message



Rapid and continuous evolving environment

Validation must be continuous, not static
integrating cutting-edges of innovations

End-to-end validation is essential

Evolving regulatory context (IVDR) – Increased
regulatory requirement and documentation

A risk-based analysis approach to ensure our solutions
continue to evolve while complying with IVDR regulations

