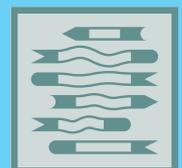


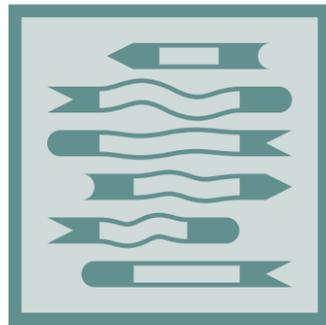


# Next-Generation Sequencing

Improve your laboratory workflow



# Library Construction with Improved Reproducibility



NGS library construction

How can I ensure reliable and reproducible sequencing results?

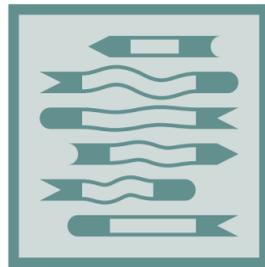
How can I increase efficiency of my NGS lab?

Insufficient quantity and quality of nucleic acid input samples!  
What can I do?

Are you aware of negative effects caused by leachables or extractables from consumables?

Next-generation sequencing (NGS) requires optimal, thorough sample preparation upstream of the sequencing process to ensure the best possible results. This includes nucleic acid purification, magnetic bead-based cleanups, enzymatic incubations at various temperatures, and small-volume liquid handling. Eppendorf offers a broad range of high-quality, smart consumables and precise and accurate instrumentation for all the steps upstream of sequencing – from sample generation and storage to sample preparation/purification, library preparation and quantification, and PCR amplification.

# Library Construction with Improved Reproducibility



## NGS library construction

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### Most frequent problems/challenges

**Questionable sequencing results**

- > Inconsistent library quality and yields
- > Variable sequencing results
- > Ensuring sensitive and reliable quantification of nucleic acid

### Possible solution

Minimize the risk:

- > Use standardized library prep methods
- > Qualify personnel through thorough training on processes
- > Use high quality, calibrated equipment
- > Use automated library preparation
- > Use the right method (e. g. fluorescence dyes) for quantification

### Eppendorf solution

Eppendorf product benefits:

- > Preprogrammed and optimized library prep methods for *epMotion*
- > PCR cyclers with excellent block homogeneity and evaporation protection
- > High-quality PCR consumables
- > Eppendorf BioSpectrometer fluorescence

### Eppendorf BioSpectrometer®, Mastercycler® X50



### Most frequent problems/challenges

**Inefficient workload**

- > Labor-intensive, tedious library preparation
- > Need to process various library prep workflows
- > Error-prone long manual procedures
- > Cross contamination due to (previous) PCR products
- > Limited throughput with manual processing
- > Instrument downtime due to failure or maintenance

### Possible solution

Minimize the risk:

- > Plan manual work thoroughly
- > Reduce hands-on time through walk-away automation
- > Use flexible equipment to implement and optimize different methods
- > Separate of pre and post PCR processes spatially
- > Ensure redundancy or backup instrumentation

### Eppendorf solution

Eppendorf product benefits:

- > *epMotion* can free up your time
- > *epMotion* features open architecture and easy-to-use software
- > Use *epMotion* 5070, or 5073 as post-PCR system
- > *epServices* keep your products running and minimize downtime
- > Tools can be sent in for calibration; no downtime due to replacement tools

### epMotion® 5073m, epMotion® 5075 NGS solution



### Most frequent problems/challenges

**Insufficient input sample**

- > Degraded RNA or DNA
- > Inefficient nucleic acid purification
- > Limited amounts of primary samples
- > Sample loss during long-term storage

### Possible solution

Minimize the risk:

- > Avoid manual processing to reduce DNase/RNase contamination risk
- > Use suitable purification products and protocols
- > Reduce losses caused by poor recovery or degradation
- > Increase library yields through optimized workflows

### Eppendorf solution

Eppendorf product benefits:

- > Use *epMotion* for nucleic acid purification
- > Consumables with certified PCR clean quality (DNase/RNase free)
- > Eppendorf LoBind® Consumables reduce DNA and enzyme absorption by plastic wall

### LoBind Tubes and plates



### Most frequent problems/challenges

**Issues related to leachables & extractables**

- > Potential contamination of valuable reagents and precious samples through substances released from plastics
- > Inhibition of enzymatic reactions
- > Interference with sensitive assays (QC, sequencing, fluorescence-based)
- > Release of leachables during prolonged hybridization at elevated temperatures

### Possible solution

Minimize the risk:

- > Validate each lot of your consumables for the absence of additives
- > Request a »free of additives« certificate from your consumable supplier

### Eppendorf solution

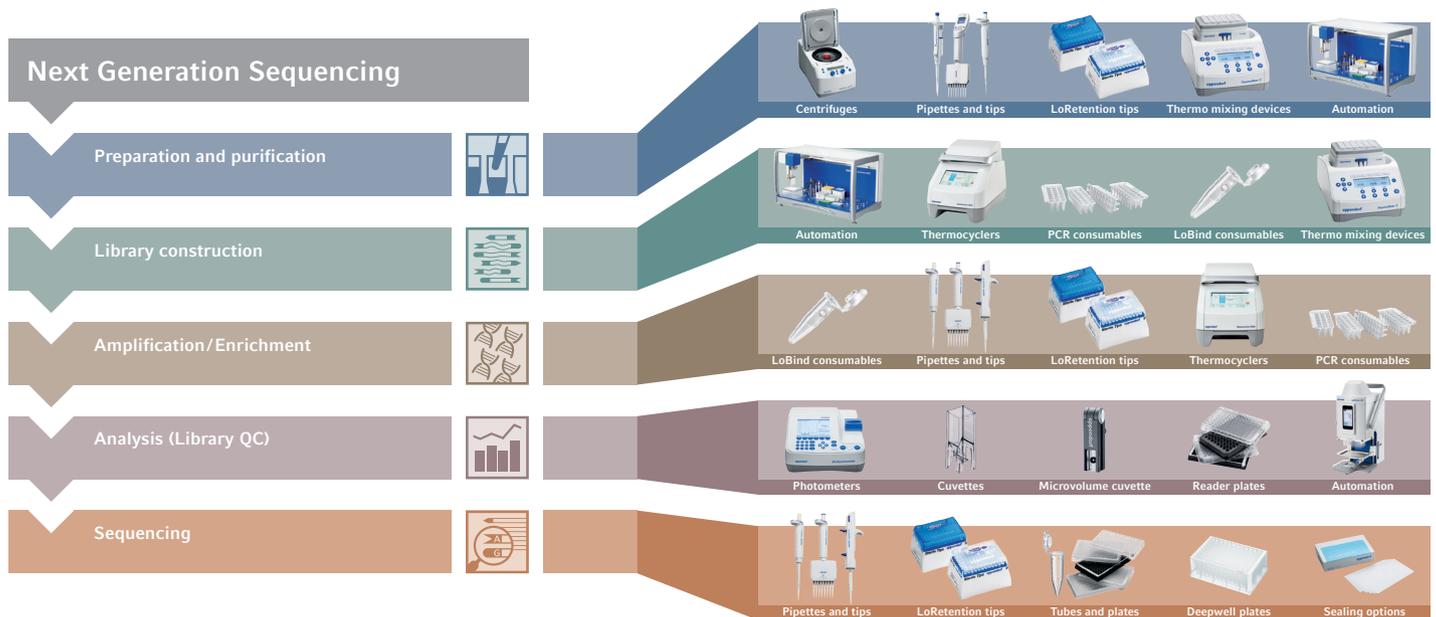
Eppendorf product benefits:

- > Use Eppendorf consumables that are certified free of plasticizers, biocides and slipping agents

### Consumables



# Being in Process



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