



COMPARATIVE ANALYSES OF DNA AND RNA EXTRACTIONS USING THE PRECELLYS EVOLUTION & PRECELLYS EVOLUTION TOUCH

INCREASING DNA & RNA YIELD EXTRACTION USING PRECELLYS EVOLUTION TOUCH

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CONTEXT

Nucleic acid isolation is the starting point of most downstream experiments. It is an essential step in molecular biology. DNA and RNA extraction can be divided in two main steps: cell lysis and purification. As these molecules are fragile, especially for RNA, it is important to ensure efficient grinding while preserving biological compounds.

Thanks to the 3D bead-beating technology, the Precellys Evolution guarantees **efficient grinding, homogenization, or lysis of any biological sample**.

This Application Note compares the homogenization efficiency of the Precellys Evolution and the new **Precellys Evolution Touch** through DNA and RNA extractions from two different types of sample (heart and liver). It also highlights how nucleic acid extraction kits allow high yields of purified DNA and RNA.

MATERIALS

- Precellys Evolution (ref: P000062-PEVO0-A.0)
- **Precellys Evolution Touch** (ref: P002511-PEVT0-A.0)
- Precellys Lysing Kit CK14 (ref: P000912-LYSK0-A)
- Precellys Lysing Kit CK28-R (ref: P000916-LYSK0-A)
- Precellys Tissue DNA extraction kit (ref: D05701)
- Precellys Tissue total RNA extraction kit (ref: D05711)
- 12 Mice heart samples
- 12 Mice liver samples
- Spectrophotometer Denovix DS-11



Precellys Evolution Touch



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PROTOCOL

Tissue Homogenization

- Mice heart samples: Lysing kit CK28-R (25 mg for DNA extraction and 10 mg for RNA extraction)
 - Mice liver samples: Lysing kit CK14 (25 mg for DNA extraction and 10 mg for RNA extraction)
1. Add sample to the lysing kit tube
 2. Add DNA Tissue Lysis buffer and Proteinase K (for DNA) or RNA Tissue Lysis buffer only (for RNA)
 3. Protocol settings on both instruments:
 - Mice heart samples: 8500 rpm for 3 x 10 sec, 10 sec of pause
 - Mice liver samples: 8500 rpm for 1 x 10 sec

DNA / RNA extraction

12 mice heart samples and 12 mice liver samples were used for both DNA and RNA extractions following the user's manual of the Precellys Tissue DNA Extraction Kit (D05701) and Total RNA Extraction kit (D05711). Samples were homogenized using the Precellys Evolution (6 samples) and **Precellys Evolution Touch** (6 samples).

RESULTS AND DISCUSSION

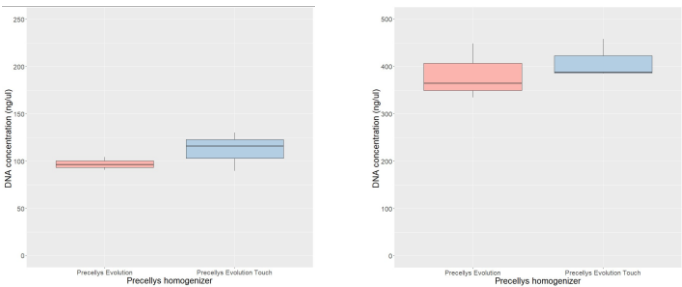


Figure 1 – DNA concentration (ng/μl) of heart (left) and liver (right) samples of mice

	Average DNA concentration (ng/uL)		Average RNA concentration (ng/uL)	
	Precellys Evolution	Precellys Evolution Touch	Precellys Evolution	Precellys Evolution Touch
Heart Sample	97,0	111,9	181,5	136,4
Liver Sample	382,5	410,0	862,0	1067,5

Table 1 – Testing results

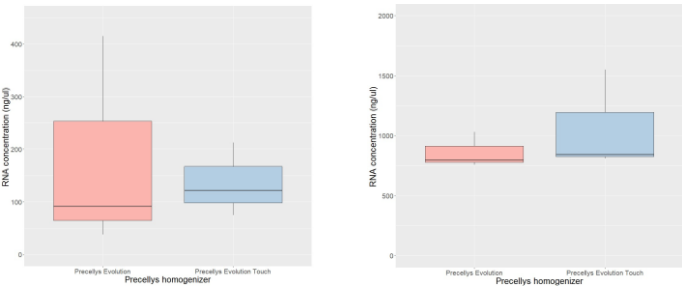


Figure 2 – RNA concentration (ng/μl) of heart (left) and liver (right) samples of mice

DNA extraction

The average DNA concentration was higher with the **Precellys Evolution Touch** compared to the Precellys Evolution for both heart and liver samples (Figure 1).

RNA extraction

RNA concentrations from heart samples were slightly higher with the Precellys Evolution, compared to the **Precellys Evolution Touch**, and well over 1000 ng/μL for liver samples (Figure 2).

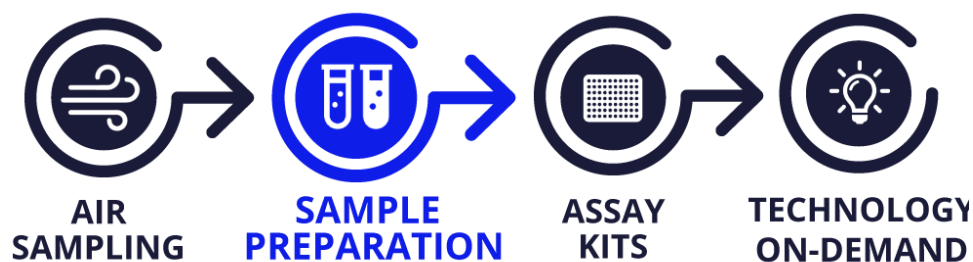


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CONCLUSION

The Precellys Evolution Touch and Precellys Evolution provide a similar homogenization quality. DNA and RNA yield was equivalent or slightly better with the Precellys Evolution Touch. Thanks to premium quality and versatility, nucleic acid extraction kits lead to high yields of purified DNA and RNA from different tissues. Overall, the Precellys Evolution Touch has demonstrated good performance and reproducibility of results when coupled with both DNA and RNA extraction kits. Thus, protocols of the Precellys Evolution can be easily transposed to the Precellys Evolution Touch and provide equivalent or even better results.

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