diagenode
Innovating Epigenetics Solutions

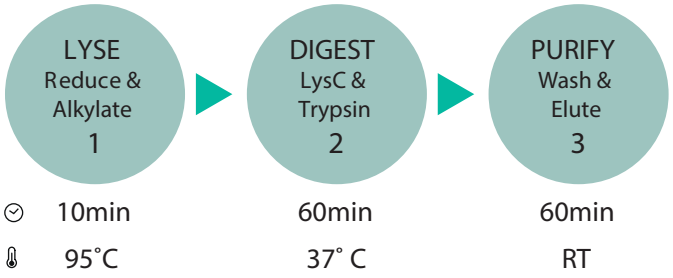
PREOMICS
Technologies for your proteomic applications

WHITE PAPER

Increase your iST ultrasonication throughput with the new Bioruptor® Pico cartridge holder

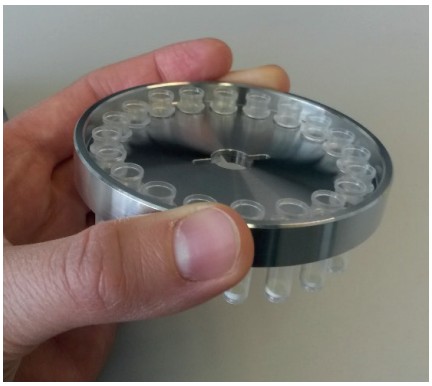
iST SAMPLE PREPARATION WITH THE BIORUPTOR® PICO

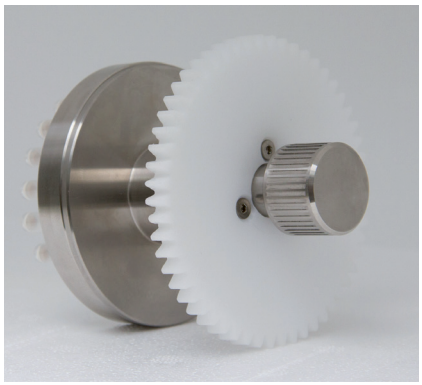
The PreOmics iST sample preparation combined with the Diagenode Bioruptor® Pico significantly improves mass spectrometry-based protein analysis. We have previously demonstrated that the number of peptide and protein identifications correlates with the number of sonication cycles, increasing protein and peptide identifications by up to 22% and 72% (see our joint application note). Thus, the ultrasonication-based cell lysis aids in proteome-wide discovery by greatly enhancing the number of peptide and protein identifications.

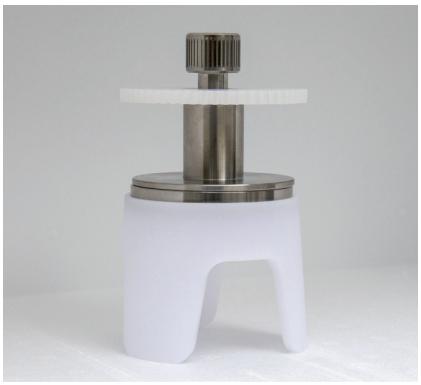


NEW iST CARTRIDGE HOLDER FOR THE BIORUPTOR® PICO

The new iST cartridge holder allows placing of up to 20 iST cartridges directly into the Bioruptor® Pico, thus minimizing sample loss and increasing throughput. A convenient dock parking placing the iST cartridge holder on the bench while placing the cartridges or while adding buffers to your samples.







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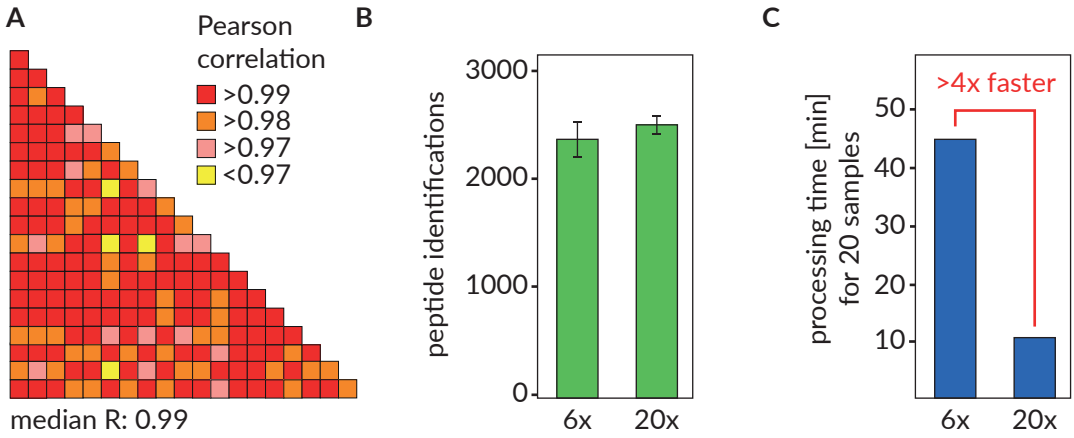
METHODS

Baker's yeast (*S.cerevisiae*) derived from a yeast cube was resuspended in ddH_2O. Aliquots of OD_{600}= 0.6 were harvested and centrifuged. Pellets were frozen at -20 °C until use. Each cell pellet was then resuspended in 50 µl LYSE buffer and either set for ultrasonication in the Bioruptor® Pico (10 cycles, 30 sec on/off) using the 6x holder for 1.5 mL reaction tubes (using 1.5 mL LoBind tubes from Eppendorf, Cat. No. #0030108116) or the newly developed 20x holder for PreOmics cartridges. The remaining sample preparation was according to the PreOmics iST kit. LC-MS/MS analysis was done on a LTQ-Orbitrap mass spectrometer (ThermoFisherScientific) and data analysis was performed using the MaxQuant and Perseus software packages.

iST CARTRIDGE HOLDER PERFORMANCE

We assessed the performance of the new holder for protein sample preparation in combination with the iST Sample Preparation Kit using yeast as starting material. Ultrasonication with the 20x iST cartridge holder results in excellent reproducibility of protein intensities (A; median R=0.99) across 20 biological replicates. When comparing both holder types, we obtained similar peptide identifications (B), but the new 20x iST cartridge holder enables much faster parallel processing of samples during the lysis and ultrasonication steps (C).



A. Color-coded Pearson correlation of 20 biological replicates demonstrates high reproducibility.
B. Peptide identifications of samples processed with either the 6x tube or the 20x cartridge holders.
C. Processing a total of 20 samples using the Bioruptor® Pico results in significant time savings when using the new 20x cartridge holder compared to the 6x tube holder.

SUMMARY

The new Bioruptor® iST holder is pefectly suited to process up to 20 PreOmics' cartridges with equal performance to the 1.5 mL tube holder but drastically reduces overall processing time and minimizes potential sample loss when operating with low input amounts.

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ORDERING INFORMATION

PRODUCT	QUANTITY	MANUFACTURER	CODE
iST Sample Preparation Kit	8 reactions	PreOmics GmbH	P.O.00001
	96 reactions		P.O.00027
iST-NHS Sample Preparation Kit	12 reactions		P.O.00026
	96 reactions		P.O.00030
Bioruptor® Pico	1 unit	Diagenode SA	B01060010
iST cartridge holder for the Bioruptor® Pico	1 unit		B01200045
1.5 ml tube holder for Bioruptor® Pico (for Mass Spec)	1 unit		B01200040

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https://www.diagenode.com