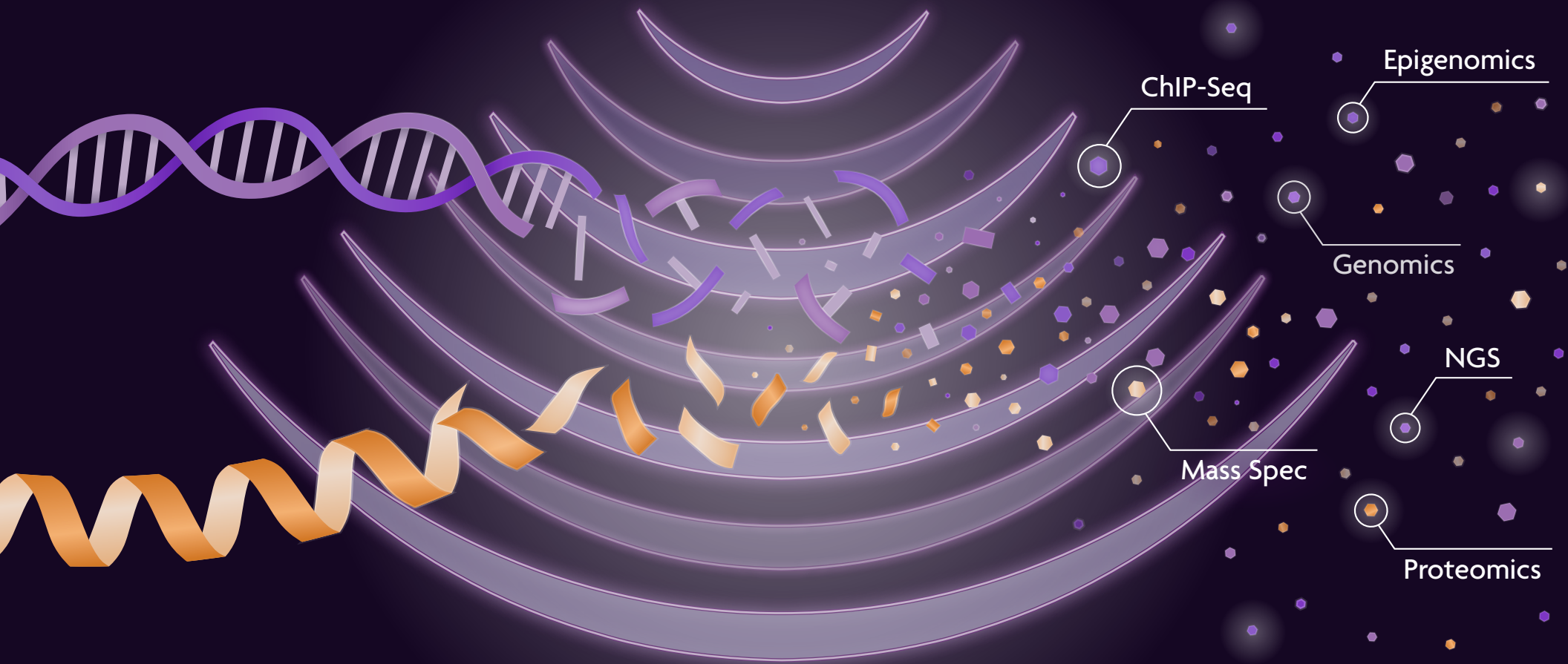
ACTIVE MOTIF®

PIXUL™ MULTI-SAMPLE SONICATOR

Extremely Consistent High-Throughput Shearing for Multi-Omics Applications



Without Consistent Sonication, Nothing Else Matters

PIXUL (short for PIXelated ULtrasound) offers an affordable, simple, rapid, and extremely consistent solution to high-throughput chromatin, DNA, RNA, and protein shearing.

Everything required for consistent sonication is included in a small benchtop footprint, making powerful shearing and sample preparation accessible to all researchers.

To request a quote or schedule a PIXUL evaluation in your lab, visit activemotif.com/pixul-info.

PIXUL Multi-Sample Sonicator Highlights:

Consistent: Process 1-96 samples simultaneously with extremely high reproducibility.

Simple: Fast setup, short learning curve, and easy operation with intuitive touchscreen.

Fast: Arrayed transducers and no degassing required saves time.

Flexible: Use up to 12 different sonication conditions per run in 96-well plates for simultaneous processing of multiple sample types and rapid optimization for difficult samples.

Affordable: No requirement for buying accessories or expensive proprietary plates or tubes.

The Future of Sonication is Here

Upgrade to PIXUL to achieve truly reproducible shearing.

Sonication Has Finally Been Upgraded!

Sonication is required for many experimental workflows, including genomics, epigenomics, and proteomics, as part of the sample preparation protocol. However, this critical step in the experiments has not evolved as fast as the experimental technology itself.

Until now. The PIXUL™ Multi-Sample Sonicator from Active Motif combines the benefits of the existing sonication technologies, while also eliminating the drawbacks, resulting in a powerful and disruptive new approach to sonication that is changing the way researchers are able to perform sample preparation for modern multi-omics studies.

Compatible applications:

- Processing samples directly from cells or tissue
- Shearing purified genomic DNA (gDNA) for NGS assays
- Shearing chromatin for ChIP assays
- Shearing RNA for transcriptomics assays
- Sample preparation for proteomics studies
- Easily process the most difficult samples types, including neurons, FFPE tissue, macrophages, fatty tissue, plant tissue, and more.

Limitations of Older Sonication Technology

Probe sonicators can get the job done for small experiments, and are cheap, but are plagued by issues with inconsistent sonication and variability between samples.

Water bath sonicators started to address the throughput problems, but have issues with inconsistency and inefficient sonication, especially for difficult sample types.

Focused ultrasonicators have made strides in increasing throughput and sonication quality, but are expensive, require costly proprietary consumables, take up a lot of space, and are difficult and time-consuming to operate.

Plug and Play Sonication. Taken to the Next Level.

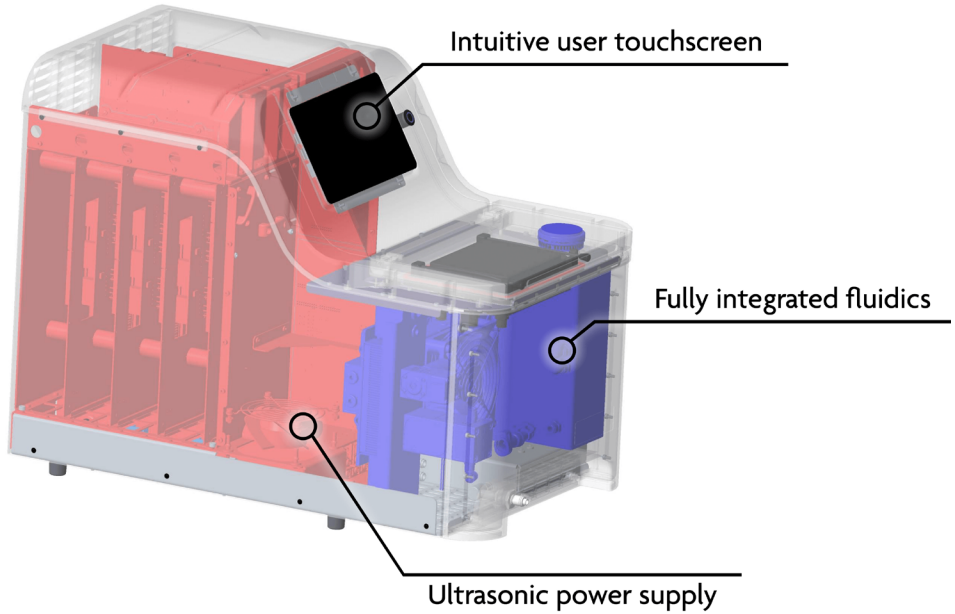
Powerful sonication doesn't need to be expensive or complicated.

Start sonicating in minutes.

1. **Start Cooling.** Tap a single button to start cooling the Coupling Fluid and PIXUL will be ready to sonicate within 6 minutes. No other setup or maintenance required.

2. **Program Sonication Conditions.** Intuitive touchscreen allows up to 12 different sonication conditions per run to be programmed in seconds.

3. **Sonicate.** Process 1-96 samples in standard, affordable 96-well cell culture plates in only 30 minutes. No need to wait longer for larger experiments. Now you can do more, faster.



The PIXUL Difference

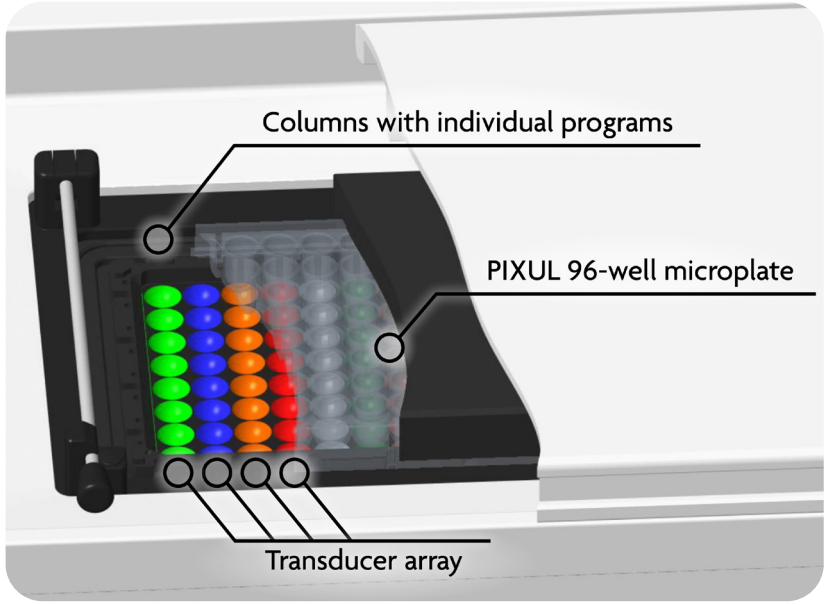
The PIXUL Multi-Sample Sonicator is not just another sonicator. It was completely redesigned from the ground up by a collaborative team of ultrasonication experts, software and hardware engineers, and leading epigenetics and multi-omics researchers.

It's all about the transducers.

Transducers generate the ultrasonic energy required for sonication. Their nature and position create the difference between inefficient and unpredictable sonication and consistent sonication you can trust.

What sets PIXUL apart from all other sonication instruments is its array of transducers. This unique transducer array allows rapid high-throughput sonication of up to 96 samples and up to 12 different sonication conditions in single run.

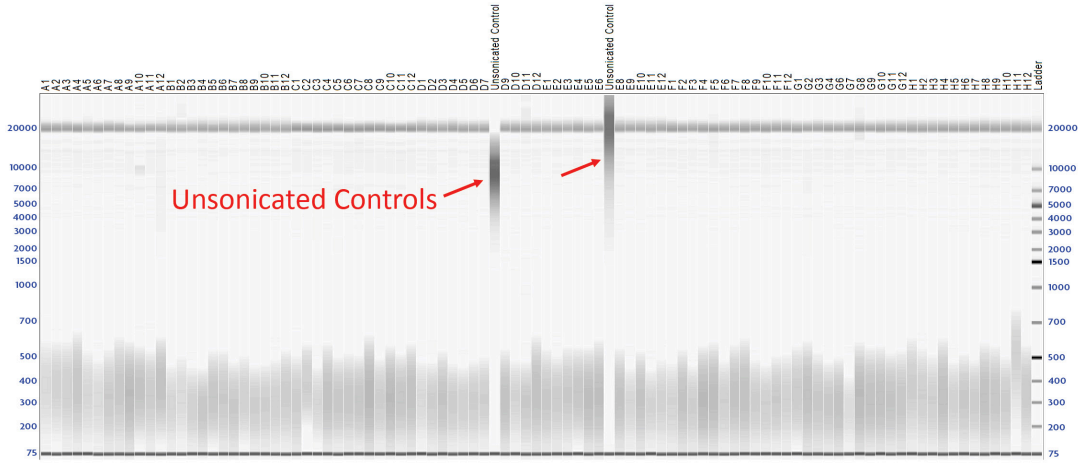
The focused ultrasound that PIXUL delivers to the sample, along with the novel formulation of the Coupling Fluid, facilitate efficient transfer of the ultrasonic energy every time. There's no water bath between the transducer and your sample to cause inefficient and inconsistent sonication.



Extremely Consistent Shearing of Genomic DNA with PIXUL

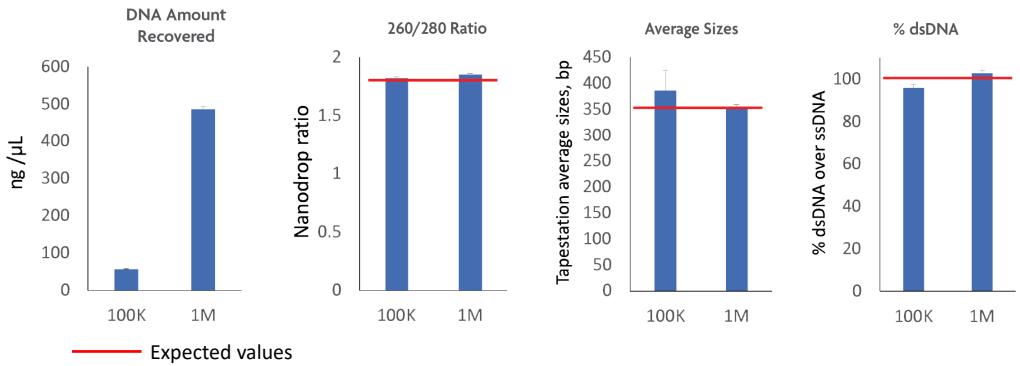
Highly efficient reproducible shearing of genomic DNA to an appropriate size for NGS library preparation is required for generation of high-quality sequencing data. Manual shearing with a probe sonicator or inconsistent shearing with other high-throughput sonicators can lead to sample-to-sample variability and unpredictable results.

Sample compatibility: Shearing genomic DNA with PIXUL is compatible with a wide range of purified gDNA (500 ng -20 µg) and cell number (100K - 5M).



Consistent Shearing of Purified Genomic DNA with PIXUL

The PIXUL Multi-Sample Sonicator consistently sonicates purified genomic DNA samples to an optimal fragmentation profile for NGS library preparation. 10 µg of salmon sperm DNA was loaded into each well of the PIXUL 96-well plate. The samples were processed for 36 minutes using the PIXUL gDNA Shearing Kit. Fragmentation profiles were examined using an Agilent Fragment Analyzer. Highly consistent average fragment lengths were observed across the entire plate.



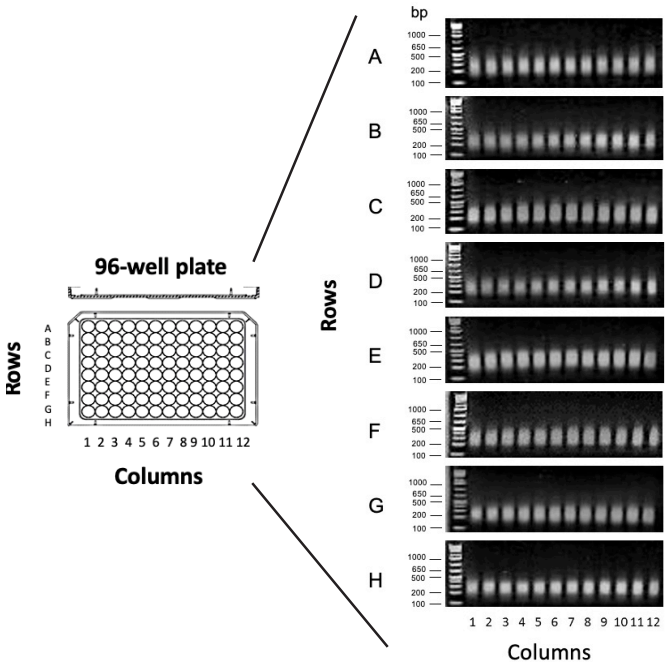
Consistent Shearing of Genomic DNA Directly From Cells with PIXUL

The PIXUL Multi-Sample Sonicator consistently sonicates genomic DNA directly from cell or tissue samples. This experiment shows sonication of samples containing 100,000 or 1,000,000 cells grown directly in 96-well PIXUL plates. No cell harvesting or transfer to different plates is required.

PIXUL Delivers Consistent Chromatin Shearing for ChIP-Seq

ChIP-Seq studies benefit from relatively narrow and consistent chromatin shearing profiles, as this can improve the resolution of transcription factor binding sites or the locations of histone post-translational modifications and ensure that ChIP-Seq data is reproducible.

Sample compatibility: Shearing chromatin with PIXUL is compatible with a wide range of cell numbers (100K – 5M) and tissue amounts (50 – 200 mg) per well.

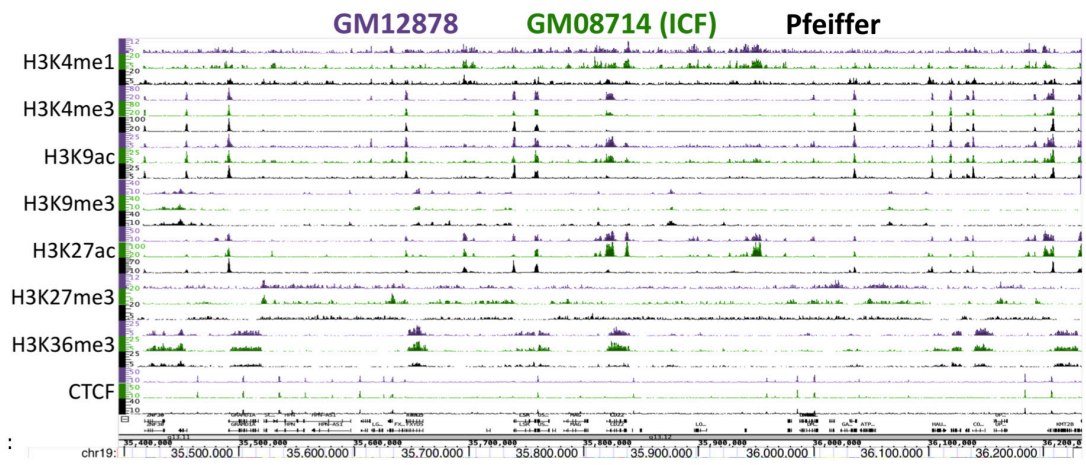


Sonication of Chromatin Directly from Cells Grown in PIXUL Plates

The PIXUL Multi-Sample Sonicator consistently sonicates chromatin to an optimal fragmentation profile for ChIP-Seq. 200,000 HCT116 cells were grown in each well of the PIXUL 96-well plate. Sonication of these samples was performed and fragmentation profiles were examined by agarose gel electrophoresis. PIXUL samples have a tight size distribution and extremely consistent shearing across the entire plate. *Nucleic Acids Res.* 2019 Jul 9; 47(12):e69.

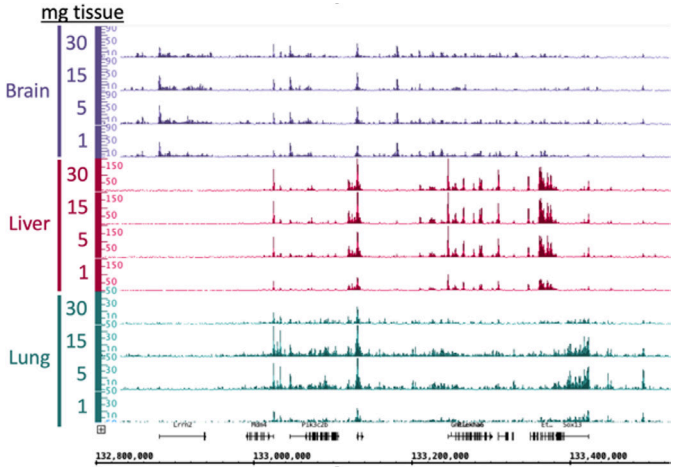
Removing the Bottleneck in High-Throughput ChIP-Seq

Advances in next-generation sequencing technology have facilitated breakthroughs in many research areas, including epigenomics. Although the sequencing and bioinformatics improvements have theoretically enabled high-throughout ChIP-Seq assays to become more feasible, the sample preparation bottleneck has prevented their wide adoption. That's changed with PIXUL. With the ability to process up to 12 different sonication conditions and 96 samples in a single run, the sonication step is no longer limiting.



PIXUL Enables High-Throughput ChIP-Seq Assays

ChIP-Seq was performed for 8 marks in 3 lymphoblastoid cell lines using chromatin generated by PIXUL using the PIXUL Chromatin Shearing Kit (cat. no. 53132), enabling high-quality, high-throughput ChIP-Seq assays.

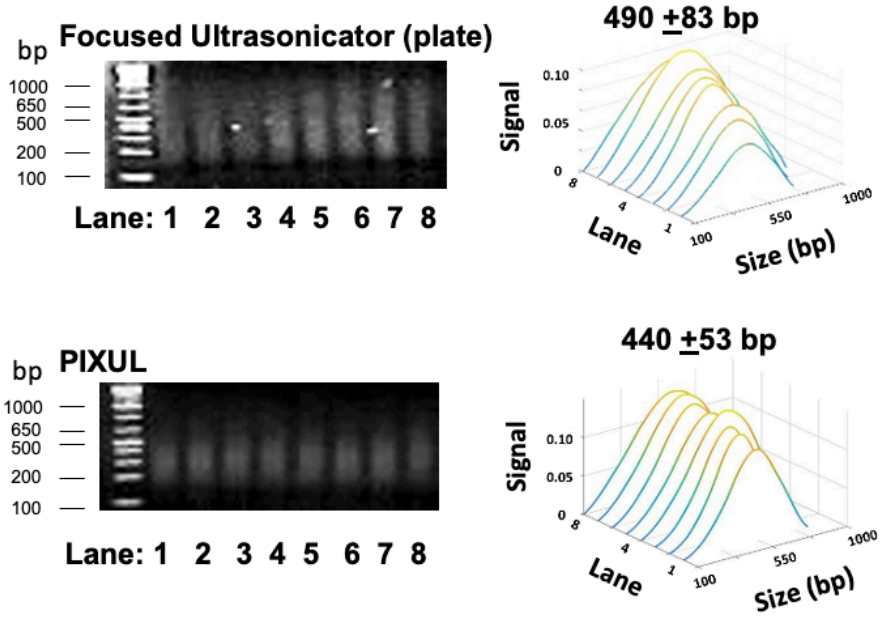


High-Quality High-Throughput ChIP-Seq Data from Mouse Tissues

H3K27ac ChIP-Seq assays were performed using sonicated chromatin generated by PIXUL from the indicated amounts of mouse tissue samples. Consistent results were observed from a wide range of tissue amounts and tissue-specific epigenetic modification patterns were identified.

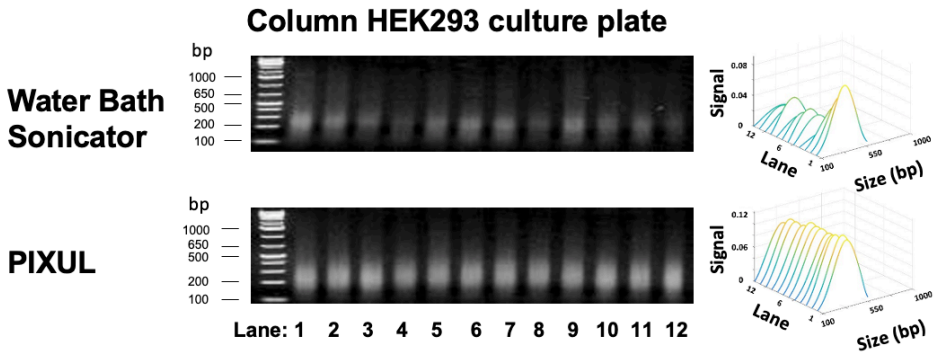
PIXUL Chromatin Shearing is More Efficient and Consistent than Other Sonicators

Different sonication technologies have different advantages and limitations. PIXUL improves chromatin shearing by offering all the benefits of competing sonication methods, without the drawbacks. To evaluate chromatin sonication consistency between different multi-sample sonicators, we compared chromatin shearing performed with the PIXUL to leading focused ultrasonication and water bath sonication systems. PIXUL demonstrated more consistency in chromatin shearing than both competitors.



Chromatin Shearing with PIXUL is More Efficient and Consistent than Focused Ultrasonication

The PIXUL Multi-Sample Sonicator consistently sonicates chromatin to an optimal fragmentation profile. 200,000 HCT116 cells were loaded into either a proprietary focused ultrasonication plate of another multi-sample sonicator or wells of the PIXUL 96-well plate. Sonication of these samples was performed and fragmentation profiles were examined by agarose gel electrophoresis. PIXUL samples have a tighter size distribution and increased consistency across the plate than samples processed with the focused ultrasonicator. *Nucleic Acids Res.* 2019 Jul 9; 47(12):e69.



PIXUL Delivers Higher Yield & More Consistent Chromatin Shearing than Water Bath Sonicators

The PIXUL Multi-Sample Sonicator consistently sonicates chromatin to an optimal fragmentation profile. HEK293 cells were loaded into each well of the PIXUL 96-well plate. They were cultured, fixed, and chromatin fragmented in the same plate without any sample transfers. Sonication with a water bath sonicator exhibits less consistent fragmentation and lower chromatin yield than sonication with PIXUL. *Nucleic Acids Res.* 2019 Jul 9; 47(12):e69.

Epigenetics and Multi-Omics Applications Will Never Be the Same Again!

The PIXUL Multi-Sample Sonicator delivers powerful and consistent next-generation sonication in a fast, simple, affordable to operate, and flexible instrument. Upgrade to PIXUL to achieve truly consistent shearing of DNA, RNA, chromatin, and protein.

To request a quote or schedule a PIXUL evaluation in your lab, visit activemotif.com/pixul-info.

Comparison of Leading Multi-Sample Sonicators

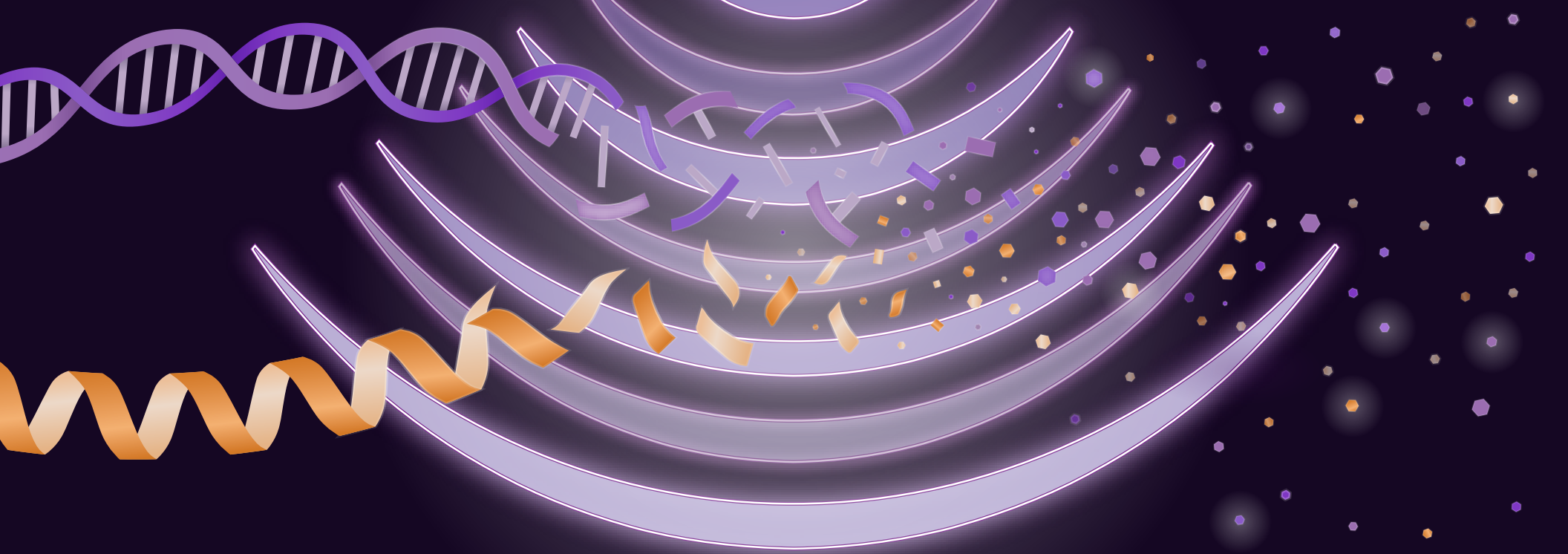
	PIXUL™ Multi-Sample Sonicator	Leading Water Bath Sonicator	Leading Focused-ultrasonicator
Everything Included?	Yes	No, requires chiller, tube holders	No, requires chiller, UV lamp, laptop
Consumable Cost	Low	Low	High
# Samples Processed	1 to 96 in ~30 minutes	1 to 12 or 16	1 to 96, but runs take longer with more samples (hours)
Consistency Between Samples	High	Variable	Good, but potential for edge effects due to transducer bar
Multiple Conditions/Run?	Yes, up to 12 per run in ~30 minutes	No	Yes, but runs take longer with more samples (hours)
Degassing Required?	No	No, but requires DI water	Yes
Set Up Time	~15 minutes	20-30 minutes	~1.5 hours
Maintenance Required	Minimal, just top off Coupling Fluid as needed	Water tank maintenance	Water tank maintenance
Problems with Algae/ Microorganism Growth?	No	Yes	Yes
Transducer Layout	Array of transducers	Single static transducer	Single mobile transducer
Temperature Control	Internal chiller	External chiller	External chiller
Noise Level	Low	High	Low
User Interface	Touchscreen	Knobs or Touchscreen	Computer (purchase separately)

Additional Products

Product	Cat. No.
PIXUL™ 96-well Plate with Sealer	53139
PIXUL™ Coupling Fluid	53136
PIXUL™ Chromatin Shearing Kit	53132
PIXUL™ Chromatin Input Prep Kit	53134
PIXUL™ gDNA Shearing Kit	53131
High Throughput ChIP-IT® Kit	53146

Our Quality Guarantee:

The PIXUL™ Multi-Sample Sonicator comes with a standard 1 year warranty with the option to upgrade and extend the plan within the first year. Our standard warranty covers you against manufacturing defects for one year from the date of purchase.



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