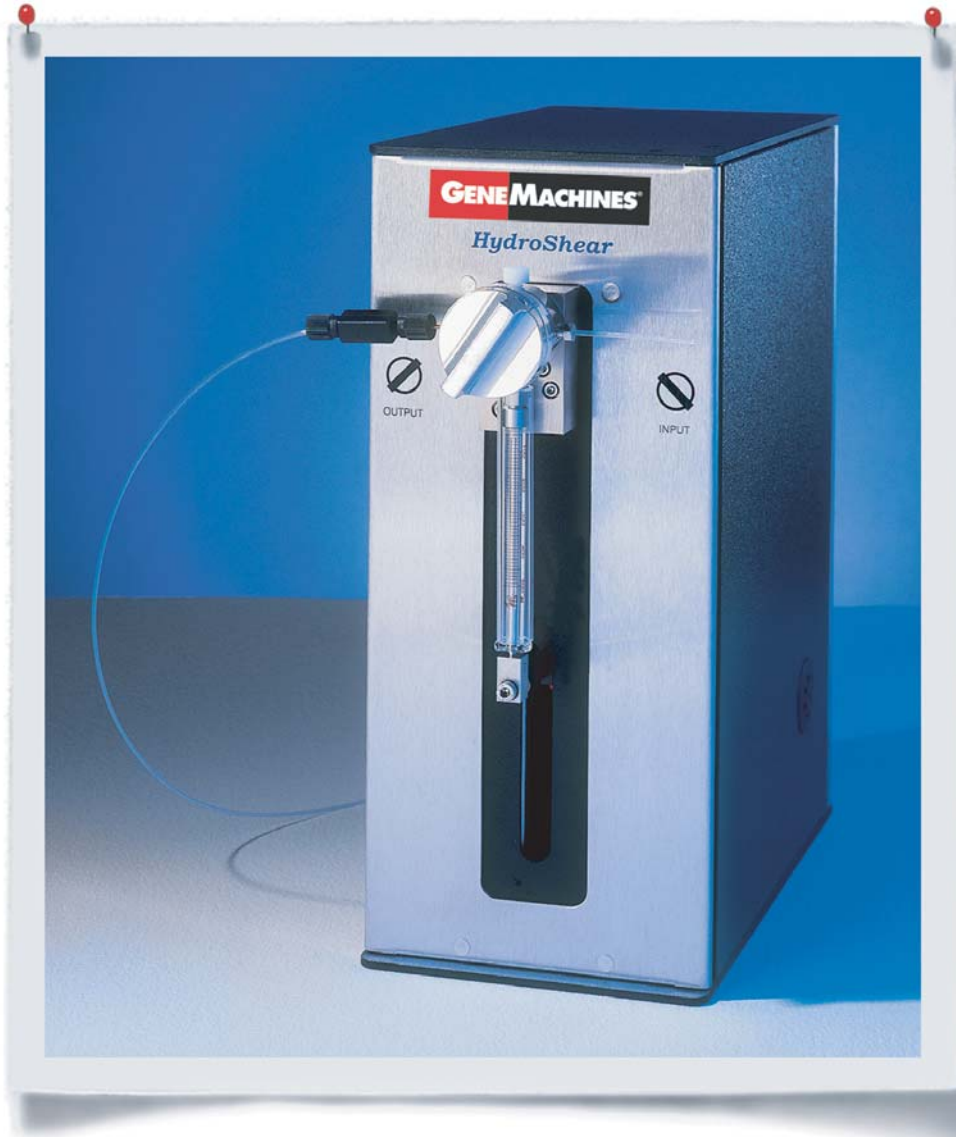


HydroShear[®]

The best way to fragment DNA for library construction.



The **HydroShear** offers the simplest, most reproducible, and controllable method for generating random DNA fragments. The software-driven, stand-alone device uses hydrodynamic forces to shear DNA.

The **HydroShear** can generate fragments as small as 1 kb, 90% of which fall within a two-fold size range. Sheared fragments can be ligated without end-repair.

Key Benefits

- Load, run and wash in 10 minutes
- Achieve consistent results across multiple users
- Fragment DNA sample volumes as small as 40 μ l
- Generate a random, representative collection of fragments

Design Specifications

Dimensions	W 5" x D 10" x H 12" (W 0.13 m x D 0.25 m x H 0.30 m)
Fragment Size	1 - 9 kb with standard assembly; 650 bp - 40 kb with custom assemblies (sold separately)
DNA Concentration	No effect on fragment size
Sample Volume	40 µl - 500 µl
Run Time	10 minutes per sample

Reagents

Complete with three different wash solutions, the optimized HydroShear Wash Kit includes all reagents necessary to perform DNA shearing using the HydroShear.

- Eliminates contamination due to sample carryover
- Minimizes batch-to-batch solution variation
- Saves valuable time

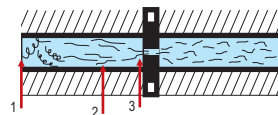


HydroShear Wash Kit

Data*

The Mechanism

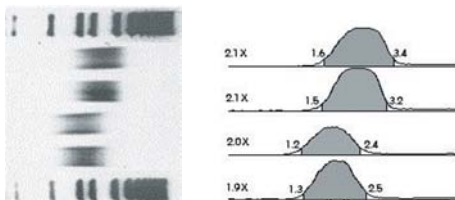
1. DNA in solution is passed through a tube with an abrupt contraction.



2. As it approaches the contraction, the fluid accelerates to maintain the volumetric flow rate through the smaller area of the contraction.

3. During this acceleration, drag forces stretch the DNA until it snaps. The DNA fragments until the pieces are too short for the shearing forces to break the chemical bonds. The flow rate of the fluid and the size of the contraction determine final DNA sizes.

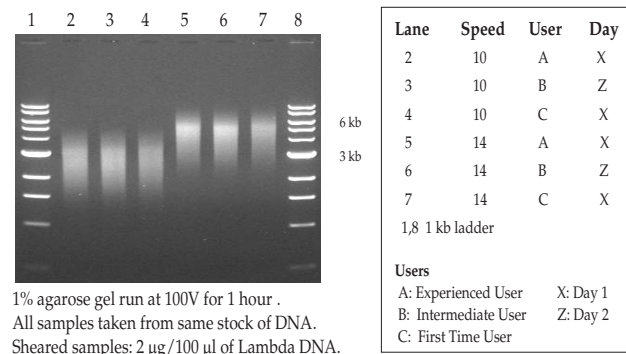
Size distribution is tight and consistent¹



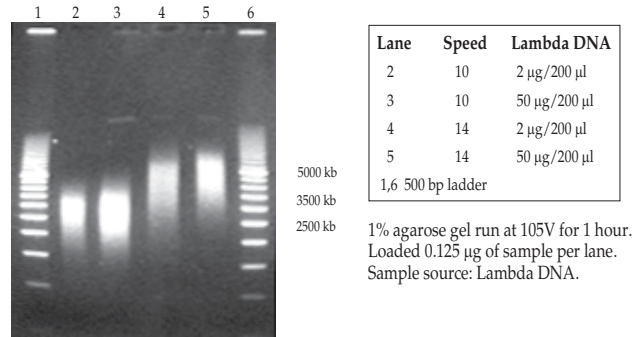
Duplicate DNA samples were sheared at two different flow rates for 20 iterations. $\text{size ratio} = \frac{\text{upper size range}}{\text{lower size range}}$

¹Thorntson, Y., Hunnicke-Smith, S., Oefner, P., Davis, R. 1998. An Automated Hydrodynamic Process for Controlled, Unbiased DNA Shearing. *Genome Research* 8, 848-855.

Consistency of Shearing Across Multiple Users and Days



Effect of DNA Concentration on Fragment Size



*Shearing examples shown are pre-cloning data.

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