MultiPep 1™ | MultiPep 2™

Automated Parallel Peptide Synthesizers

Best in Class Parallel Peptide Synthesizer

MultiPep 2

The MultiPep 2 is the state of the art automated parallel peptide synthesizer. It features unmatched flexibility for screening hundreds of peptides in parallel using plates, columns, or cellulose membranes formats.

Flexible Formats

- Plates: Up to 384 (4 x 96) peptides at 1 – 10 µmol
- Columns:
  - 48 mini-columns (0.25, 0.50 mL) at 1 – 15 µmol
  - 48 columns (2, 5, 10, 20 mL) at 1 – 500 µmol
  - 72 columns (2, 5, 10 mL) at 1 – 300 µmol
- SPOT Synthesis: Up to 2400 peptides on four cellulose membranes
- CelluSpots™: up to 768 peptides on a dissolvable cellulose support for spotting on many identical slides

Heating option for Elevated Temperature Synthesis (Plates/Columns)

Fast Synthesis with 8-Position Parallel Washing Arm

Vortex Mixing

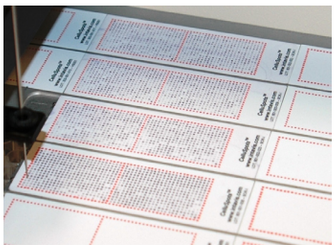
Pre-activation or In-situ Activation

Peptide Libraries — 96 Well Plates and Columns

Easily synthesize large libraries of peptides using a 96 well plate with the MultiPep 2. Use up to 4 x 96 well plates at one time for the parallel synthesis of 384 peptides. Mini-columns (up to 0.5 mL) can be used to synthesize up to 48 peptides in parallel. Alternatively, 72 larger columns (2, 5, or 10 mL size) can be used in parallel.

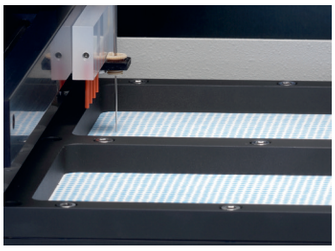
Parallel Peptide Synthesis at Elevated Temperature

Apply elevated temperature synthesis conditions to either 96 well plates or columns run on the MultiPep 2. This is made easy with optional heating block accessories with adjustable temperature control. Elevated temperature is helpful for improving the purity of difficult and longer sequences.



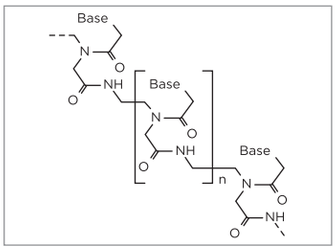
CelluSpots — Multiple Copies of Peptide Arrays on Glass Slides

Easily make many copies of a peptide array on glass slides. CelluSpots technology combines the advantages of traditional SPOT synthesis with a unique dissolvable cellulose support for making identical copies of a peptide array. After SPOT synthesis, peptides are transferred from the dissolvable cellulose support to glass slides based on the use of the SlideSpotter™.



Peptide Microarrays — SPOT Synthesis

SPOT synthesis allows for the synthesis of thousands of immobilized cellulose membrane peptides. This is useful for on-support binding studies as well as solution and cell-based assays. With the MultiPep 2, the SPOT synthesis option allows for the synthesis of up to 2400 peptides in a batch for high-throughput screening applications.



Ideal for PNA Synthesis

The MultiPep 2 is a powerful tool for small-scale synthesis requiring expensive monomers such as PNA. Perform PNA synthesis as low as 1 µmol with the small fluid delivery capabilities of the MultiPep 2. Up to 48 smaller columns in parallel (250 µL, 500 µL sizes) can be used.

MultiPep 1

The MultiPep 1 features similar capabilities to the MultiPep 2 in an entry level format. It allows for:

- Plates: Up to 96 peptides at 1 – 10 µmol
- Columns: Up to 48 peptides at 1 – 10 µmol or 8 peptides at 10 – 300 µmol
- Peptide Microarrays: SPOT Synthesis — Up to 1200 peptides on two cellulose membranes
- Heating option for elevated temperature synthesis (plates/columns)
- Vortex mixing
- Pre-activation or in-situ

MultiPep Series Comparison

	MultiPep 1	MultiPep 2
		
Scale Range	0.001 - 0.3 mmol	0.001 - 0.5 mmol
Synthesis Formats:		
Well Plates	1 x 96 well plates	4 x 96 well plates
Mini-columns	24/48 mini-columns (250, 500 µL)	24/48 mini-columns (250, 500 µL)
Columns	8 columns (2,5,10 mL)	48 columns (2, 5, 10, 20 mL) 72 columns (2, 5, 10 mL)
Micro Peptide Arrays: **SPOT Synthesis on Cellulose Membranes**	Up to 1200 peptides in parallel on 2 sheets	Up to 2400 peptides in parallel on 4 sheets
Copies of Arrays: **CelluSpots**	Many copies of arrays up to 768 peptides each with our SlideSpotter (See specs below)	Many copies of arrays up to 768 peptides each with our SlideSpotter (See specs below)
Amino Acid Positions	26 standard (up to 48)	31 standard (up to 48)
Other Positions	Up to 15	Up to 20
Fluid Delivery	Digital syringe pump	Digital syringe pump
Dimensions	22.8" W x 20.9" D x 28.3" H (58 cm x 53 cm x 72 cm)	35.0" W x 25.6" D x 31.1" H (89 cm x 65 cm x 79 cm)
Accessories	· CleavagePro™ · SlideSpotter – CelluSpots	· CleavagePro · SlideSpotter – CelluSpots

SlideSpotter — CelluSpots

Used in conjunction with the MultiPep 1 and 2 systems for making copies of peptide arrays on slides (CelluSpots).

Work Area	2 x Microtiter plates (96 or 384 well)
Slide Area	26 x 75 mm slides with freely defined grids
Total Slides	29 slides for target
Droplet size	As low as 100 nL

96/384 Well Plates and Cellulose Membranes

The Leaders in Peptide Arrays

Screening of peptides for potential activity is a fundamental technique for research towards drug development. It requires the synthesis of large numbers of peptides in various formats that investigate peptide interactions with targets of interest. This includes epitope mapping, profiling antibodies, determining active substrates of enzymes, and ligand to receptor interactions. CEM's MultiPep 1 and 2 automated parallel peptide synthesizers provide the most advanced formats for generating peptide arrays.

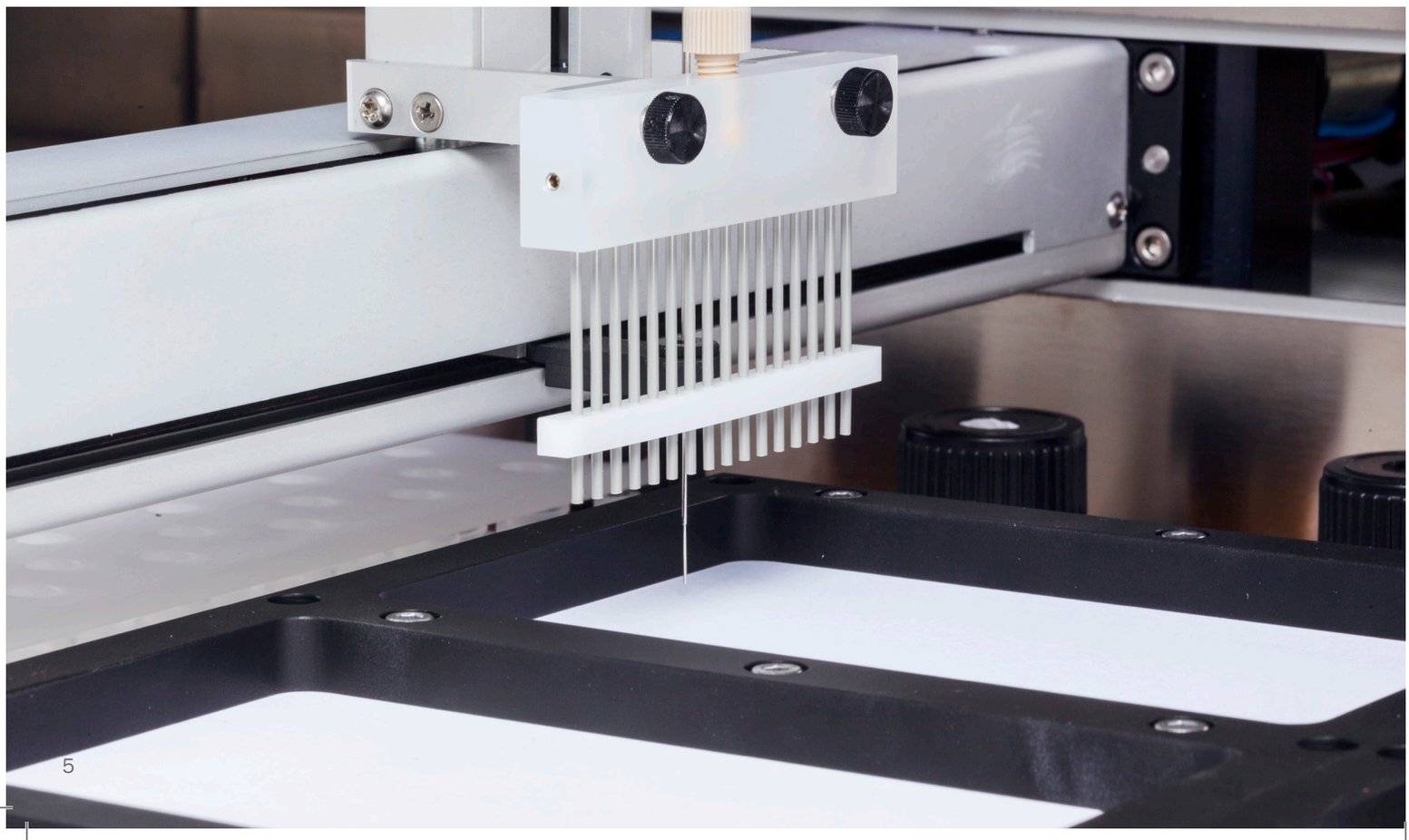
Peptide Arrays

Synthesize peptide arrays using up to 4 x 96 well plates or 72 columns (2, 5, 10 mL sizes) in parallel with the MultiPep 2 peptide synthesizer. Optional heating blocks are available for both plate and columns options to generate arrays in higher crude purity.

Peptide Microarrays

Even larger numbers of peptides can be produced using SPOT synthesis. This technique, available on the MultiPep 1 and 2 systems, allows for the parallel synthesis of up to 2400 peptides at a time by repeated deposition of activated amino acids as spots on a specially derivatized filter sheet. The SPOT
methodology has been demonstrated in > 400 scientific articles for analysis of protein-protein interactions and allows the synthesis of multiple peptides at a fraction of synthesis on resin[1]. The synthesized peptides can then be cleaved or remain bound to the cellulose membrane for direct screening.

[1] Winkler, D. et al *Peptide Microarrays – Chapter 5*, Meth. Mol. Biol. 570, **2009**



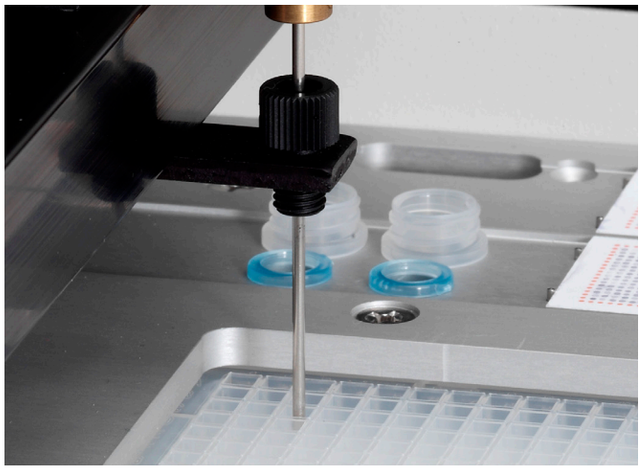
Identical Copies of Peptide Microarrays — CelluSpots

Reuse of SPOT membranes is limited (some assays can only be used once) and production of duplicate SPOT arrays with identical quality is time consuming. Additionally, membranes are large compared to microarrays on glass slides and require large sample volumes.

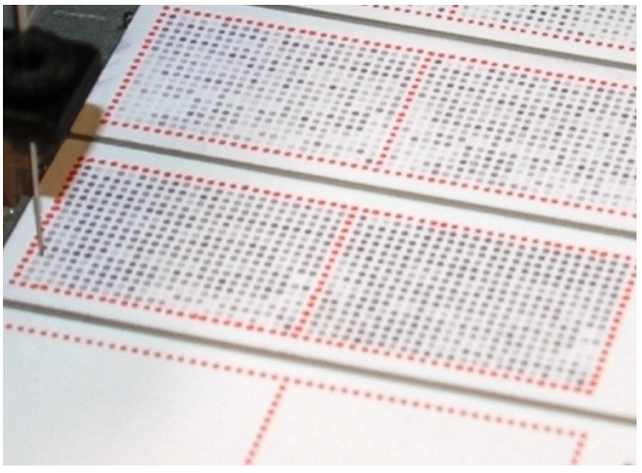
CelluSpots overcomes these limitations while maintaining the advantages of traditional SPOT membranes. With the CelluSpots methodology, peptides are synthesized on a modified cellulose support which can be uniquely dissolved after synthesis. The solutions of individual peptides covalently linked to a macromolecular cellulose can then be spotted many times onto multiple copies of a surface of choice, generating many copies of a peptide array on glass slides. After evaporation of the solvent, a three-dimensional layer is formed which is not dissolved in aqueous reagents used for standard assays. The three-dimensional structure holds up to 1000 times more peptides per area as compared to conventional monolayer deposition. This shifts the binding equilibrium in a favorable direction for low affinity protein-protein interactions.

Benefits of CelluSpots

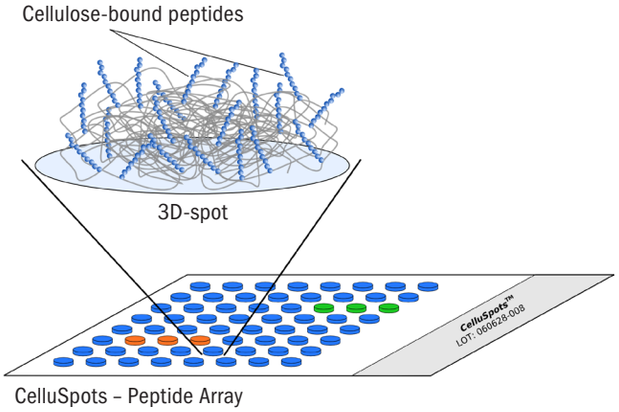
- Easily create many copies of a peptide array
- Higher peptide density allows for detection of low affinity interactions and only limited sample volume
- Detection by chemiluminescence, autoradiography, or enzymatic color development
- Compatible with standard equipment for microarray (ex. hybridization chambers and scanners)
- Low non-specific protein binding of cellulose



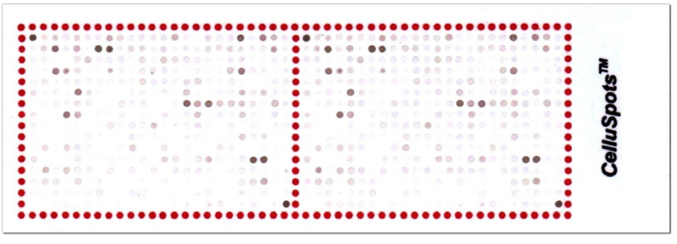
Dissolved peptide-cellulose conjugates in 384 well plate being spotted onto CelluSpots slides.



Spotting of peptide-cellulose conjugates on many identical slides using the SlideSpotter.



CelluSpots – Peptide Array



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