

Hyperion Imaging System

The Hyperion™ Imaging System is a high-parameter imaging system capable of analyzing 4 to 37 protein markers at subcellular resolution in fixed tissue sections or cell smears. With the ability to utilize up to 135 channels to detect additional parameters, the Hyperion Imaging System is ideal to meet researcher needs today and well into the future.

The Hyperion Imaging System is based on the Helios™ mass cytometry platform. This high-dimensional imaging platform uses mass-tagged antibodies to markers alongside cell structural features in tissue and cell smears.

Mass-tagging involves separation of signals based on the differences in mass, resulting in distinct signals for each marker without the need

for compensation associated with fluorometric techniques yet far more specific and sensitive than tag-free techniques.

The metal tags can be defined within 1 Da spatial resolution in tissue and cell smears, resulting in a unique spatial and parametric definition of the cells *in situ*. The system enables understanding of protein behavior and interactions to drive biological breakthroughs.

The Hyperion Imaging System comprises a Hyperion Tissue Imager, a Helios system and software for data acquisition and viewing. Maxpar® pathologist-verified antibodies, antibody labelling kits and custom antibody conjugation services are available at fluidigm.com.

Hyperion Imaging System Specifications

| Description | Specification |
|--------------------------------|---------------------------------|
| Channels | 135 |
| Mass range | 75–209 Da |
| Abundance sensitivity | 0.3% for ¹⁵⁹ Tb |
| Frequency | 200 pixels/sec |
| Detection limit | ≥400 copies per μm ² |
| Dynamic range | 4 orders of magnitude |
| Ablation spot size | ≤ 1μm ² |
| Calibration | Automated |
| Operating system | Windows® 7 Pro 64-bit |
| Data storage | >6 TB RAID (mirrored) |
| Switch time (between modes) | 12 hr |

| Description | Specification |
|--|---------------------------------------|
| Cross-cell contamination (redeposition) | ≤2% (selected direction) |
| Crosstalk pixel to pixel | ≤15% at 200 pixels/sec |
| Wet tissue thickness for full ablation | ≤7 μm |
| Addressable sample size on slide | ≥15 mm x 45 mm |
| Optical view of sample | ≥ 250 μm x 250 μm |
| File type | TXT, multipage TIFF, OME-TIFF, MCD |
| Scan area | ≥1 mm ² /2 hr (@200 Hz) |

Workstation Specifications

| Description | Specification |
|-----------------|---|
| Motherboard | HP® Z840 Workstation |
| CPU 1 and 2 | Intel® Xeon® E5-2643 v4, 3.40 GHz, 2400 6C |
| RAM | 64 GB DDR4-2400 (8 x 8 GB) 2 CPU RegRAM |
| Graphics card | NVIDIA® Quadro® K620 2 GB Graphics (DL-DVI+DP) |
| DVD | 9.5 mm Slim SuperMulti DVD-RW 1st ODD |
| Keyboard | HP USB keyboard US |
| Mouse | HP USB optical mouse |
| Chassis | HP Z840 1,125 W (1,450 W/200 V) 90% efficient chassis |
| RAID controller | LSI 9270-8i SAS 6Gb/s ROC RAID Card |
| Storage drives | HP 2 x 256 GB SATA SSD RAID 1 Western Digital® 4 x 4 TB 7200 RPM SATA, RAID 10 |

Monitor Specifications

| Description | Specification |
|-------------|--|
| Monitor | LG® 34" Class 21:9 UltraWide® LED Monitor |
| Screen size | 34.1 in (86.6 cm) |

Data File Size

| File Type | Size* |
|-----------|----------------|
| MCD | 4–5 MB/channel |
| TXT | 6–8 MB/channel |

*1,000 x 1,000 µm region of interest (ROI)

Hyperion Tissue Imager Dimensions*

| Description | Specification |
|-------------|-----------------------|
| Dimensions | Width 56 cm (22 in) |
| | Height 134 cm (53 in) |
| | Depth 56 cm (22 in) |
| Weight | 159 kg (350 lb) |

Chiller Size

| Description | Specification |
|-------------|----------------------|
| Dimensions | Width 38 cm (15 in) |
| | Height 64 cm (25 in) |
| | Depth 67 cm (27 in) |
| Weight | 81 kg (178 lb) |

Helios Dimensions

| Description | Specification |
|-------------|-----------------------|
| Dimensions | Width 103 cm (41 in) |
| | Height 132 cm (52 in) |
| | Depth 87 cm (35 in) |
| Weight | 320 kg (705 lb) |

Monitor Size

| Description | Specification |
|-------------|-------------------------------|
| Dimensions | Width 83.05 cm (32.70 in) |
| | Height 54.86 cm (21.60 in) |
| | Depth 23.87 cm (9.40 in) |
| Weight | 8.40 kg (18.50 lb) with stand |

* The Hyperion Tissue Imager must be placed directly in front of the Helios instrument.

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