Junior
Biologics formulation

Walk up, set up your run and walk away. Junior automates the manual measurements you do one by one at the bench. Choose a combo of high-throughput pH with visual inspection, visual inspection with viscosity or viscosity with pH. Crank through more samples in a single day, get them done the same way every time and check out a broader developability and formulation space.

Applications

- Rapidly characterize a wide range of protein formulations with limited material
- Perform developability and preformulation screens
- Evaluate formulation robustness
- Formulation development
- Manage and track formulations and analytical results to facilitate rapid scientific decisions

Key features

- Automate pH, viscosity and visual inspection
- Use a wide range of vials and microplates
- Check the pH of a 96-well plate in approximately 45 minutes
- Measure viscosity of protein formulations up to 100 cP with only 100 µL of sample
- Grab color, turbidity and visible particle count all in one shot
- Capture images and archive them for easy re-analysis
Available options

Visual inspection station (VIS) analyses
Includes:
- Visual particle analysis
- Turbidity
- Color measurement
Vial size: 2–20 mL
Recommended sample volume: 1 mL in 2 mL serum vial
Measurement time: 2–3 min per vial

Suspended visible particle detection
Minimum particle size detected: 80 μm
Maximum solution viscosity: 30–35 cP
Particle count accuracy:
  - No particles: 0 particles detected
  - 1–3 particles: Detect at least 1 particle
  - 4–9 particles: Actual particle count ±2 particles
  - 10–25 particles: Actual particle count ±5 particles

Turbidity
Measurement range: 10–1000 NTU
Measurement accuracy:
  - 0–100 NTU: ±5 NTU
  - >100–1000 NTU: ±5%
Repeatability: ±1 NTU for 10 consecutive samples

Color measurement
Color: Correct match of Euro Pharmacopeia BY1–BY7 standards

pH measurement
Configuration: 4-channel glass probe
Measurement time per 96-well plate: <45 minutes
Range: 0–14 pH
Resolution: 0.01 pH unit
Accuracy: ±0.03 pH unit
Precision: ±0.05 pH unit

Viscosity station
Measurement range: 1–100 cP
Accuracy: ±0.5 cP + 10% of the actual viscosity
Repeatability: StDev <0.5 cP + 5% of mean
Sample volume: 100 μL
Minimum volume in well: 200 μL
Temperature range: 4–40 °C
Temperature accuracy: ±1 °C
Measurement time: 6 min/sample
Throughput: 10 samples/h

Vial/plate gripper
Plate size: Standard microtiter
Vial size: 1–125 mL
Total mass: Up to 3 kg

Viscous liquid dispenser
Technology: Positive displacement tip (PDT)
Disposable tips: 10 μL to 10,000 μL from Eppendorf and Rainin
Viscosity: 1 cP to 1,000 cP

Vortexing station
Orbital: 60–3570 rpm
Maximum vortexing mass: 2268 g (5 lb/plate)

Off-deck third-party instrument virtual integration
- DLS
- HPLC
- cIEF
Other systems available for virtual integration. Please contact Unchained Labs for a full list of systems.

Facilities requirements

Physical
  - With integrated enclosure:
    105 cm W x 90.4 cm D x 140 cm H ~150 kg
  - With integrated table option:
    167 cm W x 90.4 cm D x 200 cm H ~240 kg

Electrical
  - Junior:
    110–220 ±10% VAC, 50–60 Hz, 16 A
  - Computer:
    US: 115 V ±10 %, 60 Hz, 10 A
    EU: 220–230 V ±10 %, 50 Hz, 16 A
Compressed dry air: 0.55–0.9 MPa (80–130 psi), 40 L/s