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.

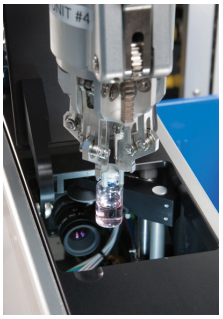
Applications

- 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

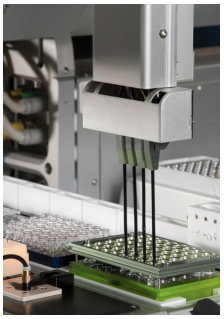
Key features

- 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

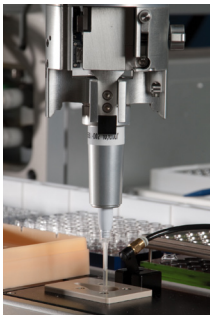
Junior configured for biologics formulation



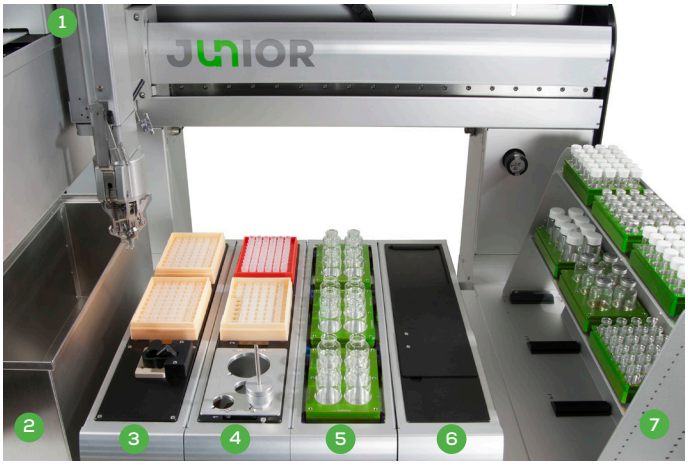
Visual inspection station



Multi-channel pH probes



Viscosity station



Example Junior deck configured for biologics formulation

1 Vial/plate gripper
2 Waste bin
3 Viscosity station
4 Tool and plate rack
5 3-Position plate rack
6 Visual inspection station
7 Vial/plate hotel

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
- >100–1,000 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

UNCHAINED LABS

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